

TUSKEGEE UNIVERSITY



Renovations to:
Commons Building A

Project Manual
Bidding & Construction
Documents

WBA No. 21-034.01

DECEMBER 16, 2021

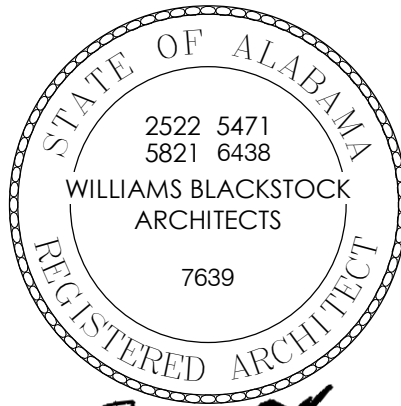
WILLIAMS BLACKSTOCK ARCHITECTS

SECTION 00 0107

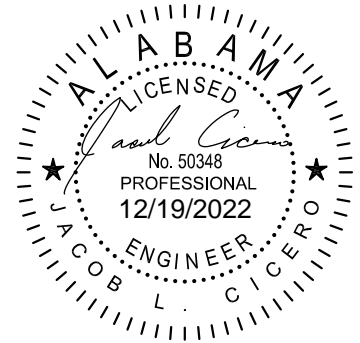
PROFESSIONAL SEALS



J. Kiumu 12/19/22



Jay Cobb 12-19-22



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1.01END OF SECTION 00 0110

SAMPLE ADVERTISEMENT FOR BIDS

Sealed proposals will be received by _____
(Owner's legal title)
at the office of _____
(Name and address of Owner's authorized representative)
until _____ CST _____ for
(Hours) (Month), (Day), (Year)
(Description of the work to be inserted here):

at which time and place they will be publicly opened and read.

A cashier's check or bid bond payable to _____
(Owner's legal title)
in an amount not less than five (5) percent of the amount of the bid, but in no event more than \$10,000,
must accompany the bidder's proposal. Performance and Payment Bonds and evidence of insurance required in
the bid documents will be required at the signing of the Contract.

Drawings and specifications may be examined at the office of _____

(Owner's representative and address)

and _____
(appropriate plan rooms; i.e., F. W. Dodge, Builders Exchange, Construction Market Data, etc.).

Bid Documents may be obtained from the Architect (Engineer) upon deposit of \$ _____ per set,
which will be refunded in full on the first _____ sets issued to each general contract bidder submitting a bonafide
bid, upon return of documents in good condition within ten days of bid date. Other sets for general contractors,
and sets for subcontractors and dealers, may be obtained with the same deposit, which will be refunded as
above, less cost of printing, reproduction, handling, and distribution.

(If applicable) Only general contractors who have been approved to bid pursuant to prequalification procedures and
criteria established by the Owner will be eligible to bid for the Project. Written prequalification procedures and
criteria are available for review at the office of _____
(Owner's or Architect's/Engineer's representative and address).

Bids must be submitted on proposal forms furnished by the Architect (Engineer) or copies thereof. All
bidders bidding in amounts exceeding that established by the State Licensing Board for General Contractors
must be licensed under the provisions of Title 34, Chapter 8, Code of Alabama, 1975, and must show
evidence of license before bidding or bid will not be received or considered by the Architect (Engineer); the
bidder shall show such evidence by clearly displaying his or her current license number on the outside of the
sealed envelope in which the proposal is delivered. The Owner reserves the right to reject any or all
proposals and to waive technical errors if, in the Owner's judgement, the best interests of the Owner will thereby
be promoted.

(Awarding Authority/Owner)

(Local Awarding Authority/Local Owner)

(Architect/Engineer)

NOTE: For projects exceeding \$50,000, this notice must be run once a week for three successive weeks in a
newspaper of general circulation in the county or counties in which the project, or any part of the project, is to
be performed. If the project involves an estimated amount exceeding \$500,000, this notice must also run at
least once in three newspapers of general circulation throughout the state. Proof of publication is required.

SAMPLE INVITATION TO BID

Sealed proposals will be received by _____
 (Owner's legal title)
 at the office of _____
 (Name and address of Owner's authorized representative)
 until _____ CST _____ for
 (Hours) (Month), (Day), (Year)
 (Description of the work to be inserted here):

at which time and place they will be publicly opened and read.

A cashier's check or bid bond payable to _____
 (Owner's legal title)
 in an amount not less than five (5) percent of the amount of the bid, but in no event more than \$10,000, must accompany the bidder's proposal. Performance and Payment Bonds and evidence of insurance required in the bid documents will be required at the signing of the Contract.

Drawings and specifications may be examined at the office of _____

 (Owner's representative and address)

and _____
 (appropriate plan rooms; i.e., F. W. Dodge, Builders Exchange, Construction Market Data, etc.).

Bid Documents may be obtained from the Architect (Engineer) upon deposit of \$ _____ per set, which will be refunded in full on the first _____ sets issued to each general contract bidder submitting a bonafide bid, upon return of documents in good condition within ten days of bid date. Other sets for general contractors, and sets for subcontractors and dealers, may be obtained with the same deposit, which will be refunded as above, less cost of printing, reproduction, handling, and distribution.

Bids must be submitted on proposal forms furnished by the Architect (Engineer) or copies thereof. All bidders bidding in amounts exceeding that established by the State Licensing Board for General Contractors must be licensed under the provisions of Title 34, Chapter 8, Code of Alabama, 1975, and must show evidence of license before bidding or bid will not be received or considered by the Architect (Engineer); the bidder shall show such evidence by clearly displaying his or her current license number on the outside of the sealed envelope in which the proposal is delivered. The Owner reserves the right to reject any or all proposals and to waive technical errors if, in the Owner's judgement, the best interests of the Owner will thereby be promoted.

 (Awarding Authority/Owner)

 (Local Awarding Authority/Local Owner)

 (Architect/Engineer)

BID BOND

The **PRINCIPAL** (*Bidder's company name and address*)

Name:

Address:

The **SURETY** (*Company name and primary place of business*)

Name:

Address:

The **OWNER** (*Entity name and address*)

Name:

Address:

The **PROJECT** for which the Principal's Bid is submitted: (*Project name as it appears in the Bid Documents*)

KNOW ALL MEN BY THESE PRESENTS, that we, the undersigned Principal and Surety, jointly and severally, hereby bind ourselves, our heirs, executors, administrators, successors, and assigns to the Owner in the **PENAL SUM of five percent (5%) of the amount of the Principal's bid, but in no event more than Ten-thousand Dollars (\$10,000.00).**

THE CONDITION OF THIS OBLIGATION is that the Principal has submitted to the Owner the attached bid, which is incorporated herein by reference, for the Project identified above.

NOW, THEREFORE, if, within the terms of the Bid Documents, the Owner accepts the Principal's bid and the Principal thereafter either:

- (a) executes and delivers a Construction Contract with the required Performance and Payment Bonds (each in the form contained in the Bid Documents and properly completed in accordance with the bid) and delivers evidence of insurance as prescribed in the Bid Documents, or
- (b) fails to execute and deliver such Construction Contract with such Bonds and evidence of insurance, but pays the Owner the difference, not to exceed the Penal Sum of this Bond, between the amount of the Principal's Bid and the larger amount for which the Owner may award a Construction Contract for the same Work to another bidder, then, this obligation shall be null and void, otherwise it shall remain in full force and effect.

The Surety, for value received, hereby stipulates and agrees that the obligation of the Surety under this Bond shall not in any manner be impaired or affected by any extension of the time within which the Owner may accept the Principal's bid, and the Surety does hereby waive notice of any such extension.

SIGNED AND SEALED this _____ day of _____, _____.

ATTEST:

PRINCIPAL:

By _____

Name and Title

SURETY:

ATTEST:

By _____

Name and Title

PROPOSAL FORM

To: _____ Date: _____
(Awarding Authority)

In compliance with the Advertisement for Bids and subject to all the conditions thereof, the undersigned

(Legal Name of Bidder)

hereby proposes to furnish all labor and materials and perform all work required for the construction of
WORK _____

in accordance with Drawings and Specifications, dated _____, prepared by
_____, Architect/Engineer.

The Bidder, which is organized and existing under the laws of the State of _____,
having its principal offices in the City of _____,
is: a Corporation a Partnership an Individual (other) _____.

LISTING OF PARTNERS OR OFFICERS: If Bidder is a Partnership, list all partners and their
addresses; if Bidder is a Corporation, list the names, titles, and business addresses of its officers:

BIDDER'S REPRESENTATION: The Bidder declares that it has examined the site of the Work,
having become fully informed regarding all pertinent conditions, and that it has examined the Drawings
and Specifications (including all Addenda received) for the Work and the other Bid and Contract
Documents relative thereto, and that it has satisfied itself relative to the Work to be performed.

ADDENDA: The Bidder acknowledges receipt of Addenda Nos. _____ through _____ inclusively.

BASE BID: For construction complete as shown and specified, the sum of _____
_____ Dollars (\$ _____)

ALTERNATES: If alternates as set forth in the Bid Documents are accepted, the following adjustments
are to be made to the Base Bid:

- For Alternate No. 1 (.....) (add) (deduct) \$ _____
(Insert key word for Alternate)
- For Alternate No. 2 (.....) (add) (deduct) \$ _____
- For Alternate No. 3 (.....) (add) (deduct) \$ _____
- For Alternate No. 4 (.....) (add) (deduct) \$ _____
- For Alternate No. 5 (.....) (add) (deduct) \$ _____
- For Alternate No. 6 (.....) (add) (deduct) \$ _____

UNIT PRICES - (Attach to this Proposal Form the unit prices, if any, on a separate sheet.)

BID SECURITY: The undersigned agrees to enter into a Construction Contract and furnish the prescribed Performance and Payment Bonds and evidence of insurance within fifteen calendar days, or such other period stated in the Bid Documents, after the contract forms have been presented for signature, provided such presentation is made within 30 calendar days after the opening of bids, or such other period stated in the Bid Documents. As security for this condition, the undersigned further agrees that the funds represented by the Bid Bond (or cashier's check) attached hereto may be called and paid into the account of the Awarding Authority as liquidated damages for failure to so comply.

Attached hereto is a: *(Mark the appropriate box and provide the applicable information.)*

- Bid Bond, executed by _____ as Surety,
 - a cashier's check on the _____ Bank of _____,
- for the sum of _____
Dollars (\$ _____) made payable to the Awarding Authority.

BIDDER'S ALABAMA LICENSE:

State License for General Contracting: _____
License Number Bid Limit Type(s) of Work

CERTIFICATIONS: The undersigned certifies that he or she is authorized to execute contracts on behalf of the Bidder as legally named, that this proposal is submitted in good faith without fraud or collusion with any other bidder, that the information indicated in this document is true and complete, and that the bid is made in full accord with State law. Notice of acceptance may be sent to the undersigned at the address set forth below.

The Bidder also declares that a list of all proposed major subcontractors and suppliers will be submitted at a time subsequent to the receipt of bids as established by the Architect in the Bid Documents but in no event shall this time exceed twenty-four (24) hours after receipt of bids.

Legal Name of Bidder _____

Mailing Address _____

* **By (Legal Signature)** _____

* Name & Title (print) _____ (Seal)

Telephone Number _____

Email Address _____

* If other than the individual proprietor, or an above named member of the Partnership, or the above named president, vice-president, or secretary of the Corporation, attach written authority to bind the Bidder. Any modification to a bid shall be over the initials of the person signing the bid, or of an authorized representative.

Note: A completed DCM Form C-3A: Accounting of Sales Tax must be submitted with DCM Form C-3: Proposal Form. Submission of DCM Form C-3A is required, it is not optional. A proposal shall be rendered non-responsive if an Accounting of Sales Tax is not provided.

ACCOUNTING OF SALES TAX

Attachment to DCM Form C-3: Proposal Form

To: _____ Date: _____
(Awarding Authority)

NAME OF PROJECT _____

SALES TAX ACCOUNTING

Pursuant to Act 2013-205, Section 1(g) the Contractor accounts for the sales tax NOT included in the bid proposal form as follows:

ESTIMATED SALES TAX AMOUNT

BASE BID: \$ _____

Alternate No. 1 (.....) (add) (deduct) \$ _____
(Insert key word for Alternate)

Alternate No. 2 (.....) (add) (deduct) \$ _____

Alternate No. 3 (.....) (add) (deduct) \$ _____

Alternate No. 4 (.....) (add) (deduct) \$ _____

Alternate No. 5 (.....) (add) (deduct) \$ _____

Alternate No. 6 (.....) (add) (deduct) \$ _____

Failure to provide an accounting of sales tax shall render the bid non-responsive. Other than determining responsiveness, sales tax accounting shall not affect the bid pricing nor be considered in the determination of the lowest responsible and responsive bidder.

Legal Name of Bidder _____

Mailing Address _____

***By (Legal Signature)** _____

***Name (type or print)** _____

(Seal)

***Title** _____

Telephone Number _____

Email Address _____

Note: A completed DCM Form C-3A: Accounting of Sales Tax must be submitted with DCM Form C-3: Proposal Form. Submission of DCM Form C-3A with DCM Form C-3 is required, it is not optional. A proposal shall be rendered non-responsive if an Accounting of Sales Tax is not provided.

(1) DCM (BC) Project # _____ (required)

PSCA Project # _____ (required)

Do not staple this form and/or attachments; use clips. Print single-sided; do not submit double-side printed documents.

CONSTRUCTION CONTRACT

Numbers in margin correspond to "Checklist", DCM Form B-7

(2) This Construction Contract is entered into this _____ day of _____ in the year of
(3) between the **OWNERS, the ALABAMA PUBLIC SCHOOL AND COLLEGE AUTHORITY**
and **LOCAL OWNER,**

Entity Name:
Address:
Email & Phone #:

(4) and the **CONTRACTOR,**
Company Name:
Address:
Email & Phone #:

(5) for the **WORK** of the Project, identified as:

(6) The **CONTRACT DOCUMENTS** are dated _____ and have been amended by
(7) **ADDENDA**

(8) The **ARCHITECT** is
Firm Name:
Address:
Email & Phone #:

(9) The **CONTRACT SUM** is
Dollars (\$) _____) and is the sum of the Contractor's Base Bid for the Work and the following

(10) **BID ALTERNATE PRICES:**

(11) The **CONTRACT TIME** is _____ One hundred eighty two (182) calendar days.

THE OWNER AND THE CONTRACTOR AGREE AS FOLLOWS: The Contract Documents, as defined in the General Conditions of the Contract (DCM Form C-8), are incorporated herein by reference. The Contractor shall perform the Work in accordance with the Contract Documents. The Owner will pay and the Contractor will accept as full compensation for such performance of the Work, the Contract Sum subject to additions and deductions (including liquidated damages) as provided in the Contract Documents. The Work shall commence on a date to be specified in a Notice to Proceed issued by the Owner or the Director, Alabama Division of Construction Management, and shall then be substantially completed within the Contract Time.

(12) **LIQUIDATED DAMAGES** for which the Contractor and its Surety (if any) shall be liable and may be required to pay the Owner in accordance with the Contract Documents shall be equal to six percent interest per annum on the total Contract Sum unless a dollar amount is stipulated in the following space, in which case liquidated damages shall be determined at _____ dollars (\$ _____) per calendar day.

(13) **SPECIAL PROVISIONS** (such as acceptance or rejection of unit prices. Indicate continuation on an attachment if needed.)

A. SEVERABLE PAYMENTS: The Alabama Public School and College Authority will first pay the Contractor _____ Dollars (\$ _____) from its available funds and the _____ will thereafter pay the Contractor the remaining _____ Dollars (\$ _____) from its available funds.

B.

Numbers in margin correspond to "Checklist", ABC Form B-7

(14) **STATE GENERAL CONTRACTOR'S LICENSE:** The Contractor does hereby certify that Contractor is currently licensed by the Alabama State Licensing Board for General Contractors and that the certificate for such license bears the following:

License No.:

Classification(s):

Bid Limit:

The Owner and Contractor have entered into this Construction Contract as of the date first written above and have executed this Construction Contract in sufficient counterparts to enable each contracting party to have an originally executed Construction Contract each of which shall, without proof or accounting for the other counterparts, be deemed an original thereof.

The Owner does hereby certify that this Construction Contract was let in accordance with the provisions of Title 39, Code of Alabama 1975, as amended, and all other applicable provisions of law, and that the terms and commitments of this Construction Contract do not constitute a debt of the State of Alabama in violation of Article 11, Section 213 of the Constitution of Alabama, 1901, as amended by Amendment Number 26.

Numbers in margin correspond to "Checklist", ABC Form B-7

(15)

APPROVALS

**ALABAMA DEPARTMENT OF FINANCE,
REAL PROPERTY MANAGEMENT,
DIVISION OF CONSTRUCTION MANAGEMENT
(DCM)**

By _____
Director

REVIEWED BY AND FUNDS AVAILABLE:

PSCA funds are available in the amount stated in
(13) "Special Provisions", Paragraph A.

By _____
Contract Administrator

CONTRACTING PARTIES

Contractor Company

By _____
Signature

Name & Title _____

Local Owner Entity

By _____
Signature

Name & Title _____

**ALABAMA PUBLIC SCHOOL and COLLEGE
AUTHORITY**

By _____ Date: _____
Governor and President of Authority

Review/Signature flow: Architect/Engineer (prepare documents) > Contractor (review and sign) > Architect/Engineer (review) > Local Owner (review and sign) > DCM (review and sign) > Finance-Legal > Governor (review and sign) > DCM (distribute the fully executed Contract to all parties along with a Notice to Proceed).

**PREPARATION AND APPROVAL OF
CONSTRUCTION
CONTRACTS and BONDS
SUBMITTED ON PAPER**

CHECKLIST

Use with DCM Forms C-5, C-6, & C-7
and DCM Forms 9-A, 9-B, & 9-C

<p align="center">CONSTRUCTION CONTRACT - DCM Form C-5 or DCM Form 9-A (PSCA Projects)</p> <p>Six copies of documents with original signatures required. The numbers in the left column below correspond to numbers in the left margin of the Contract form. If the project is funded partially or fully by the Alabama Public School and College Authority (PSCA), use DCM Form 9-A instead of DCM Form C-5.</p>	
(1)	<p>PROJECT NUMBER(S): Insert the DCM (BC) Project Number in the block provided.</p> <ul style="list-style-type: none"> On DCM Form 9-A, also insert the PSCA Project Number in the block provided.
(2)	<p>DATE: Insert the date upon which the Contractor will sign the contract.</p>
(3)	<p>OWNER: Insert the full, legal name, address, email, and telephone number of the Owner (Awarding Authority).</p> <ul style="list-style-type: none"> On DCM Form 9-A, insert the name, address, email, and telephone number of the Local Owner (city or county school board, college, university, etc.) after "Alabama Public School and College Authority"
(4)	<p>CONTRACTOR: Insert the Contractor's full, legal company name, correct mailing address, email, and telephone number. For State Agency projects, the Contractor Company name and address must match the name and address registered in the State of Alabama Accounting and Resource System (STAARS) used by the State to pay Vendors. The Contractor Company name and address must be consistent across all documents in the same contract package, in order to avoid STAARS rejection.</p> <ul style="list-style-type: none"> On DCM Form 9-A: The Contractor Company name and address must match the name and address registered in STAARS used by the State to pay Vendors. The Contractor Company name and address must be consistent across all documents in the same contract package, in order to avoid STAARS rejection.
(5)	<p>The WORK: Insert the complete name of the Project; same as in the Bid Documents.</p>
(6)	<p>CONTRACT DOCUMENTS: Insert the date of the Bid Documents</p>
(7)	<p>ADDENDA: Identify, by number and date, all pre-bid Addenda that were issued to the Bid Documents. If none were issued, insert "None". All Addenda shall be submitted to DCM for review prior to contract issuance.</p>
(8)	<p>ARCHITECT: Insert the full, legal name, address, email, and telephone number of the Project Architectural or Engineering firm.</p>
(9)	<p>CONTRACT SUM: The Contract Sum is the total of the Contract's Base Bid and accepted Bid Alternate Prices, if any. Insert the Contract Sum in words and figures, verifying that this amount corresponds with the CERTIFIED TABULATION OF BIDS.</p>
(10)	<p>BID ALTERNATE PRICES: Identify which, if any, Bid Alternate Prices are accepted and included in the Contract Sum by inserting either (a) "No Alternate Prices Requested in Bid", (b) "No Alternate Prices Accepted", or (c) a listing of the accepted Alternates by number and dollar amount.</p>
(11)	<p>The CONTRACT TIME: State the Contract Time in words and in figures.</p>
(12)	<p>LIQUIDATED DAMAGES: If the Owner has computed a daily rate for liquidated damages, insert the amount in both words and figures in the spaces provided.</p>
(13)	<p>SPECIAL PROVISIONS: This space may be used to incorporate Special Provisions into the Contract, such as unit prices, compliance with enacted provisions, and value engineering. If the solicitation for bids required Unit Prices, insert a statement of which Unit Prices, if any, are accepted and incorporated into the Contract. If more space is needed, Special Provisions may be stated on an attachment that is cited in the Special Provisions section.</p> <ul style="list-style-type: none"> DCM Form 9-A is published bearing Special Provision "A. Severable Payments", which is where the portions of the Contract Sum to be paid by the PSCA and the Local Owner are to be stated. Obtain these amounts from Local Owner and insert them in the spaces provided. Other Special Provisions, such as disposition of Unit Prices, may be inserted below this provision.
(14)	<p>STATE GENERAL CONTRACTOR'S LICENSE: Insert the Contractor's current state general contracting license number, bid limit, and classification in the spaces provided.</p>

(15)	SIGNATURES - APPROVING and CONTRACTING PARTIES Signature spaces vary for different Owner types and funding sources. Download the appropriate document per Owner/funding type from www.dcm.alabama.gov/forms.aspx . Original signatures required; copies of signatures will not be accepted.
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**PERFORMANCE BOND, DCM Form C-6 or DCM Form 9-B (PSCA Projects), and
PAYMENT BOND, DCM Form C-7 or DCM Form 9-C (PSCA Projects)**

Before forwarding the Construction Contract and Bonds to the Owner, verify that the Surety has accurately provided all information in the spaces provided. The information should be the same on both Bonds.

(1)	SURETY’S BOND NUMBER should be inserted in the block provided.
(2)	PRINCIPAL: Contractor’s name and address is to be the same as appears in the Construction Contract.
(3)	SURETY: The full, legal name and address of the bonding company.
(4)	OWNER: The Owner’s name and address is to be the same as appears in the Construction Contract.
(5)	PENAL SUM: The Penal Sum of each Bond is to be the Contract Sum of the Construction Contract and is to be inserted in both words and figures.
(6)	The Date of the Construction Contract: The date that appears on the Construction Contract.
(7)	The PROJECT: The same name or description as appears in the Construction Contract.
(8)	DATE: After “SIGNED AND SEALED” is to appear the date upon which Contractor and Surety sign the Bond. THIS DATE CANNOT PRECEDE THE DATE OF THE CONSTRUCTION CONTRACT.
(9)	CONTRACTOR’S SIGNATURE: The Contractor’s name must appear beneath “CONTRACTOR”, under which the signature of a member or officer of the firm must appear with the name and title of the signing party appearing LEGIBLY beneath the signature.
(10)	SURETY’S SIGNATURE: The full, legal name of the bonding company must appear under “SURETY”, under which the signature of an individual having power of attorney for the bonding company must appear with the individual’s name and title appearing LEGIBLY beneath the signature.
(11)	ATTACHED POWER OF ATTORNEY: Clipped to each copy of the Bonds must be a Power of Attorney, signed by an officer of the bonding company, for the individual signing the bond on behalf of the bonding company. The date of the Power of Attorney must not precede the date of the bond.

ATTACHMENTS

The following documents must be attached to each of the six Construction Contract copies:

- Insurance Certificate (attach copy): It is the responsibility of the design professional to ensure all insurance requirements are discussed with bidders prior to a bid and that Contractor has provided the requirements to their insurance provider. Contractor must obtain all insurance coverage specified in Article 37 of the General Conditions of the Contract - required per Section 39-2-8 of the Code of Alabama.
- Performance Bond: required for contracts of \$50,000.0 or more, attach original with surety’s power-of-attorney original - required per Section 39-2-8 of the Code of Alabama.
- Payment Bond: required for contracts of \$50,000.0 or more, attach original with surety’s power-of-attorney original - required per Section 39-2-8 of the Code of Alabama.
- Certified Tabulation of Bids (attach copy): required for all projects including those with informal bids - required per Section 39-2-6 of the Code of Alabama.
- DCM Form C-3: Proposal Form (attach copy)
- DCM Form C-3A: Accounting of Sales Tax (attach copy): copy must be of the executed C-3A from the bid - required per Section 40-9-14.1 of the Code of Alabama.
- E-Verify Memorandum of Understanding (attach copy): entire document required - required per Section 31-13-25(b) of the Code of Alabama.
- Alabama Disclosure Statement (attach original) - required per Section 41-16-82 of the Code of Alabama.

FORWARDING CONTRACT and ATTACHMENTS

After determining that the Construction Contract (signed by the Contractor) and attachments are in order, the design professional shall forward all six (6) copies of these documents (with original signatures) to the Owner for signature. The Owner shall then forward the documents per the Review/Signature Flow instructions specified on the contract form underneath the signature block.

SUBMITTAL TO DCM:

- All contract documents and attachments must be single-sided on letter-sized paper without staples; use clips. Purpose: quickly and efficiently scan thousands of documents into DCM's database. Scanners compatible with the database do not scan double-sided nor legal-sized paper.
- Contracts with double-sided printing will not be accepted.
- The Contract Document Administration Fee-CC and the Permit Fee must be paid by the time a Construction Contract for a state agency project, Alabama Community College System (ACCS) project or PSCA-funded project is submitted to DCM for review, or when a fully locally-funded project Construction Contract is converted to PSCA. Contract reviews can begin once the fees have been paid.
- The Permit Fee must be paid by the time a copy of a fully locally-funded K-12 school project's executed Construction Contract is received at DCM's office from the State Department of Education (SDE).

Basic Contract Document Administration (CDA) Fee: This fee covers review of the Agreement Between Owner and Architect (O/A Agreement) and Construction Contract for state agency projects, ACCS projects and partially or fully PSCA-funded projects of K-12 public schools and universities and the related amendments, change orders, service invoices and pay requests. This fee does not apply to fully locally-funded K-12 public school projects or fully locally-funded university projects. The Basic CDA Fee covers review of the original submitted document and one revision. The total basic CDA fee is 1/2 of 1% of the total construction cost, due in two parts: 1/4 of 1% (.25%) of the Project Budget for administration of the O/ A Agreement. 1/4 of 1% (.25%) of the Construction Contract Amount for administration of the Construction Contract.

Additional Revised Contract Document Fee: When more than one revision of a Construction Contract is required, an additional fee of \$200.00 will be charged to the design professional for each additional submittal until the document is executed.

Basic Permit Fee: This fee covers required project inspections. The Permit Fee is due when a construction contract or self-performance letter is received by DCM, and must be paid before a Pre-Construction Conference is scheduled with DCM Inspectors for any type of project. Note: although DCM does not review the construction contracts of non-ACCS public higher education institutions such as two and four-year universities, the permit fee must be paid before a required Pre-Construction Conference is scheduled with DCM Inspectors for such projects.

Fees may be paid online at www.dcm.alabama.gov or paid with a physical check. Make check payable to: "Finance - Construction Management", include the DCM (BC) Project #, if assigned, on the check and attach the CDA Fees Calculation Worksheet (also available on www.dcm.alabama.gov). Mail payment to: Finance - Construction Management, P.O. Box 301150, Montgomery, AL 36130-1150. For payments using Public School and College Authority (PSCA) funds and for state agency inter-fund transfers: contact Jennie Jones at 334-242-4808 or jennie.jones@realproperty.alabama.gov.

PRE-CONSTRUCTION CONFERENCE CHECKLIST

The following are recommended topics to be covered during a Pre-Construction Conference. Contact the DCM Project Inspector at least fourteen (14) days prior to scheduling the conference.

**Item shall be discussed while Owner is present.*

1.	Name and relationship to job of local Owner personnel
2.	Public officials involved
3.	Names of architect/engineer personnel involved
4.	Provide e-mail addresses on Pre-Construction Sign-in sheet
5.	Construction sets of plans available to contractor
6.	Verify alternates accepted, etc.
7.	Approved list of sub-contractors
8.	Approved cost breakdown & Progress Schedule
9.	Method of approving monthly payment requests
10.	Change Orders - Documentation - no prior work, unless authorized in writing
11.	Shop drawings, time to process
12.	<p>Advance notice for required inspections The contractor will notify the architect by email of the date the project will be ready for an inspection by the Division of Construction Management. Inspections must be requested 14 days in advance. When the DCM Inspector confirms the inspection date and time, the architect will send an email confirming the inspection date and time to all parties as well as a copy to inspections@realproperty.alabama.gov. Cancellations of any scheduled inspection must be received in writing no later than 48 hours prior to the scheduled inspection. If the inspection is canceled, it will be rescheduled subject to the DCM Inspector's availability. Cancellations received less than 48 hours in advance shall incur a \$1,500.00 re-inspection fee. If the contractor is not ready for the scheduled inspection he shall incur a \$1,500.00 re-inspection fee.</p>
13.	<p>Inspection Minimum Requirements The following minimum requirements listed below are provided to aid the contractors and architect in determining if a project is ready for a required inspection. <u>Pre-Construction Conference:</u> Required Attendees: Contractor, Owner, Architect, Major Subs</p> <ul style="list-style-type: none"> • Fully-executed construction contract and Notice to Proceed • Verification of payment of permit fee • Contractor's statement of responsibility and quality assurance plan (storm shelter) • Fire alarm contractor and fire sprinkler contractor certification (from State Fire Marshal) • ADEM permit, if more than one acre of land is disturbed <p><u>Pre-Construction Conference for Storm Shelter:</u> Required Attendees: Contractor, Owner, Architect, Structural Engineer, Major Subs, Special Inspections Representative</p> <ul style="list-style-type: none"> • The completed and signed DCM Form C-17: Contractor's Statement of Responsibility for Construction of Tornado Storm Shelter (Hurricane Shelter Where Applicable) along with the required Quality Assurance Plan (QAP) must be submitted to the DCM Inspector at the pre-construction conference.

	<p>13. <u>Pre-Roofing Conference</u>: Required Attendees: Contractor, Owner, Architect, Roofing Sub, Roofing Manufacturer's Representative</p> <ul style="list-style-type: none"> • Roofing submittals must be approved by the architect prior to pre-roofing conference • Roofing manufacturer must provide documentation that roof design and roofing materials meet code requirements for wind uplift and impact resistance • Copy of sample roof warranty <p><u>Above Ceiling Inspections</u>: Required Attendees: Contractor, Owner, Architect, MEP Engineers, Major Subs</p> <ul style="list-style-type: none"> • All work must be completed except for installation of ceiling tiles, and/or hard ceilings • Space must be conditioned • Permanent power must be connected unless otherwise arranged with the DCM Inspector • Grease duct must be inspected and approved by the DCM Inspector prior to fire wrapping and above-ceiling inspection <p><u>Life Safety Inspections and Final Inspection</u>: Required Attendees: Contractor, Owner, Architect, Engineers, Major Subs, Local Fire Marshal</p> <ul style="list-style-type: none"> • Fire alarm certification • Kitchen hood fire suppression system certification • General contractor's 5-year roofing guarantee (DCM Form C-9) • Roofing manufacturer's warranty • Above ground and below ground sprinkler certifications • Completed certificate of structural engineer's observations (for storm shelter) • Emergency and exit lighting tests • Fire alarm must be monitored • Elevator inspection completed and certificate of operation provided by the State of Alabama Department of Labor • Boiler/vessels inspection completed and certificate of operation provided by the State of Alabama Department of Labor • Pressure test/Flush test for underground sprinkler lines (witnessed by local fire marshal, fire chief and/or DCM Inspector) • Flush/pressure test for new and/or existing fire hydrants • Must have clear egress/access and emergency (for first responders) access to building • Must have ADA access completed <p><u>Year-End Inspection</u>: Required Attendees: Contractor, Owner, Architect, Engineers and/or Major Subs may be required</p> <ul style="list-style-type: none"> • Owner's list of documented warranty items • Reconciliation of user fees with DCM shall be completed prior to inspection
	14. Other inspections required before work is covered
	15. Inspection report distribution – weekly per Owner-Architect Agreement
	16. Record Drawings, definition of, procedures, addenda posted, etc.
	*17. Project sign and other job signs
	18. Point of contact for project. Job Superintendent and phone number.
	*19. Overall phasing of job
	20. Contractor's duty to coordinate work of separate contractors
	*21. Use of site and existing building, access drive, signs
	*22. Use of existing toilets
	*23. Coordinate any utilities supplied by Owner
	*24. Coordinate outages and work in existing building with Owner
	25. Keeping existing exit paths open

26.	Routine job cleanup
27.	O.S.H.A. - Report all accidents - safety General Contractor's responsibility
28.	Contractor is reminded of obligation to comply with the Alabama Child Labor Law and E-verify
29.	Project limits
30.	Building location relative to critical property line, easement, setback, etc.
31.	Locating property line, corners, etc.
32.	Verify sanitary outfall before committing floor level
33.	ADEM land disturbance permits shall be required if site is over 1-acre.
34.	Procedure if bad soil or rock is encountered: Geotech and special inspections
35.	Stockpiling topsoil
36.	Protecting trees
37.	Soil compaction, type soil, lab tests, etc.
38.	Soil Treatment, mix on site in presence of Job Superintendent
39.	Surveyor to check foundation wall if location critical
40.	Ready mix plant, file delivery tickets, slump tests, cylinders
41.	Quality of concrete work; concrete testing
42.	Inspections before pouring concrete
43.	What is expected of masonry work, mortar additive
44.	Problems with hollow metal - install proper fire labels
45.	Pre-roofing Conference - no roofing materials installed prior to conference, all roofing submittals and warranties must have been reviewed and approved by the Architect prior to the Pre-roofing Conference. Manufacturer's Representative must be present at Pre-roofing conference. The Roofing Manufacturer must show compliance with the IBC wind and impact-resistance requirements. Contractor shall video existing building interior and exterior prior to roofing operations and provide copy to Owner.
46.	General Contractor's Roofing Guarantee and Manufacturer's Roofing Warrantees must be presented to DCM Inspector at Final Inspection and submitted with Certificate of Substantial Completion
47.	Potential conflict of mechanical and electrical equipment; shop drawings
48.	Return air plenums (no combustibles)
49.	Fire damper installation issues
50.	Certificate of Substantial Completion/Final Inspection
51.	Conduct of contractor's personnel. No interaction with staff and/or students. No foul language, no smoking or use of tobacco products, no drugs and no firearms on school property.
52.	Elevators/Pressure Vessels must be inspected and approved by the State of AL Dept. of Labor prior to final inspection.
53.	Life safety, fire alarm, sprinkler and kitchen hood fire suppression systems must be complete and certified prior to final Inspection. Also, exit and emergency lighting must be complete.
54.	Comply with ADA requirements: plumbing fixture heights, toilet partition widths, turnaround, signage, parking lot striping, etc.

	55. Coordinate with local fire authority to assure access to the building for firefighting equipment during construction and before final acceptance. Provide fire extinguishers as required.
	56. Light gauge metal roof framing and/or wood truss framing to be inspected by the structural engineer.
	57. Comply with fire hydrant requirement; coordinate with local Fire Authority or State Fire Marshal.
	58. Craft-faced insulation is not to be installed exposed.
	59. Fire alarm contractor and fire sprinkler contractor must be permitted through the State of Alabama Fire Marshal's Office. Provide permits.
	60. All sprinkler system valves must be electrically supervised
	*61. Fire alarm monitoring requirements
	62. Storm Shelter requirements a. Contractor's Statement of Responsibility and Quality Assurance Plan – Provide paperwork at Pre-Construction Conference b. Certification of Structural Observations from the Structural Engineer of Record must be attached to the Certificate of Substantial Completion form.
	63. Third-party inspections/special inspections
	64. Release of retainage – 30 days to complete punch list and closeout
	*65. Sales tax savings (Alabama Department of Revenue)
	66. Project Closeout - precedes Final Payment a. Warranties b. Operating and Maintenance Manuals c. As-built Drawings d. Other requirements
	67. Advertisement of Completion - start ad after substantial completion a. for projects less than \$50,000.00, Owner advertises 1 week b. for projects \$50,000.00 or more, Contractor advertises for 4 consecutive weeks
	68. Time Extensions
	69. Final Payment Application checklist



Kay Ivey
Governor

Bill Poole
Director of Finance

STATE OF ALABAMA
DEPARTMENT OF FINANCE
REAL PROPERTY MANAGEMENT
Division of Construction Management

P.O. Box 301150, Montgomery, AL 36130-1150
770 Washington Avenue, Suite 444, Montgomery, AL 36104
Telephone: (334) 242-4082 Fax: (334) 242-4182



Mickey Allen
Assistant Finance Director
Real Property Management

Frank Barnes, Director
Construction Management

E-Verify Memorandum of Understanding

Instructions for inclusion in project manuals.

Per DCM's May 29, 2012 bulletin *Guidance on Act 2012-491 Amending the Alabama Immigration Law*: "Contractors (including architects and engineers) will ... be required to enroll in the E-Verify program and to provide documentation of enrollment in the E-Verify program with their contracts or agreements."

Upon completing enrollment in the E-Verify program available at <https://www.e-verify.gov/employers/enrolling-in-e-verify>, an E-Verify Memorandum of Understanding (MOU) is issued to the enrolled business. The same E-Verify MOU can be repeatedly used until any information in the business's E-Verify user profile is updated, at which time E-Verify updates the printable Company Information section of the MOU, while the original signatory information remains the same. Typically, an E-Verify MOU is 13-18 pages long depending on business type and number of employees.

DCM requires a copy of the entire current E-Verify MOU document including the completed Department of Homeland Security – Verification Division section (with name, signature and date included) to be submitted as an attachment to each Construction Contract original and to each Agreement Between Owner and Architect original.



ALABAMA DEPARTMENT OF FINANCE
REAL PROPERTY MANAGEMENT
Division of Construction Management

www.dcm.alabama.gov, 334-242-4082, inspections@realproperty.alabama.gov

Department Use Only
Invoice #
Date Paid
Confirmation #

PERMIT FEE & PERMIT RE-INSPECTION FEE CALCULATON WORKSHEET

DCM (BC) #
Date
Project Name; Owner/Architect/Engineer Project # & Phase/Package #
Owner Entity Name
Architect/Engineer Firm Name
Contractor Company Name
Select only ONE of the following:
Basic Permit Fee.
ACCS Storm Shelter Permit Fee.
Permit Re-Inspection Flat Fee.
Awarded Contract Sum, or ACCS Storm Shelter Area Estimate:
Email address(es) for Payment Receipt:

BASIC PERMIT FEE CALCULATION:

Awarded Contract Sum or ACCS Storm Shelter Area Estimate is less than \$1,000: N/A
Awarded Contract Sum or ACCS Storm Shelter Area Estimate is \$1,001 - \$50,000:
Contract Sum or Shelter Estimate less \$1,000= /1,000 x \$5.00= +\$15.00=
Awarded Contract Sum or ACCS Storm Shelter Area Estimate is \$50,001 - \$100,000:
Contract Sum or Shelter Estimate less \$50,000= /1,000 x \$4.00= +\$260.00=
Awarded Contract Sum or ACCS Storm Shelter Area Estimate is \$100,001 - \$500,000:
Contract Sum or Shelter Estimate less \$100,000= /1,000 x \$3.00= +\$460.00=
Awarded Contract Sum or ACCS Storm Shelter Area Estimate is \$500,001 and up:
Contract Sum or Shelter Estimate less \$500,000= /1,000 x \$2.00= +\$1,660.00=

PERMIT RE-INSPECTION FEE:

Flat fee of \$1,500.00 per occurrence

TOTAL DUE:

Basic Permit Fee: Covers all required pre-construction conferences, construction inspections and certificate of substantial completion issuance by the DCM Inspector. This fee is due when a construction contract or self-performance letter is received by DCM and must be paid before the required Pre-Construction Conference is scheduled with the DCM Inspector.

ACCS Storm Shelter Permit Fee: Covers all required storm shelter pre-construction meetings and construction inspections by the DCM Inspector. This fee is due when a copy of the construction contract and Notice-to-Proceed is received by DCM and must be paid before the required Storm Shelter Pre-Construction Meeting is scheduled with the DCM Inspector.

Permit Re-Inspection Fee: May be charged if (A) the contractor has not completed the work required for the particular inspection as detailed in DCM Form B-8: Pre-Construction Conference Checklist, or (B) the inspection is canceled or rescheduled without the required minimum 48 hours notice to all parties.

Make check payable to: "Finance - Construction Management," include the DCM (BC) Project # on the check and attach the fee worksheet. Mail payment to: Finance - Construction Management, P.O. Box 301150, Montgomery, AL 36130-1150.

State agency inter-fund transfer and payments using Public School and College Authority (PSCA) funds: contact Jennie Jones at 334-242-4808 or jennie.jones@realproperty.alabama.gov.

Fees may be paid online at www.dcm.alabama.gov (in which case a completed fee worksheet is not required).

The Basic Permit Fee and ACCS Storm Shelter Permit Fee is subject to Final Reconciliation of Fees at the end of construction.



ALABAMA DEPARTMENT OF REVENUE
 SALES AND USE TAX DIVISION
 P.O. Box 327710 • Montgomery, AL 36132-7710

ST: EXC-01
 6/21

Application For Sales and Use Tax Certificate of Exemption

FOR GOVERNMENT ENTITY PROJECT

This Certificate of Exemption will be limited to purchases which qualify for an exemption of sales and use taxes pursuant to Rule No. 810-6-3-.77

PROJECT INFORMATION:

PROJECT NAME			PROJECT OWNER'S FEIN (EXEMPT ENTITY)	
STREET ADDRESS OF PROJECT (CITY AND COUNTY INCLUDED)	CITY	ZIP	COUNTY	

APPLICANT'S INFORMATION:

RELATION: (CHOOSE ONE)

Government Entity
 General Contractor
 Subcontractor

APPLICANT'S LEGAL NAME			FEIN	
DBA			CONSUMER'S USE TAX ACCOUNT NUMBER	
MAILING ADDRESS: STREET	CITY	STATE	ZIP	COUNTY
CONTACT PERSON			BUSINESS TELEPHONE NUMBER ()	
EMAIL ADDRESS				

CONTRACT SIGN DATE (PROVIDED BY GENERAL CONTRACTOR)	CONTRACT COMPLETION DATE (PROVIDED BY GENERAL CONTRACTOR)
ESTIMATED START DATE (FOR APPLICANT)	ESTIMATED COMPLETION DATE (FOR APPLICANT)
WILL THE APPLICANT HAVE ANY SUBCONTRACTORS ON THIS JOB? <input type="checkbox"/> Yes <input type="checkbox"/> No If yes, please attach list.	NAME OF PARTY TO THE CONTRACT
JOB DESCRIPTION	

WILL ANY POLLUTION CONTROL EXEMPTION BE APPLICABLE? <input type="checkbox"/> Yes <input type="checkbox"/> No	ESTIMATED POLLUTION CONTROL COST \$
---	--

TOTAL PROJECT BID AMOUNT (APPLICANT'S PORTION OF PROJECT) \$	LABOR COST (APPLICANT'S PORTION OF PROJECT) \$	MATERIAL COST (APPLICANT'S PORTION OF PROJECT) \$
--	--	---

REVENUE DEPARTMENT USE ONLY

PENDING DOCUMENTATION / INFORMATION:

GCL
 SBL
 Contract / NTP / LOI
 LOS
 Contract Dates / Breakdown of Costs

Contact Dates: _____ Received Date: _____

_____ Forwarded for Denial: _____

PROJECT NAME

PROJECT OWNER'S FEIN (EXEMPT ENTITY)

FORM OF OWNERSHIP:

Individual Partnership Corporation Multi member LLC Single member LLC Government Entity

If applicant is a corporation, a copy of the certified certificate of incorporation, amended certificate of incorporation, certificate of authority, or articles of incorporation should be attached. If the applicant is a limited liability company or a limited liability partnership, a copy of the certified articles of organization should be attached.

OWNERSHIP INFORMATION:

Corporations – give name, title, home address, and Social Security Number of each officer.

Partnerships – give name, home address, Social Security Number or FEIN of each partner.

Sole Proprietorships – give name, home address, Social Security Number of owner.

LLC – give name, home address, and Social Security Number or FEIN of each member.

LLP – give name, home address, and Social Security Number or FEIN of each partner.

NAME (PLEASE PRINT)

SIGNATURE

TITLE

DATE

REVENUE DEPARTMENT USE ONLY

PENDING OTHER:

Government Entity General Contractor Not on LOS

Contact Dates: _____ Received Date: _____

Forwarded for Denial: _____

Examiner's Remarks _____

Examiner _____ Date _____

Instructions For Preparation of Form ST: EXC-01 Sales and Use Tax Certificate of Exemption for Government Entity Project

NOTE: Exemption Certificates will be issued as of the contract sign date or the received date of the application. If, upon receipt of the application, the project has already commenced, the certificate will be issued as of the received date of the application. Any purchases made prior to the issuance of a certificate will not be exempt.

***** Please allow 10 to 14 business days for your application to be processed. *****

In order to expedite the processing of your application, please include the following documentation when submitting your application:

Exempt Entity:

1. Signed Application
2. Copy of Executed/Signed Contract, Letter of Intent, Notice of Award, and/or Notice to Proceed

General Contractor:

1. Signed Application
2. Copy of Executed/Signed Contract, Letter of Intent, Notice of Award, and/or Notice to Proceed
3. List of Subcontractors
4. Alabama Board of General Contractor's License
5. State/County Business License (usually obtained through county probate office)
6. Any other municipal business licenses associated with the project

Subcontractor:

1. Signed Application
2. Alabama Board of General Contractor's License
3. State/County Business License (usually obtained through county probate office)
4. Any other municipal business licenses associated with the project
5. List of Subcontractors (if any)

General contractors and subcontractors:

- Any additions and/or deletions to the list of subcontractors working on a project must be submitted to the Department within 30 days of occurrence.
- If an extension is needed for a project, please contact the Department of Revenue at the address, number, or email listed below. Extension requests should be submitted no more than 30 days after expiration date.
- Subcontractor's Estimated Start Date should be the date they will begin working on the project and ordering materials instead of the General Contractor's Estimated Start Date for the project.

THERE IS A FILING REQUIREMENT IF YOUR APPLICATION IS APPROVED. The return will be filed through the Consumer's Use Tax account. Please see the following page for detailed instructions and general information regarding the reporting requirements.

The application and required documentation may be mailed, faxed, or emailed to the following:

Fax: (334) 353-7867

Email: STExemptionUnit@revenue.alabama.gov

Mailing Address: ATTN: Contractor's Exemption
Alabama Department of Revenue
Sales & Use Tax Division
Room 4303
PO Box 327710
Montgomery, AL 36132-7710

General Information and Instructions Regarding the Reporting Requirements for Contractors Awarded an Exemption Certificate

A contractor's exemption certificate for a Government Entity project is needed in order to purchase materials tax exempt for the qualified project. Once the exemption certificate has been applied for and awarded, there is a monthly filing requirement to report the purchases that have been made for each exempt project. The Consumer's Use (CNU) tax account is used to report the tax-exempt purchases made with each certificate for each exempt project for each month.

The consumer's use tax return must be filed for each of the months covered by the exemption certificate. (For example, if the certificate's effective date is June 29, 2014 and the expected completion date is October 1, 2014, a consumer's use tax return must be filed for each of the following months: June, July, August, September, and October.) A return MUST be filed each month to report the monthly purchases. Therefore, all active exemption certificates must be included on the monthly report even if the monthly purchases for a specific project was \$0.

If a CNU tax account is not already open under the taxpayer/business name, one will automatically be assigned at the time the exemption certificate is generated. Electronic filing is required through the Department's online filing system, My Alabama Taxes (MAT). A letter containing the online filing information will be mailed to the address on file within a few days after the new CNU tax account has been assigned. This letter will contain all the information needed to create your online filing account in MAT. For questions relating to setting up the account on www.myalabamataxes.alabama.gov, please contact Business Registration at 334-242-1584 or the Sales Tax Division at 1-866-576-6531.

Once the MAT account is set up, please log in and file the monthly CNU tax return. There is a table located at the bottom left hand corner labeled "Contractor's Exemption for Government Construction Projects." All three fields in the table are required to be completed: exemption number, project number, and total amount of purchases for that specific project for the month. Additional projects may be added on the additional rows that appear as data is added; the table will allow the addition of more projects.

***Please do not use lines 1 through 9 of the return for reporting exempt project information. Leave these lines blank unless taxable purchases were made outside of the state of Alabama that need to be reported and tax remitted. (Lines 1 through 9 do not have anything to do with the exemption reporting requirements).

When the certificate expires (upon the project's completion) and the CNU tax account is no longer needed, please contact the Business Registration Unit at 334-242-1584 and close the CNU tax account. Please be advised that if there are multiple government entity projects open, the consumer's use tax account should remain open until the last project completion date. For example, if Project EXC00ABCD ends in June of 2014 but Project EXC00EFGH ends January of 2015, the CNU tax account must remain open until the end of January 2015. A return for Project EXC00EFGH must be filed all the way through January 2015.

If the applicant already has a CNU tax account and it is currently set up online, please use this account to report exempt project purchases through www.myalabamataxes.alabama.gov using the instructions provided above. The return may then be filed as usual.

***All Consumer's Use Tax returns are due on the 20th of the month following the month in which purchases were made (i.e., the return for the month of June is due July 20th, etc. There are 20 days to file the return before it is deemed late.)

***Any penalty waiver requests may be directed to the Sales and Use Tax Division at 1-866-576-6531. Only one waiver per 18 month period is allowed.

SURETY'S BOND NUMBER

PERFORMANCE BOND

Do not staple this form; use clips.

Numbers in margin correspond to second page of "Checklist", DCM Form B-7

(2) The **PRINCIPAL** (*Company name and address of Contractor as appears in the Construction Contract*)

Name:
Address:

(3) The **SURETY** (*Company name and primary place of business*)

Name:
Address:

(4) The **OWNER:** **The ALABAMA PUBLIC SCHOOL AND COLLEGE AUTHORITY** and
(*Local Owner entity's name and address, same as appears in the Construction Contract*)

Name:
Address:

(5) The **PENAL SUM** of this Bond (the Contract Sum)

Dollars (\$) _____).

(6) **DATE** of the Construction Contract :

(7) The **PROJECT:** (*Same as appears in the Construction Contract*)

1. **WE, THE PRINCIPAL (hereinafter "Contractor") AND THE SURETY**, jointly and severally, hereby bind ourselves, our heirs, executors, administrators, successors, and assigns to the Owner in the Penal Sum stated above for the performance of the Contract, and Contract Change Orders, in accord with the requirements of the Contract Documents, which are incorporated herein by reference. If the Contractor performs the Contract, and Contract Change Orders, in accordance with the Contract Documents, then this obligation shall be null and void; otherwise it shall remain in full force and effect.
2. The Penal Sum shall remain equal to the Contract Sum as the Contract Sum is adjusted by Contract Change Orders. All Contract Change Orders involving an increase in the Contract Sum will require consent of Surety by endorsement of the Contract Change Order form. The Surety waives notification of any Contract Change Orders involving only extension of the Contract Time.

Numbers in margin correspond to second page of "Checklist", DCM Form B-7

3. Whenever the Architect gives the Contractor and the Surety, at their addresses stated above, a written Notice to Cure a condition for which the Contract may be terminated in accordance with the Contract Documents, the Surety may, within the time stated in the notice, cure or provide the Architect with written verification that satisfactory positive action is in process to cure the condition.
4. The Surety's obligation under this Bond becomes effective after the Contractor fails to satisfy a Notice to Cure and the Owner:
 - (a) gives the Contractor and the Surety, at their addresses stated above, a written Notice of Termination declaring the Contractor to be in default under the Contract and stating that the Contractor's right to complete the Work, or a designated portion of the Work, shall terminate seven days after the Contractor's receipt of the notice; and
 - (b) gives the Surety a written demand that, upon the effective date of the Notice of Termination, the Surety promptly fulfill its obligation under this Bond.
5. In the presence of the conditions described in Paragraph 4, the Surety shall, at its expense:
 - (a) On the effective date of the Notice of Termination, take charge of the Work and be responsible for the safety, security, and protection of the Work, including materials and equipment stored on and off the Project site, and
 - (b) Within twenty-one days after the effective date of the Notice of Termination, proceed, or provide the Owner with written verification that satisfactory positive action is in process to facilitate proceeding promptly, to complete the Work in accordance with the Contract Documents, either with the Surety's resources or through a contract between the Surety and a qualified contractor to whom the Owner has no reasonable objection.
6. As conditions precedent to taking charge of and completing the Work pursuant to Paragraph 5, the Surety shall neither require, nor be entitled to, any agreements or conditions other than those of this Bond and the Contract Documents. In taking charge of and completing the Work, the Surety shall assume all rights and obligations of the Contractor under the Contract Documents; however, the Surety shall also have the right to assert "Surety Claims" to the Owner in accordance with the Contract Documents. The presence or possibility of a Surety Claim shall not be just cause for the Surety to fail or refuse to promptly take charge of and complete the Work or for the Owner to fail or refuse to continue to make payments in accordance with the Contract Documents.
7. By accepting this Bond as a condition of executing the Construction Contract, and by taking the actions described in Paragraph 4, the Owner agrees that:
 - (a) the Owner shall promptly advise the Surety of the unpaid balance of the Contract Sum and, upon request, shall make available or furnish to the Surety, at the cost of reproduction, any portions of the Project Record, and
 - (b) as the Surety completes the Work, or has it completed by a qualified contractor, the Owner shall pay the Surety, in accordance with terms of payment of the Contract Documents, the unpaid balance of the Contract Sum, less any amounts that may be or become due the Owner from the Contractor under the Construction Contract or from the Contractor or the Surety under this Bond.
8. In the presence of the conditions described in Paragraph 4, the Surety's obligation includes responsibility for the correction of Defective Work, liquidated damages, and reimbursement of any reasonable expenses incurred by the Owner as a result of the Contractor's default under the Contract, including architectural, engineering, administrative, and legal services.

Numbers in margin correspond to second page of "Checklist", DCM Form B-7

9. Nothing contained in this Bond shall be construed to mean that the Surety shall be liable to the Owner for an amount exceeding the Penal Sum of this Bond, except in the event that the Surety should be in default under the Bond by failing or refusing to take charge of and complete the Work pursuant to Paragraph 5. If the Surety should fail or refuse to take charge of and complete the Work, the Owner shall have the authority to take charge of and complete the Work, or have it completed, and the following costs to the Owner, less the unpaid balance of the Contract Sum, shall be recoverable under this Bond:

- (a) the cost of completing the Contractor's responsibilities under the Contract, including correction of Defective Work;
- (b) additional architectural, engineering, managerial, and administrative services, and reasonable attorneys' fees incident to completing the Work;
- (c) interest on, and the cost of obtaining, funds to supplement the unpaid balance of the Contract Sum as may be necessary to cover the foregoing costs;
- (d) the fair market value of any reductions in the scope of the Work necessitated by insufficiency of the unpaid balance of the Contract Sum and available supplemental funds to cover the foregoing costs; and
- (f) additional architectural, engineering, managerial, and administrative services, and reasonable attorneys' fees incident to ascertaining and collecting the Owner's losses under the Bond.

10. All claims and disputes arising out of or related to this bond, or its breach, shall be resolved in accordance with Article 24, General Conditions of the Contract.

(8) **SIGNED AND SEALED** this _____ day of _____, _____.

(9 & 10) **SURETY:**

CONTRACTOR as PRINCIPAL:

Surety Company Name

Contractor Company Name

By _____

By _____

Signee's Printed Name and Title

Signee's Printed Name and Title

(11) **NOTE:** Original power of attorney for the Surety's signatory shall be furnished with each of the original six bond forms to be attached to each of the six contract forms per project.

Do not staple this form; use clips. Purpose: quickly and efficiently scan thousands of documents into DCM's database.

Numbers in margin correspond to second page of "Checklist", DCM Form B-7

(1) **PAYMENT BOND**

SURETY'S BOND NUMBER

Do not staple this form; use clips.

(2) The **PRINCIPAL** (*Company name and address of Contractor as appears in the Construction Contract*)

Name:
Address:

(3) The **SURETY** (*Company name and primary place of business*)

Name:
Address:

(4) The **OWNER: The ALABAMA PUBLIC SCHOOL AND COLLEGE AUTHORITY** and
(*Local Owner entity's name and address, same as appears in the Construction Contract*)

Name:
Address:

(5) The **PENAL SUM** of this Bond (the Contract Sum)

Dollars (\$).

(6) **DATE** of the Construction Contract :

(7) The **PROJECT:** (*Same as appears in the Construction Contract*)

1. **WE, THE PRINCIPAL (hereinafter "Contractor") AND THE SURETY**, jointly and severally, hereby bind ourselves, our heirs, executors, administrators, successors, and assigns to the Owner in the Penal Sum stated above to promptly pay all persons supplying labor, materials, or supplies for or in the prosecution of the Contract, which is incorporated herein by reference, and any modifications thereof by Contract Change Orders. If the Contractor and its Subcontractors promptly pay all persons supplying labor, materials, or supplies for or in the prosecution of the Contract and Contract Change Orders, then this obligation shall be null and void; otherwise to remain and be in full force and effect.

2. The Penal Sum shall remain equal to the Contract Sum as the Contract Sum is adjusted by Contract Change Orders. All Contract Change Orders involving an increase in the Contract Sum will require consent of Surety by endorsement of the Contract Change Order form. The Surety waives notification of any Contract Change Orders involving only extension of the Contract Time.

Numbers in margin correspond to second page of "Checklist", DCM Form B-7

3. Any person that has furnished labor, materials, or supplies for or in the prosecution of the Contract and Contract Change Orders for which payment has not been timely made may institute a civil action upon this Bond and have their rights and claims adjudicated in a civil action and judgment entered thereon. Notwithstanding the foregoing, a civil action may not be instituted on this bond until 45 days after written notice to the Surety of the amount claimed to be due and the nature of the claim. The civil action must commence not later than one year from the date of final settlement of the Contract. The giving of notice by registered or certified mail, postage prepaid, addressed to the Surety at any of its places of business or offices shall be deemed sufficient. In the event the Surety or Contractor fails to pay the claim in full within 45 days from the mailing of the notice, then the person or persons may recover from the Contractor and Surety, in addition to the amount of the claim, a reasonable attorney's fee based on the result, together with interest on the claim from the date of the notice.
4. Every person having a right of action on this bond shall, upon written application to the Owner indicating that labor, material, or supplies for the Work have been supplied and that payment has not been made, be promptly furnished a certified copy of this bond and the Construction Contract. The claimant may bring a civil action in the claimant's name on this Bond against the Contractor and the Surety, or either of them, in the county in which the Work is to be or has been performed or in any other county where venue is otherwise allowed by law.
5. This bond is furnished to comply with Code of Alabama, §39-1-1, and all provisions thereof shall be applicable to civil actions upon this bond.
6. All claims and disputes between Owner and either the Contractor or Surety arising out of or related to this bond, or its breach, shall be resolved in accordance with Article 24, General Conditions of the Contract.

(8) **SIGNED AND SEALED** this _____ day of _____, _____.

(9 & 10) **SURETY:**

CONTRACTOR as PRINCIPAL:

Surety Company Name

Contractor Company Name

By _____

By _____

Signee's Printed Name and Title

Signee's Printed Name and Title

(11) **NOTE:** Original power of attorney for the Surety's signatory shall be furnished with each of the original six bond forms to be attached to each of the six contract forms per project.

Do not staple this form; use clips. Purpose: quickly and efficiently scan thousands of documents into DCM's database.

MODIFICATION TO THE CONSTRUCTION CONTRACT

- ADJUSTMENT OF SEVERABLE PAYMENTS -

PSCA # _____ (Required) _____ Date _____ DCM (BC) # _____ (Required)

The SEVERABLE PAYMENT provision of the Construction Contract, dated _____,
between the Alabama Public School and College Authority and _____, Owners,
and _____, Contractor,
for _____, Name of Project
is hereby amended to be as stated below.

Date(s) of previous Modifications affecting SEVERABLE PAYMENT: _____

Amount of original Contract: \$ _____

Net Amount of Change Orders Nos. _____ through _____: \$ _____

Total Amount of Contract this date: \$ _____

Total Amount to be assumed by the Authority: \$ _____

Total Amount to be assumed by the Local Owner (include all previous payments made with local funds and attach documentation): \$ _____

SEVERABLE PAYMENT:

- The Alabama Public School and College Authority will pay the Contractor _____ Dollars (\$ _____) from its available funds.
- The _____ Local Owner will thereafter pay the Contractor the remaining _____ Dollars (\$ _____) from its available funds.

CONSENT OF SURETY	
_____ Surety Company Name	
By _____ Its Attorney-in-fact Signature	Power of Attorney Attached
Name & Title: _____	

CONTRACTING PARTIES	
_____ Contractor Company Name	
By _____	
Name & Title: _____	

APPROVED BY

ALABAMA DEPARTMENT OF FINANCE, REAL PROPERTY MANAGEMENT, DIVISION OF CONSTRUCTION MANAGEMENT

By _____ Director

Reviewed By _____ Contract Administrator

_____ Local Owner Entity Name	
By _____	
Name & Title: _____	

ALABAMA PUBLIC SCHOOL AND COLLEGE AUTHORITY

By _____	Date: _____
Governor and President of Authority	

Attest to: _____ Secretary of Authority
--

PSCA funds are available in the amount stated above.

MODIFICATION TO THE CONSTRUCTION CONTRACT

ADDING THE ALABAMA PUBLIC SCHOOL & COLLEGE AUTHORITY AS CO-OWNER

PSCA # _____ (Required) _____ Date _____ DCM (BC) # _____ (Required)

The Construction Contract dated _____ between the _____, Owner,
Local Owner
and _____, Contractor,
Contractor
for _____, Name of Project

is hereby modified by adding, as Co-owner, the Alabama Public School and College Authority. The Construction Contract is further modified by the addition of the provision for SEVERABLE PAYMENT as stated below.

Amount of original Contract: \$ _____
Net Amount of Change Orders Nos. ____ through ____: \$ _____
Total Amount of Contract this date: \$ _____
Total Amount to be assumed by the Authority: \$ _____
Total Amount to be assumed by the Local Owner (include all previous payments made with local funds and attach documentation): \$ _____

SEVERABLE PAYMENT:

1. The Alabama Public School and College Authority will pay the Contractor _____ Dollars (\$ _____) from its available funds.
2. The _____ Local Owner will thereafter pay the Contractor the remaining _____ Dollars (\$ _____) from its available funds.

CONSENT OF SURETY	
_____ Surety Company Name	
By _____ Its Attorney-in-fact Signature	Power of Attorney Attached
Name & Title: _____	

APPROVED BY	
ALABAMA DEPARTMENT OF FINANCE, REAL PROPERTY MANAGEMENT, DIVISION OF CONSTRUCTION MANAGEMENT	
By _____ Director	
Reviewed By _____ Contract Administrator	

CONTRACTING PARTIES	
_____ Contractor Company Name	
By _____ Name & Title: _____	
_____ Local Owner Entity Name	
By _____ Name & Title: _____	
ALABAMA PUBLIC SCHOOL AND COLLEGE AUTHORITY	
By _____ Governor and President of Authority	Date: _____
Attest to: _____ Secretary of Authority	

MODIFICATION OF THE PERFORMANCE BOND AND PAYMENT BOND ADDING, AS CO-OWNER, THE ALABAMA PUBLIC SCHOOL & COLLEGE AUTHORITY

_____ Date _____

In connection with the Construction Contract dated _____ between the
_____, Owner,
Local Owner
and _____, Contractor,
Contractor
for _____,
Name of Project
_____, as Surety,
Bonding Company (Surety)
furnished a PERFORMANCE BOND and a LABOR AND MATERIAL PAYMENT BOND, copies of which are
attached hereto and incorporated herein by reference.

It is understood and agreed the said PERFORMANCE BOND and LABOR AND MATERIAL PAYMENT
BOND are hereby modified by adding the ALABAMA PUBLIC SCHOOL AND COLLEGE AUTHORITY as
Owner and Obligee where Owner and Obligee are referenced therein.

AGREED TO;

SURETY:

CONTRACTOR:

Bonding Company (Surety) Name

Name of Company

By _____
Its Attorney-in-fact
Attach current Power of Attorney

By _____

Printed Name and Title

Printed Name and Title

SEAL

Alabama Department of Finance
Real Property Management
Division of Construction Management (DCM)
 770 Washington Avenue, Suite 444
 Montgomery, Alabama 36104
 (334) 242-4082 FAX (334) 242-4182

INVOICE CHECKLIST

For Materials and Equipment to be Purchased with Funds of the ALABAMA PUBLIC SCHOOL AND COLLEGE AUTHORITY

This checklist contains the prerequisites for DCM's approval of the use of ALABAMA PUBLIC SCHOOL AND COLLEGE AUTHORITY (PSCA) bond issue funds for the purchase of materials and equipment. The prerequisites assure conformance with PSCA requirements, competitive bid laws, DCM recording methods, and distribution requirements. The authority submitting invoices for payment with PSCA funds should utilize this checklist when preparing invoices for submittal to assure prompt approval and processing.

1.	Materials and/or equipment are to be for capital improvements only (not maintenance, etc.)
2.	Two originals of the invoice are to be submitted. Faxed and emailed copies are not acceptable.
3.	The two invoices must be certified as being "True, correct and unpaid." The vendor's signature must be Notarized .
4.	<p>Material Receipt DCM form 9 – I is no longer required. Instead, the following statement must be included on each invoice and signed by the Owner. Agencies can use a certification stamp or affix a printed label to the invoices.</p> <p>"I hereby certify that the article(s) and or service(s) listed on this document were received on _____ in the proper condition, are the kind and quantity ordered and appropriate purchasing policy and purchasing procedures were followed.</p> <p>Received by: _____</p> <p>Date: _____"</p>
5.	A "Certificate of Compliance" with Competitive Bid Law must be attached to each invoice. DCM Form 9-H, Certificate of Compliance, Title 41: Public Contracts, is to be used for this purpose.
6.	Each "Certificate of Compliance" must bear the original signature of the president, director or superintendent of the school or institution. This signature must be Notarized .
7.	<p>The following statement is to be included via Memorandum on the school or institution letterhead. The president, director or superintendent must sign the memorandum.</p> <p>To: Any/All Interested Parties From: (Insert name of President, Director or Superintendent) Subject: Immigration Requirements Date: (Insert Date)</p> <p>The undersigned hereby certifies that the transaction under which this payment is requested is subject to the requirements of §31-13-9(a) and (b), Code of Alabama, 1975, as amended, and the proper documentation is on file in the agency. If you have questions, please call (insert school or institution telephone number).</p>
8.	A copy of the purchase order issued to the Vendor must be attached to each invoice.

CERTIFICATION OF COMPLIANCE TITLE 41: PUBLIC CONTRACTS

I hereby certify that the contract for the Equipment or Materials covered by the attached invoice was awarded in accordance with Competitive Bid Law applying to the School Board or Institution noted below.

DCM (BC)# _____
City - County - Institution

PSCA# _____ By _____
Signature of Officer & Title

Sworn to and subscribed before me
this _____ day of _____, 20_____.

Notary Public Signature

Seal

INSTRUCTIONS: This certification must be signed by the president, director, or superintendent of the school or institution, notarized, and attached to each copy of each invoice for equipment or materials being submitted to Alabama Division of Construction Management for approval to pay the invoice from funds of the ALABAMA PUBLIC SCHOOL AND COLLEGE AUTHORITY. The certificate attached to each copy of an invoice must bear original signatures.

GENERAL CONDITIONS of the CONTRACT

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3. Contractor's Representation
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6. Supervision, Superintendent, & Employees
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ARTICLE 1 DEFINITIONS

Whenever the following terms, or pronouns in place of them, are used in the Contract Documents, the intent and meaning shall be interpreted as follows:

- A. **ALABAMA DIVISION OF CONSTRUCTION MANAGEMENT:** The Technical Staff of the Alabama Division of Construction Management.
- B. **ARCHITECT:** The Architect is the person or entity lawfully licensed to practice architecture in the State of Alabama, who is under contract with the Owner as the primary design professional for the Project and identified as the Architect in the Construction Contract. The term "Architect" means the Architect or the Architect's authorized representative. If the employment of the Architect is terminated, the Owner shall employ a new Architect whose status under the Contract Documents shall be that of the former Architect. If the primary design professional for the Project is a Professional Engineer, the term "Engineer" shall be substituted for the term "Architect" wherever it appears in this document.

- C. COMMISSION:** The former Alabama Building Commission, for which the Alabama Division of Construction Management has been designated by the Legislature as its successor.
- D. CONTRACT:** The Contract is the embodiment of the Contract Documents. The Contract represents the entire and integrated agreement between the Owner and Contractor and supersedes any prior written or oral negotiations, representations or agreements that are not incorporated into the Contract Documents. The Contract may be amended only by a Contract Change Order or a Modification to the Construction Contract. The contractual relationship which the Contract creates between the Owner and the Contractor extends to no other persons or entities. The Contract consists of the following Contract Documents, including all additions, deletions, and modifications incorporated therein before the execution of the Construction Contract:
- (1) Construction Contract
 - (2) Performance and Payment Bonds
 - (3) Conditions of the Contract (General, Supplemental, and other Conditions)
 - (4) Specifications
 - (5) Drawings
 - (6) Contract Change Orders
 - (7) Modifications to the Construction Contract (applicable to PSCA Projects)
- E. CONTRACT SUM:** The Contract Sum is the total amount payable by the Owner to the Contractor for performance of the Work under the Contract Documents. The term “Contract Sum” means the Contract Sum stated in the Construction Contract as may have been increased or decreased by Change Order(s) in accordance with the Contract Documents.
- F. CONTRACT TIME:** The Contract Time is the period of time in which the Contractor must achieve Substantial Completion of the Work. The date on which the Contract Time begins is specified in the written Notice To Proceed issued to the Contractor by the Owner or Director. The Date of Substantial Completion is the date established in accordance with Article 32. The term “Contract Time” means the Contract Time stated in the Construction Contract as may have been extended by Change Order(s) in accordance with the Contract Documents. The term “day” as used in the Contract Documents shall mean calendar day unless otherwise specifically defined.
- G. CONTRACTOR:** The Contractor is the person or persons, firm, partnership, joint venture, association, corporation, cooperative, limited liability company, or other legal entity, identified as such in the Construction Contract. The term “Contractor” means the Contractor or the Contractor’s authorized representative.
- H. DCM:** The Alabama Division of Construction Management.
- I. DCM PROJECT INSPECTOR:** The member of the Technical Staff of the Alabama Division of Construction Management to whom the Project is assigned relative to executing the respective inspections and authorities described in Article 16, Inspection of the Work.
- J. DEFECTIVE WORK:** The term “Defective Work” shall apply to: (1) any product, material, system, equipment, or service, or its installation or performance, which does not conform to the requirements of the Contract Documents, (2) in-progress or completed Work the workmanship of which does not conform to the quality specified or, if not specified, to the quality produced by skilled workers performing work of a similar nature on similar projects in the state, (3) substitutions and deviations not properly submitted and approved or otherwise authorized, (4) temporary

supports, structures, or construction which will not produce the results required by the Contract Documents, and (5) materials or equipment rendered unsuitable for incorporation into the Work due to improper storage or protection.

- K. DIRECTOR:** The Director of the Alabama Division of Construction Management.
- L. DRAWINGS:** The Drawings are the portions of the Contract Documents showing graphically the design, location, layout, and dimensions of the Work, in the form of plans, elevations, sections, details, schedules, and diagrams.
- M. NOTICE TO PROCEED:** A proceed order issued by the Owner or Director, as applicable, fixing the date on which the Contractor shall begin the prosecution of the Work, which is also the date on which the Contract Time shall begin.
- N. OWNER:** The Owner is the entity or entities identified as such in the Construction Contract and is referred to throughout the Contract Documents as if singular in number. The term “Owner” means the Owner or the Owner’s authorized representative. The term “Owner” as used herein shall be synonymous with the term “Awarding Authority” as defined and used in Title 39 - Public Works, Code of Alabama, 1975, as amended.
- O. THE PROJECT:** The Project is the total construction of which the Work required by these Contract Documents may be the entirety or only a part with other portions to be constructed by the Owner or separate contractors.
- P. PROJECT MANUAL:** The Project Manual is the volume usually assembled for the Work which may include the Advertisement for Bids, Instructions to Bidders, sample forms, General Conditions of the Contract, Supplementary Conditions, and Specifications of the Work.
- Q. SPECIFICATIONS:** The Specifications are that portion of the Contract Documents which set forth in writing the standards of quality and performance of products, equipment, materials, systems, and services and workmanship required for acceptable performance of the Work.
- R. SUBCONTRACTOR:** A Subcontractor is a person or entity who is undertaking the performance of any part of the Work by virtue of a contract with the Contractor. The term “Subcontractor” means a Subcontractor or its authorized representatives.
- S. THE WORK:** The Work is the construction and services required by the Contract Documents and includes all labor, materials, supplies, equipment, and other items and services as are necessary to produce the required construction and to fulfill the Contractor’s obligations under the Contract. The Work may constitute the entire Project or only a portion of it.

ARTICLE 2

INTENT and INTERPRETATION of the CONTRACT DOCUMENTS

A. INTENT

It is the intent of the Contract Documents that the Contractor shall properly execute and complete the Work described by the Contract Documents, and unless otherwise provided in the Contract, the

Contractor shall provide all labor, materials, equipment, tools, construction equipment and machinery, water, heat, utilities, transportation, and other facilities and services, whether temporary or permanent and whether or not incorporated or to be incorporated in the Work, in full accordance with the Contract Documents and reasonably inferable from them as being necessary to produce the indicated results.

B. COMPLEMENTARY DOCUMENTS

The Contract Documents are complementary. If Work is required by one Contract Document, the Contractor shall perform the Work as if it were required by all of the Contract Documents. However, the Contractor shall be required to perform Work only to the extent that is consistent with the Contract Documents and reasonably inferable from them as being necessary to produce the indicated results.

C. ORDER of PRECEDENCE

Should any discrepancy arise between the various elements of the Contract Documents, precedence shall be given to them in the following order unless to do so would contravene the apparent Intent of the Contract Documents stated in preceding Paragraph A:

- (1) The Construction Contract.
- (2) Addenda, with those of later date having precedence over those of earlier date.
- (3) Supplementary Conditions (or other Conditions which modify the General Conditions of the Contract).
- (4) General Conditions of the Contract.
- (5) The Specifications.
- (6) Details appearing on the Drawings; large scale details shall take precedence over smaller scale details.
- (7) The Drawings; large scale drawings shall take precedence over smaller scale drawings.

D. ORGANIZATION

Except as may be specifically stated within the technical specifications, neither the organization of the Specifications into divisions, sections, or otherwise, nor any arrangement of the Drawings shall control how the Contractor subcontracts portions of the Work or assigns Work to any trade.

E. INTERPRETATION

(1) The Contract Documents shall be interpreted collectively, each part complementing the others and consistent with the Intent of the Contract Documents stated in preceding Paragraph A. Unless an item shown or described in the Contract Documents is specifically identified to be furnished or installed by the Owner or others or is identified as “Not In Contract” (“N.I.C.”), the Contractor’s obligation relative to that item shall be interpreted to include furnishing, assembling, installing, finishing, and/or connecting the item at the Contractor’s expense to produce a product or system that is complete, appropriately tested, and in operative condition ready for use or subsequent construction or operation of the Owner or separate contractors. The omission of words or phrases for brevity of the Contract Documents, the inadvertent omission of words or phrases, or obvious typographical or written errors shall not defeat such interpretation as long as it is reasonably inferable from the Contract Documents as a whole.

(2) Words or phrases used in the Contract Documents which have well-known technical or

construction industry meanings are to be interpreted consistent with such recognized meanings unless otherwise indicated.

(3) Except as noted otherwise, references to standard specifications or publications of associations, bureaus, or organizations shall mean the latest edition of the referenced standard specification or publication as of the date of the Advertisement for Bids.

(4) In the case of inconsistency between Drawings and Specifications or within either document not clarified by addendum, the better quality or greater quantity of Work shall be provided in accordance with the Architect's interpretation.

(5) Any portions of the Contract Documents written in longhand must be initialed by all parties..

(6) Any doubt as to the meaning of the Contract Documents or any obscurity as to the wording of them, shall be promptly submitted in writing to the Architect for written interpretation, explanation, or clarification.

F. SEVERABILITY.

The partial or complete invalidity of any one or more provision of this Contract shall not affect the validity or continuing force and effect of any other provision.

ARTICLE 3
CONTRACTOR'S REPRESENTATIONS

By executing the Construction Contract the Contractor represents to the Owner:

- A. The Contractor has visited the site of the Work to become familiar with local conditions under which the Work is to be performed and to evaluate reasonably observable conditions as compared with requirements of the Contract Documents.
- B. The Contractor shall use its best skill and attention to perform the Work in an expeditious manner consistent with the Contract Documents.
- C. The Contractor is an independent contractor and in performance of the Contract remains and shall act as an independent contractor having no authority to represent or obligate the Owner in any manner unless authorized by the Owner in writing.

ARTICLE 4
DOCUMENTS FURNISHED to CONTRACTOR

Unless otherwise provided in the Contract Documents, twenty sets of Drawings and Project Manuals will be furnished to the Contractor by the Architect without charge. Other copies requested will be furnished at reproduction cost.

ARTICLE 5
OWNERSHIP of DRAWINGS

All original or duplicated Drawings, Specifications, and other documents prepared by the Architect, and furnished to the Contractor are the property of the Architect and are to be used solely for this Project and not to be used in any manner for other work. Upon completion of the Work, all copies of Drawings and Specifications, with the exception of the Contractor's record set, shall be returned or accounted for by the Contractor to the Architect, on request.

ARTICLE 6
SUPERVISION, SUPERINTENDENT, and EMPLOYEES

A. SUPERVISION and CONSTRUCTION METHODS

(1) The term "Construction Methods" means the construction means, methods, techniques, sequences, and procedures utilized by the Contractor in performing the Work. The Contractor is solely responsible for supervising and coordinating the performance of the Work, including the selection of Construction Methods, unless the Contract Documents give other specific instructions concerning these matters.

(2) The Contractor is solely and completely responsible for job site safety, including the protection of persons and property in accordance with Article 14.

(3) The Contractor shall be responsible to the Owner for acts and omissions of not only the Contractor and its agents and employees, but all persons and entities, and their agents and employees, who are performing portions of the Work for or on behalf of the Contractor or any of its Subcontractors.

(4) The Contractor shall be responsible to inspect the in-progress and completed Work to verify its compliance with the Contract Documents and to insure that any element or portion of the Work upon which subsequent Work is to be applied or performed is in proper condition to receive the subsequent Work.

B. SUPERINTENDENT

(1) The Contractor shall employ and maintain a competent level of supervision for the performance of the Work at the Project site, including a superintendent who shall:

(a) have full authority to receive instructions from the Architect or Owner and to act on those instructions and (b) be present at the Project site at all times during which Work is being performed.

(2) Before beginning performance of the Work, the Contractor shall notify the Architect in writing of the name and qualifications of its proposed superintendent so that the Owner may review the individual's qualifications. If, for reasonable cause, the Owner refuses to approve the individual, or withdraws its approval after once giving it, the Contractor shall name a different superintendent for the Owner's review and approval. Any disapproved superintendent will not perform in that capacity thereafter at the Project site.

C. EMPLOYEES

The Contractor shall permit only fit and skilled persons to perform the Work. The Contractor shall enforce safety procedures, strict discipline, and good order among persons performing the Work. The Contractor will remove from its employment on the Project any person who deliberately or persistently produces non-conforming Work or who fails or refuses to conform to reasonable rules of personal conduct contained in the Contract Documents or implemented by the Owner and delivered to the Contractor in writing during the course of the Work.

ARTICLE 7

REVIEW of CONTRACT DOCUMENTS and FIELD CONDITIONS by CONTRACTOR

- A. In order to facilitate assembly and installation of the Work in accordance with the Contract Documents, before starting each portion of the Work, the Contractor shall examine and compare the relevant Contract Documents, and compare them to relevant field measurements made by the Contractor and any conditions at the site affecting that portion of the Work.
- B. If the Contractor discovers any errors, omissions, or inconsistencies in the Contract Documents, the Contractor shall promptly report them to the Architect as a written request for information that includes a detailed statement identifying the specific Drawings or Specifications that are in need of clarification and the error, omission, or inconsistency discovered in them.
- (1) The Contractor shall not be expected to act as a licensed design professional and ascertain whether the Contract Documents comply with applicable laws, statutes, ordinances, building codes, and rules and regulations, but the Contractor shall be obligated to promptly notify the Architect of any such noncompliance discovered by or made known to the Contractor. If the Contractor performs Work without fulfilling this notification obligation, the Contractor shall pay the resulting costs and damages that would have been avoided by such notification.
- (2) The Contractor shall not be liable to the Owner for errors, omissions, or inconsistencies that may exist in the Contract Documents, or between the Contract Documents and conditions at the site, unless the Contractor knowingly fails to report a discovered error, omission, or inconsistency to the Architect, in which case the Contractor shall pay the resulting costs and damages that would have been avoided by such notification.
- C. If the Contractor considers the Architect's response to a request for information to constitute a change to the Contract Documents involving additional costs and/or time, the Contractor shall follow the procedures of Article 20, Claims for Extra Cost or Extra Work.
- D. If, with undue frequency, the Contractor requests information that is obtainable through reasonable examination and comparison of the Contract Documents, site conditions, and previous correspondence, interpretations, or clarifications, the Contractor shall be liable to the Owner for reasonable charges from the Architect for the additional services required to review, research, and respond to such requests for information.

ARTICLE 8
SURVEYS by CONTRACTOR

- A. The Contractor shall provide competent engineering services to assure accurate execution of the Work in accordance with the Contract Documents. The Contractor shall verify the figures given for the contours, approaches and locations shown on the Drawings before starting any Work and be responsible for the accuracy of the finished Work. Without extra cost to the Owner, the Contractor shall engage a licensed surveyor if necessary to verify boundary lines, keep within property lines, and shall be responsible for encroachments on rights or property of public or surrounding property owners.

- B. The Contractor shall establish all base lines for the location of the principal components of the Work and make all detail surveys necessary for construction, including grade stakes, batter boards and other working points, lines and elevations. If the Work involves alteration of or addition to existing structures or improvements, the Contractor shall locate and measure elements of the existing conditions as is necessary to facilitate accurate fabrication, assembly, and installation of new Work in the relationship, alignment, and/or connection to the existing structure or improvement as is shown in the Contract Documents.

ARTICLE 9
SUBMITTALS

- A. Where required by the Contract Documents, the Contractor shall submit shop drawings, product data, samples and other information (hereinafter referred to as Submittals) to the Architect for the purpose of demonstrating the way by which the Contractor proposes to conform to the requirements of the Contract Documents. Submittals which are not required by the Contract Documents may be returned by the Architect without action.

- B. The Contractor shall be responsible to the Owner for the accuracy of its Submittals and the conformity of its submitted information to the requirements of the Contract Documents. Each Submittal shall bear the Contractor's approval, evidencing that the Contractor has reviewed and found the information to be in compliance with the requirements of the Contract Documents. Submittals which are not marked as reviewed and approved by the Contractor may be returned by the Architect without action.

- C. The Contractor shall prepare and deliver its submittals to the Architect sufficiently in advance of construction requirements and in a sequence as to cause no delay in the Work or in the activities of the Owner or of separate contractors. In coordinating the Submittal process with its construction schedule, the Contractor shall allow sufficient time to permit adequate review by the Architect.

- D. By approving a Submittal the Contractor represents not only that the element of Work presented in the Submittal complies with the requirements of the Contract Documents, but also that the Contractor has:
 - (1) found the layout and/or dimensions in the Submittal to be comparable with those in the Contract Documents and other relevant Submittals and has made field measurements as necessary to verify their accuracy, and
 - (2) determined that products, materials, systems, equipment and/or procedures presented in the Submittal are compatible with those presented, or being presented, in other relevant Submittals and

with the Contractor's intended Construction Methods.

- E. The Contractor shall not fabricate or perform any portion of the Work for which the Contract Documents require Submittals until the respective Submittals have been approved by the Architect.
- F. In the case of a resubmission, the Contractor shall direct specific attention to all revisions in a Submittal. The Architect's approval of a resubmission shall not apply to any revisions that were not brought to the Architect's attention.
- G. If the Contract Documents specify that a Submittal is to be prepared and sealed by a registered architect or licensed engineer retained by the Contractor, all drawings, calculations, specifications, and certifications of the Submittal shall bear the Alabama seal of registration and signature of the registered/licensed design professional who prepared them or under whose supervision they were prepared. The Owner and the Architect shall be entitled to rely upon the adequacy, accuracy and completeness of such a Submittal, provided that all performance and design criteria that such Submittal must satisfy are sufficiently specified in the Contract Documents. The Architect will review, approve or take other appropriate action on such a Submittal 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 or design criteria specified in the Contract Documents.

H. DEVIATIONS

(1) The Architect is authorized by the Owner to approve "minor" deviations from the requirements of the Contract Documents. "Minor" deviations are defined as those which are in the interest of the Owner, do not materially alter the quality or performance of the finished Work, and do not affect the cost or time of performance of the Work. Deviations which are not "minor" may be authorized only by the Owner through the Change Order procedures of Article 19.

(2) Any deviation from the requirements of the Contract Documents contained in a Submittal shall be clearly identified as a "Deviation from Contract Requirements" (or by similar language) within the Submittal and, in a letter transmitting the Submittal to the Architect, the Contractor shall direct the Architect's attention to, and request specific approval of, the deviation. Otherwise, the Architect's approval of a Submittal does not constitute approval of deviations from the requirements of the Contract Documents contained in the Submittal.

(3) The Contractor shall bear all costs and expenses of any changes to the Work, changes to work performed by the Owner or separate contractors, or additional services by the Architect required to accommodate an approved deviation unless the Contractor has specifically informed the Architect in writing of the required changes and a Change Order has been issued authorizing the deviation and accounting for such resulting changes and costs.

I. ARCHITECT'S REVIEW and APPROVAL

(1) The Architect will review the Contractor's Submittals for conformance with requirements of, and the design concept expressed in, the Contract Documents and will approve or take other appropriate action upon them. This review is not intended to verify the accuracy and completeness of details such as dimensions and quantities nor to substantiate installation instructions or performance of equipment or systems, all of which remain the responsibility of the Contractor. However, the Architect shall advise the Contractor of any errors or omissions which the Architect

may detect during this review. The Architect's approval of a specific item shall not indicate approval of an assembly of which the item is a component.

(2) The Architect will review and respond to all Submittals with reasonable promptness to avoid delay in the Work or in the activities of the Owner, Contractor or separate contractors, while allowing sufficient time to permit adequate review.

(3) No corrections or changes to Submittals indicated by the Architect will be considered as authorizations to perform Extra Work. If the Contractor considers such correction or change of a Submittal to require Work which differs from the requirements of the Contract Documents, the Contractor shall promptly notify the Architect in writing in accordance with Article 20, Claims for Extra Cost or Extra Work.

J. CONFORMANCE with SUBMITTALS

The Work shall be constructed in accordance with approved Submittals.

**ARTICLE 10
DOCUMENTS and SAMPLES at the SITE**

A. "AS ISSUED" SET

The Contractor shall maintain at the Project site, in good order, at least one copy of all Addenda, Change Orders, supplemental drawings, written directives and clarifications, and approved Submittals intact as issued, and an updated construction schedule.

B. "POSTED" SET

The Contractor shall maintain at the Project site, in good order, at least one set of the Drawings and Project Manual into which the Contractor has "posted"(incorporated) all Addenda, Change Orders, supplemental drawings, clarifications, and other information pertinent to the proper performance of the Work. The Contractor shall assure that all sets of the Drawings and Project Manuals being used by the Contractor, Subcontractors, and suppliers are "posted" with the current information to insure that updated Contract Documents are used for performance of the Work.

C. RECORD SET

One set of the Drawings and Project Manual described in Paragraph B shall be the Contractor's record set in which the Contractor shall record all field changes, corrections, selections, final locations, and other information as will be duplicated on the "As-built" documents required under Article 11. The Contractor shall record such "as-built" information in its record set as it becomes available through progress of the Work. The Contractor's performance of this requirement shall be subject to confirmation by the Architect at any time as a prerequisite to approval of Progress Payments.

D. The documents and samples required by this Article to be maintained at the Project site shall be readily available to the Architect, Owner, DCM Project Inspector, and their representatives.

ARTICLE 11
“AS-BUILT” DOCUMENTS

- A. Unless otherwise provided in the Contract Documents, the Contractor shall deliver two (2) sets of “As-built” documents, as described herein, to the Architect for submission to the Owner upon completion of the Work. Each set of “As-built” documents shall consist of a copy of the Drawings and Project Manual, in like-new condition, into which the Contractor has neatly incorporated all Addenda, Change Orders, supplemental drawings, clarifications, field changes, corrections, selections, actual locations of underground utilities, and other information as required herein or specified elsewhere in the Contract Documents.
- B. The Contractor shall use the following methods for incorporating information into the “As-built” documents:
- (1) **Drawings**
- (a) To the greatest extent practicable, information shall be carefully drawn and lettered, in ink, on the Drawings in the form of sketches, details, plans, notes, and dimensions as required to provide a fully dimensioned record of the Work. When required for clarity, sketches, details, or partial plans shall be drawn on supplemental sheets and bound into the Drawings and referenced on the drawing being revised.
- (b) Where a revised drawing has been furnished by the Architect, the drawing of latest date shall be bound into the Drawings in the place of the superseded drawing.
- (c) Where a supplemental drawing has been furnished by the Architect, the supplemental drawing shall be bound into the Drawings in an appropriate location and referred to by notes added to the drawing being supplemented.
- (d) Where the Architect has furnished details, partial plans, or lengthy notes of which it would be impractical for the Contractor to redraw or letter on a drawing, such information may be affixed to the appropriate drawing with transparent tape if space is available on the drawing.
- (e) Any entry of information made in the Drawings that is the result of an Addendum or Change Order, shall identify the Addendum or Change Order from which it originated.
- (2) **Project Manual**
- (a) A copy of all Addenda and Change Orders, excluding drawings thereof, shall be bound in the front of the Project Manual.
- (b) Where a document, form, or entire specification section is revised, the latest issue shall be bound into the Project Manual in the place of the superseded issue.
- (c) Where information within a specification section is revised, the deleted or revised information shall be drawn through in ink and an adjacent note added identifying the Addendum or Change Order containing the revised information.
- C. Within ten days after the Date of Substantial Completion of the Work, or the last completed portion of the Work, the Contractor shall submit the “As-built” documents to the Architect for approval. If the Architect requires that any corrections be made, the documents will be returned in a reasonable time for correction and resubmission.

ARTICLE 12
PROGRESS SCHEDULE

(Not applicable if the Contract Time is 60 days or less.)

- A. The Contractor shall within fifteen days after the date of commencement stated in the Notice to Proceed, or such other time as may be provided in the Contract Documents, prepare and submit to the Architect for review and approval a practicable construction schedule informing the Architect and Owner of the order in which the Contractor plans to carry on the Work within the Contract Time. The Architect's review and approval of the Contractor's construction schedule shall be only for compliance with the specified format, Contract Time, and suitability for monitoring progress of the Work and shall not be construed as a representation that the Architect has analyzed the schedule to form opinions of sequences or durations of time represented in the schedule.
- B. If a schedule format is not specified elsewhere in the Contract Documents, the construction schedule shall be prepared using DCM Form C-11, "Sample Progress Schedule and Report", (contained in the Project Manual) or similar format of suitable scale and detail to indicate the percentage of Work scheduled to be completed at the end of each month. At the end of each month the Contractor shall enter the actual percentage of completion on the construction schedule submit two copies to the Architect, and attach one copy to each copy of the monthly Application for Payment. The construction schedule shall be revised to reflect any agreed extensions of the Contract Time or as required by conditions of the Work.
- C. If a more comprehensive schedule format is specified elsewhere in the Contract Documents or voluntarily employed by the Contractor, it may be used in lieu of DCM Form C-11.
- D. The Contractor's construction schedule shall be used by the Contractor, Architect, and Owner to determine the adequacy of the Contractor's progress. The Contractor shall be responsible for maintaining progress in accordance with the currently approved construction schedule and shall increase the number of shifts, and/or overtime operations, days of work, and/or the amount of construction plant and equipment as may be necessary to do so. If the Contractor's progress falls materially behind the currently approved construction schedule and, in the opinion of the Architect or Owner, the Contractor is not taking sufficient steps to regain schedule, the Architect may, with the Owner's concurrence, issue the Contractor a Notice to Cure pursuant to Article 27. In such a Notice to Cure the Architect may require the Contractor to submit such supplementary or revised construction schedules as may be deemed necessary to demonstrate the manner in which schedule will be regained.

ARTICLE 13
EQUIPMENT, MATERIALS, and SUBSTITUTIONS

- A. Every part of the Work shall be executed in a workmanlike manner in accordance with the Contract Documents and approved Submittals. All materials used in the Work shall be furnished in sufficient quantities to facilitate the proper and expeditious execution of the Work and shall be new except such materials as may be expressly provided or allowed in the Contract Documents to be otherwise.
- B. Whenever a product, material, system, item of equipment, or service is identified in the Contract Documents by reference to a trade name, manufacturer's name, model number, etc.(hereinafter

referred to as “source”), and only one or two sources are listed, or three or more sources are listed and followed by “or approved equal” or similar wording, it is intended to establish a required standard of performance, design, and quality, and the Contractor may submit, for the Architect’s approval, products, materials, systems, equipment, or services of other sources which the Contractor can prove to the Architect’s satisfaction are equal to, or exceed, the standard of performance, design and quality specified, unless the provisions of Paragraph D below apply. Such proposed substitutions are not to be purchased or installed without the Architect’s written approval of the substitution.

- C. If the Contract Documents identify three or more sources for a product, material, system, item of equipment or service to be used and the list of sources is not followed by “or approved equal” or similar wording, the Contractor may make substitution only after evaluation by the Architect and execution of an appropriate Contract Change Order.
- D. If the Contract Documents identify only one source and expressly provide that it is an approved sole source for the product, material, system, item of equipment, or service, the Contractor must furnish the identified sole source.

ARTICLE 14
SAFETY and PROTECTION of PERSONS and PROPERTY

- A. The Contractor shall be solely and completely responsible for conditions at the Project site, including safety of all persons (including employees) and property. The Contractor shall create, maintain, and supervise conditions and programs to facilitate and promote safe execution of the Work, and shall supervise the Work with the attention and skill required to assure its safe performance. Safety provisions shall conform to OSHA requirements and all other federal, state, county, and local laws, ordinances, codes, and regulations. Where any of these are in conflict, the more stringent requirement shall be followed. Nothing contained in this Contract shall be construed to mean that the Owner has employed the Architect nor has the Architect employed its consultants to administer, supervise, inspect, or take action regarding safety programs or conditions at the Project site.
- B. The Contractor shall employ Construction Methods, safety precautions, and protective measures that will reasonably prevent damage, injury or loss to:
 - (1) workers and other persons on the Project site and in adjacent and other areas that may be affected by the Contractor’s operations;
 - (2) the Work and materials and equipment to be incorporated into the Work and stored by the Contractor on or off the Project site; and
 - (3) other property on, or adjacent to, the Project site, including trees, shrubs, lawns, walks, pavements, roadways, structures, utilities, and other improvements not designated in the Contract Documents to be removed, relocated, or replaced.
- C. The Contractor shall be responsible for the prompt remedy of damage and loss to property, including the filing of appropriate insurance claims, caused in whole or in part by the fault or negligence of the Contractor, a Subcontractor, or anyone for whose acts they may be liable.

- D. The Contractor shall comply with and give notices required by applicable laws, ordinances, rules, regulations and lawful orders of public authorities bearing on safety and protection of persons or property, including without limitation notices to adjoining property owners of excavation or other construction activities that potentially could cause damage or injury to adjoining property or persons thereon.
- E. The Contractor shall erect and maintain barriers, danger signs, and any other reasonable safeguards and warnings against hazards as may be required for safety and protection during performance of the Contract and shall notify owners and users of adjacent sites and utilities of conditions that may exist or arise which may jeopardize their safety.
- F. If use or storage of explosives or other hazardous materials or equipment or unusual Construction Methods are necessary for execution of the Work, the Contractor shall exercise commensurate care and employ supervisors and workers properly qualified to perform such activity.
- G. The Contractor shall furnish a qualified safety representative at the Project site whose duties shall include the prevention of accidents. The safety representative shall be the Contractor's superintendent, unless the Contractor assigns this duty to another responsible member of its on-site staff and notifies the Owner and Architect in writing of such assignment.
- H. The Contractor shall not permit a load to be applied, or forces introduced, to any part of the construction or site that may cause damage to the construction or site or endanger safety of the construction, site, or persons on or near the site.
- I. The Contractor shall have the right to act as it deems appropriate in emergency situations jeopardizing life or property. The Contractor shall be entitled to equitable adjustment of the Contract Sum or Contract Time for its efforts expended for the sole benefit of the Owner in an emergency. Such adjustment shall be determined as provided in Articles 19 and 20.
- J. The duty of the Architect and the Architect's consultants to visit the Project site to conduct periodic inspections of the Work or for other purposes shall not give rise to a duty to review or approve the adequacy of the Contractor's safety program, safety supervisor, or any safety measure which Contractor takes or fails to take in, on, or near the Project site.

ARTICLE 15
HAZARDOUS MATERIALS

- A. A Hazardous Material is any substance or material identified as hazardous under any federal, state, or local law or regulation, or any other substance or material which may be considered hazardous or otherwise subject to statutory or regulatory requirements governing its handling, disposal, and/or clean-up. Existing Hazardous Materials are Hazardous Materials discovered at the Project site and not introduced to the Project site by the Contractor, a Subcontractor, or anyone for whose acts they may be liable.
- B. If, during the performance of the Work, the Contractor encounters a suspected Existing Hazardous Material, the Contractor shall immediately stop work in the affected area, take measures appropriate to the condition to keep people away from the suspected Existing Hazardous Material, and

immediately notify the Architect and Owner of the condition in writing.

- C. The Owner shall obtain the services of an independent laboratory or professional consultant, appropriately licensed and qualified, to determine whether the suspected material is a Hazardous Material requiring abatement and, if so, to certify after its abatement that it has been rendered harmless. Any abatement of Existing Hazardous Materials will be the responsibility of the Owner. The Owner will advise the Contractor in writing of the persons or entities who will determine the nature of the suspected material and those who will, if necessary, perform the abatement. The Owner will not employ persons or entities to perform these services to whom the Contractor or Architect has reasonable objection.
- D. After certification by the Owner's independent laboratory or professional consultant that the material is harmless or has been rendered harmless, work in the affected area shall resume upon written agreement between the Owner and Contractor. If the material is found to be an Existing Hazardous Material and the Contractor incurs additional cost or delay due to the presence and abatement of the material, the Contract Sum and/or Contract Time shall be appropriately adjusted by a Contract Change Order pursuant to Article 19.
- E. The Owner shall not be responsible for Hazardous Materials introduced to the Project site by the Contractor, a Subcontractor, or anyone for whose acts they may be liable unless such Hazardous Materials were required by the Contract Documents.

ARTICLE 16

INSPECTION of the WORK

A. GENERAL

(1) The Contractor is solely responsible for the Work's compliance with the Contract Documents; therefore, the Contractor shall be responsible to inspect in-progress and completed Work, and shall verify its compliance with the Contract Documents and that any element or portion of the Work upon which subsequent Work is to be applied or performed is in proper condition to receive the subsequent Work. Neither the presence nor absence of inspections by the Architect, Owner, Director, DCM Project Inspector, any public authority having jurisdiction, or their representatives shall relieve the Contractor of responsibility to inspect the Work, for responsibility for Construction Methods and safety precautions and programs in connection with the Work, or from any other requirement of the Contract Documents.

(2) The Architect, Owner, Director, DCM Project Inspector, any public authority having jurisdiction, and their representatives shall have access at all times to the Work for inspection whenever it is in preparation or progress, and the Contractor shall provide proper facilities for such access and inspection. All materials, workmanship, processes of manufacture, and methods of construction, if not otherwise stipulated in the Contract Documents, shall be subject to inspection, examination, and test at any and all places where such manufacture and/or construction are being carried on. Such inspections will not unreasonably interfere with the Contractor's operations.

(3) The Architect will inspect the Work as a representative of the Owner. The Architect's inspections may be supplemented by inspections by the DCM Project Inspector as a representative of the Alabama Division of Construction Management.

(4) The Contractor may be charged by the Owner for any extra cost of inspection incurred by the Owner or Architect on account of material and workmanship not being ready at the time of inspection set by the Contractor.

B. TYPES of INSPECTIONS

(1) **SCHEDULED INSPECTIONS and CONFERENCES.** Scheduled Inspections and Conferences are conducted by the Architect, scheduled by the Architect in coordination with the Contractor and DCM Project Inspector, and are attended by the Contractor and applicable Subcontractors, suppliers and manufacturers, and the DCM Project Inspector. Scheduled Inspections and Conferences of this Contract include:

(a) **Pre-construction Conference.**

(b) **Pre-roofing Conference** (not applicable if the Contract involves no roofing work)

(c) **Above Ceiling Inspection(s):** An above ceiling inspection of all spaces in the building is required before the ceiling material is installed. Above ceiling inspections are to be conducted at a time when all above ceiling systems are complete and tested to the greatest extent reasonable pending installation of the ceiling material. System identifications and markings are to be complete. All fire-rated construction including fire-stopping of penetrations and specified identification above the ceiling shall be complete. Ceiling framing and suspension systems shall be complete with lights, grilles and diffusers, access panels, fire protection drops for sprinkler heads, etc., installed in their final locations to the greatest extent reasonable. Above ceiling framing to support ceiling mounted equipment shall be complete. The above ceiling construction shall be complete to the extent that after the inspection the ceiling material can be installed without disturbance.

(d) **Final Inspection(s):** A Final Inspection shall establish that the Work, or a designated portion of the Work, is Substantially Complete in accordance with Article 32 and is accepted by the Architect, Owner, and DCM Project Inspector as being ready for the Owner's occupancy or use. At the conclusion of this inspection, items requiring correction or completion ("punch list" items) shall be minimal and require only a short period of time for accomplishment to establish Final Acceptance of the Work. If the Work, or designated portion of the Work, includes the installation, or modification, of a fire alarm system or other life safety systems essential to occupancy, such systems shall have been tested and appropriately certified before the Final Inspection.

(e) **Year-end Inspection(s):** An inspection of the Work, or each separately completed portion thereof, is required near the end of the Contractor's one year warranty period(s). The subsequent delivery of the Architect's report of this inspection will serve as confirmation that the Contractor was notified of Defective Work found within the warranty period in accordance with Article 35.

(2) **PERIODIC INSPECTIONS.** Periodic Inspections are conducted throughout the course of the Work by the Architect, the Architect's consultants, their representatives, and the DCM Project Inspector, jointly or independently, with or without advance notice to the Contractor.

(3) **SPECIFIED INSPECTIONS and TESTS.** Specified Inspections and Tests include inspections, tests, demonstrations, and approvals that are either specified in the Contract Documents or required by laws, ordinances, rules, regulations, or orders of public authorities having jurisdiction, to be performed by the Contractor, one of its Subcontractors, or an independent testing laboratory or firm (whether paid for by the Contractor or Owner).

C. INSPECTIONS by the ARCHITECT

- (1) The Architect is not authorized to revoke, alter, relax, or waive any requirements of the Contract Documents (other than “minor” deviations as defined in Article 9 and “minor” changes as defined in Article 19), to finally approve or accept any portion of the Work or to issue instructions contrary to the Contract Documents without concurrence of the Owner.
- (2) The Architect will visit the site at intervals appropriate to the stage of the Contractor’s operations and as otherwise necessary to:
 - (a) become generally familiar with the in-progress and completed Work and the quality of the Work,
 - (b) determine whether the Work is progressing in general accordance with the Contractor’s schedule and is likely to be completed within the Contract Time,
 - (c) visually compare readily accessible elements of the Work to the requirements of the Contract Documents to determine, in general, if the Contractor’s performance of the Work indicates that the Work will conform to the requirements of the Contract Documents when completed,
 - (d) endeavor to guard the Owner against Defective Work,
 - (e) review and address with the Contractor any problems in implementing the requirements of the Contract Documents that the Contractor may have encountered, and
 - (f) keep the Owner fully informed about the Project.
- (3) The Architect shall have the authority to reject Defective Work or require its correction, but shall not be required to make exhaustive investigations or examinations of the in-progress or completed portions of the Work to expose the presence of Defective Work. However, it shall be an obligation of the Architect to report in writing, to the Owner, Contractor, and DCM Project Inspector, any Defective Work recognized by the Architect.
- (4) The Architect shall have the authority to require the Contractor to stop work only when, in the Architect’s reasonable opinion, such stoppage is necessary to avoid Defective Work. The Architect shall not be liable to the Contractor or Owner for the consequences of any decisions made by the Architect in good faith either to exercise or not to exercise this authority.
- (5) “Inspections by the Architect” includes appropriate inspections by the Architect’s consultants as dictated by their respective disciplines of design and the stage of the Contractor’s operations.

D. INSPECTIONS by the DCM PROJECT INSPECTOR

- (1) The DCM Project Inspector will:
 - (a) participate in scheduled inspections and conferences as practicable,
 - (b) perform periodic inspections of in-progress and completed Work to ensure code compliance of the Project and general conformance of the Work with the Contract Documents, and
 - (c) monitor the Contractor's progress and performance of the Work.
- (2) The DCM Project Inspector shall have the authority to:
 - (a) reject Work that is not in compliance with the State Building Code adopted by the DCM, unless the Work is in accordance with the Contract Documents in which case the DCM Project Inspector will advise the Architect to initiate appropriate corrective action, and
 - (b) notify the Architect, Owner, and Contractor of Defective Work recognized by the DCM Project Inspector.

(3) The DCM Project Inspector's periodic inspections will usually be scheduled around key stages of construction based upon information reported by the Architect. As the Architect or Owner deems appropriate, the DCM Project Inspector, as well as other members of the Technical Staff, can be requested to schedule special inspections or meetings to address specific matters. The written findings of DCM Project Inspector will be transmitted to the Owner, Contractor, and Architect.

(4) The DCM Project Inspector is not authorized to revoke, alter, relax, or waive any requirements of the Contract Documents, to finally approve or accept any portion of the Work or to issue instructions contrary to the Contract Documents without concurrence of the Owner. The Contractor shall not proceed with Work as a result of instructions or findings of the DCM Project Inspector which the Contractor considers to be a change to the requirements of the Contract Documents without written authorization of the Owner through the Architect.

E. UNCOVERING WORK

(1) If the Contractor covers a portion of the Work before it is examined by the Architect and this is contrary to the Architect's request or specific requirements in the Contract Documents, then, upon written request of the Architect, the Work must be uncovered for the Architect's examination and be replaced at the Contractor's expense without change in the Contract Time.

(2) Without a prior request or specific requirement that Work be examined by the Architect before it is covered, the Architect may request that Work be uncovered for examination and the Contractor shall uncover it. If the Work is in accordance with the Contract Documents, the Contract Sum shall be equitably adjusted under Article 19 to compensate the Contractor for the costs of uncovering and replacement. If the Work is not in accordance with the Contract Documents, uncovering, correction, and replacement 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.

F. SPECIFIED INSPECTIONS and TESTS

(1) The Contractor shall schedule and coordinate Specified Inspections and Tests to be made at appropriate times so as not to delay the progress of the Work or the work of the Owner or separate contractors. If the Contract Documents require that a Specified Inspection or Test be witnessed or attended by the Architect or Architect's consultant, the Contractor shall give the Architect timely notice of the time and place of the Specified Inspection or Test. If a Specified Inspection or Test reveals that Work is not in compliance with requirements of the Contract Documents, the Contractor shall bear the costs of correction, repeating the Specified Inspection or Test, and any related costs incurred by the Owner, including reasonable charges, if any, by the Architect for additional services. Through appropriate Contract Change Order the Owner shall bear costs of tests, inspections or approvals which become Contract requirements subsequent to the receipt of bids.

(2) If the Architect, Owner, or public authority having jurisdiction determines that inspections, tests, demonstrations, or approvals in addition to Specified Inspections and Tests are required, the Contractor shall, upon written instruction from the Architect, arrange for their performance by an entity acceptable to the Owner, giving timely notice to the architect of the time and place of their performance. Related costs shall be borne by the Owner unless the procedures reveal that Work is

not in compliance with requirements of the Contract Documents, in which case the Contractor shall bear the costs of correction, repeating the procedures, and any related costs incurred by the Owner, including reasonable charges, if any, by the Architect for additional services.

(3) Unless otherwise required by the Contract Documents, required certificates of Specified Inspections and Tests shall be secured by the Contractor and promptly delivered to the Architect.

(4) Failure of any materials to pass Specified Inspections and Tests will be sufficient cause for refusal to consider any further samples of the same brand or make of that material for use in the Work.

ARTICLE 17 **CORRECTION of DEFECTIVE WORK**

- A. The Contractor shall, at the Contractor's expense, promptly correct Defective Work rejected by the Architect or which otherwise becomes known to the Contractor, removing the rejected or nonconforming materials and construction from the project site.
- B. Correction of Defective Work shall be performed in such a timely manner as will avoid delay of completion, use, or occupancy of the Work and the work of the Owner and separate contractors.
- C. The Contractor shall bear all expenses related to the correction of Defective Work, including but not limited to: (1) additional testing and inspections, including repeating Specified Inspections and Tests, (2) reasonable services and expenses of the Architect, and (3) the expense of making good all work of the Contractor, Owner, or separate contractors destroyed or damaged by the correction of Defective Work.

ARTICLE 18 **DEDUCTIONS for UNCORRECTED WORK**

If the Owner deems it advisable and in the Owner's interest to accept Defective Work, the Owner may allow part or all of such Work to remain in place, provided an equitable deduction from the Contract Sum, acceptable to the Owner, is offered by the Contractor.

ARTICLE 19 **CHANGES in the WORK**

A. GENERAL

(1) The Owner may at any time direct the Contractor to make changes in the Work which are within the general scope of the Contract, including changes in the Drawings, Specifications, or other portions of the Contract Documents to add, delete, or otherwise revise portions of the Work. The Architect is authorized by the Owner to direct "minor" changes in the Work by written order to the Contractor. "Minor" changes in the Work are defined as those which are in the interest of the Owner, do not materially alter the quality or performance of the finished Work, and do not affect the cost or time of performance of the Work. Changes in the Work which are not "minor" may be

authorized only by the Owner.

(2) If the Owner directs a change in the Work, the change shall be incorporated into the Contract by a Contract Change Order prepared by the Architect and signed by the Contractor, Owner, and other signatories to the Construction Contract, stating their agreement upon the change or changes in the Work and the adjustments, if any, in the Contract Sum and the Contract Time.

(3) Subject to compliance with Alabama's Public Works Law, the Owner may, upon agreement by the Contractor, incorporate previously unawarded bid alternates into the Contract.

(4) In the event of a claim or dispute as to the appropriate adjustment to the Contract Sum or Contract Time due to a directive to make changes in the Work, the Work shall proceed as provided in this article subject to subsequent agreement of the parties or final resolution of the dispute pursuant to Article 24.

(5) Consent of surety will be obtained for all Contract Change Orders involving an increase in the Contract Sum.

(6) Changes in the Work shall be performed under applicable provisions of the Contract Documents and the Contractor shall proceed promptly to perform changes in the Work, unless otherwise directed by the Owner through the Architect.

(7) All change orders require DCM Form C-12: Contract Change Order and DCM Form B-11: Change Order Justification. Only Change Orders 10% or greater of the current contract amount require the Owner's legal advisor's signature on DCM Form B-11: Change Order Justification.

B. DETERMINATION of ADJUSTMENT of the CONTRACT SUM

The adjustment of the Contract Sum resulting from a change in the Work shall be determined by one of the following methods, or a combination thereof, as selected by the Owner:

(1) **Lump Sum.** By mutual agreement to a lump sum based on or negotiated from an itemized cost proposal from the Contractor. Additions to the Contract Sum shall include the Contractor's direct costs plus a maximum 15% markup for overhead and profit. Where subcontract work is involved the total mark-up for the Contractor and a Subcontractor shall not exceed 25%. **Changes which involve a net credit to the Owner shall include fair and reasonable credits for overhead and profit on the deducted work, in no case less than 5%.** For the purposes of this method of determining an adjustment of the Contract Sum, "overhead" shall cover the Contractor's indirect costs of the change, such as the cost of bonds, superintendent and other job office personnel, watchman, job office, job office supplies and expenses, temporary facilities and utilities, and home office expenses.

(2) **Unit Price.** By application of Unit Prices included in the Contract or subsequently agreed to by the parties. However, if the character or quantity originally contemplated is materially changed so that application of such unit price to quantities of Work proposed will cause substantial inequity to either party, the applicable unit price shall be equitably adjusted.

(3) **Force Account.** By directing the Contractor to proceed with the change in the Work on a "force account" basis under which the Contractor shall be reimbursed for reasonable expenditures incurred by the Contractor and its Subcontractors in performing added Work and the Owner shall

receive reasonable credit for any deleted Work. The Contractor shall keep and present, in such form as the Owner may prescribe, an itemized accounting of the cost of the change together with sufficient supporting data. Unless otherwise stated in the directive, the adjustment of the Contract Sum shall be limited to the following:

- (a) costs of labor and supervision, including employee benefits, social security, retirement, unemployment and workers' compensation insurance required by law, agreement, or under Contractor's or Subcontractor's standard personnel policy;
- (b) cost of materials, supplies and equipment, including cost of delivery, whether incorporated or consumed;
- (c) rental cost of machinery and equipment, not to exceed prevailing local rates if contractor-owned;
- (d) costs of premiums for insurance required by the Contract Documents, permit fees, and sales, use or similar taxes related to the change in the Work;
- (e) reasonable credits to the Owner for the value of deleted Work, without Contractor or Subcontractor mark-ups; and
- (f) for additions to the Contract Sum, mark-up of the Contractor's direct costs for overhead and profit not exceeding 15% on Contractor's work nor exceeding 25% for Contractor and Subcontractor on a Subcontractor's work. **Changes which involve a net credit to the Owner shall include fair and reasonable credits for overhead and profit on the deducted work, in no case less than 5%.** For the purposes of this method of determining an adjustment of the Contract Sum, "overhead" shall cover the Contractor's indirect costs of the change, such as the cost of insurance other than mentioned above, bonds, superintendent and other job office personnel, watchman, use and rental of small tools, job office, job office supplies and expenses, temporary facilities and utilities, and home office expenses.

C. ADJUSTMENT of the CONTRACT TIME due to CHANGES

(1) Unless otherwise provided in the Contract Documents, the Contract Time shall be equitably adjusted for the performance of a change provided that the Contractor notifies the Architect in writing that the change will increase the time required to complete the Work. Such notice shall be provided no later than:

- (a) with the Contractor's cost proposal stating the number of days of extension requested, or
- (b) within ten days after the Contractor receives a directive to proceed with a change in advance of submitting a cost proposal, in which case the notice should provide an estimated number of days of extension to be requested, which may be subject to adjustment in the cost proposal.

(2) The Contract Time shall be extended only to the extent that the change affects the time required to complete the entire Work of the Contract, taking into account the concurrent performance of the changed and unchanged Work.

D. CHANGE ORDER PROCEDURES

(1) If the Owner proposes to make a change in the Work, the Architect will request that the Contractor provide a cost proposal for making the change to the Work. The request shall be in writing and shall adequately describe the proposed change using drawings, specifications, narrative, or a combination thereof. Within 21 days after receiving such a request, or such other time as may be stated in the request, the Contractor shall prepare and submit to the Architect a written proposal, properly itemized and supported by sufficient substantiating data to facilitate evaluation. The stated

time within which the Contractor must submit a proposal may be extended if, within that time, the Contractor makes a written request with reasonable justification thereof.

(2) The Contractor may voluntarily offer a change proposal which, in the Contractor's opinion, will reduce the cost of construction, maintenance, or operation or will improve the cost-effective performance of an element of the Project, in which case the Owner, through the Architect, will accept, reject, or respond otherwise within 21 days after receipt of the proposal, or such other reasonable time as the Contractor may state in the proposal.

(3) If the Contractor's proposal is acceptable to the Owner, or is negotiated to the mutual agreement of the Contractor and Owner, the Architect will prepare an appropriate Contract Change Order for execution. Upon receipt of the fully executed Contract Change Order, the Contractor shall proceed with the change.

(4) In advance of delivery of a fully executed Contract Change Order, the Architect may furnish to the Contractor a written authorization to proceed with an agreed change. However, such an authorization shall be effective only if it:

- (a) identifies the Contractor's accepted or negotiated proposal for the change,
- (b) states the agreed adjustments, if any, in Contract Sum and Contract Time,
- (c) states that funds are available to pay for the change, and
- (d) is signed by the Owner.

(5) If the Contractor and Owner cannot agree on the amount of the adjustment in the Contract Sum for a change, the Owner, through the Architect, may order the Contractor to proceed with the change on a Force Account basis, but the net cost to the Owner shall not exceed the amount quoted in the Contractor's proposal. Such order shall state that funds are available to pay for the change.

(6) If the Contractor does not promptly respond to a request for a proposal, or the Owner determines that the change is essential to the final product of the Work and that the change must be effected immediately to avoid delay of the Project, the Owner may:

- (a) determine with the Contractor a sufficient maximum amount to be authorized for the change and
- (b) direct the Contractor to proceed with the change on a Force Account basis pending delivery of the Contractor's proposal, stating the maximum increase in the Contract Sum that is authorized for the change.

(7) Pending agreement of the parties or final resolution of any dispute of the total amount due the Contractor for a change in the Work, amounts not in dispute for such changes in the Work may be included in Applications for Payment accompanied by an interim Change Order indicating the parties' agreement with part of all of such costs or time extension. Once a dispute is resolved, it shall be implemented by preparation and execution of an appropriate Change Order.

ARTICLE 20

CLAIMS for EXTRA COST or EXTRA WORK

- A. If the Contractor considers any instructions by the Architect, Owner, DCM Project Inspector, or public authority having jurisdiction to be contrary to the requirements of the Contract Documents and will involve extra work and/or cost under the Contract, the Contractor shall give the Architect

written notice thereof within ten days after receipt of such instructions, and in any event before proceeding to execute such work. As used in this Article, “instructions” shall include written or oral clarifications, directions, instructions, interpretations, or determinations.

- B. The Contractor’s notification pursuant to Paragraph 20.A shall state: (1) the date, circumstances, and source of the instructions, (2) that the Contractor considers the instructions to constitute a change to the Contract Documents and why, and (3) an estimate of extra cost and time that may be involved to the extent an estimate may be reasonably made at that time.
- C. Except for claims relating to an emergency endangering life or property, no claim for extra cost or extra work shall be considered in the absence of prior notice required under Paragraph 20.A.
- D. Within ten days of receipt of a notice pursuant to Paragraph 20.A, the Architect will respond in writing to the Contractor, stating one of the following:
 - (1) The cited instruction is rescinded.
 - (2) The cited instruction is a change in the Work and in which manner the Contractor is to proceed with procedures of Article 19, Changes in the Work.
 - (3) The cited instruction is reconfirmed, is not considered by the Architect to be a change in the Contract Documents, and the Contractor is to proceed with Work as instructed.
- E. If the Architect’s response to the Contractor is as in Paragraph 20.D(3), the Contractor shall proceed with the Work as instructed. If the Contractor continues to consider the instructions to constitute a change in the Contract Documents, the Contractor shall, within ten days after receiving the Architect’s response, notify the Architect in writing that the Contractor intends to submit a claim pursuant to Article 24, Resolution of Claims and Disputes

ARTICLE 21

DIFFERING SITE CONDITIONS

A. DEFINITION

“Differing Site Conditions” are:

- (1) subsurface or otherwise concealed physical conditions at the Project site which differ materially from those indicated in the Contract Documents, or
- (2) unknown physical conditions at the Project site which are of an unusual nature, differing materially from conditions ordinarily encountered and generally recognized as inherent in construction activities of the character required by the Contract Documents.

B. PROCEDURES

If Differing Site Conditions are encountered, then the party discovering the condition shall promptly notify the other party before the condition is disturbed and in no event later than ten days after discovering the condition. Upon such notice and verification that a Differing Site Condition exists, the Architect will, with reasonable promptness and with the Owner’s concurrence, make changes in the Drawings and/or Specifications as are deemed necessary to conform to the Differing

Site Condition. Any increase or decrease in the Contract Sum or Contract Time that is warranted by the changes will be made as provided under Article 19, Changes in the Work. If the Architect determines a Differing Site Condition has not been encountered, the Architect shall notify the Owner and Contractor in writing, stating the reason for that determination.

ARTICLE 22 **CLAIMS for DAMAGES**

If either party to the Contract 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 after the discovery. The notice shall provide sufficient detail to enable the other party to investigate the matter.

ARTICLE 23 **DELAYS**

- A.** A delay beyond the Contractor's control at any time in the commencement or progress of Work by an act or omission of the Owner, Architect, or any separate contractor or by labor disputes, unusual delay in deliveries, unavoidable casualties, fires, abnormal floods, tornadoes, or other cataclysmic events of nature, may entitle the Contractor to an extension of the Contract Time provided, however, that the Contractor shall, within ten days after the delay first occurs, give written notice to the Architect of the cause of the delay and its probable effect on progress of the entire Work.
- B.** Adverse weather conditions that are more severe than anticipated for the locality of the Work during any given month may entitle the Contractor to an extension of Contract Time provided, however;
- (1)** the weather conditions had an adverse effect on construction scheduled to be performed during the period in which the adverse weather occurred, which in reasonable sequence would have an effect on completion of the entire Work,
 - (2)** the Contractor shall, within twenty-one days after the end of the month in which the delay occurs, give the Architect written notice of the delay that occurred during that month and its probable effect on progress of the Work, and
 - (3)** within a reasonable time after giving notice of the delay, the Contractor provides the Architect with sufficient data to document that the weather conditions experienced were unusually severe for the locality of the Work during the month in question. Unless otherwise provided in the Contract Documents, data documenting unusually severe weather conditions shall compare actual weather conditions to the average weather conditions for the month in question during the previous five years as recorded by the National Oceanic and Atmospheric Administration (NOAA) or similar record-keeping entities.
- C.** Adjustments, if any, of the Contract Time pursuant to this Article shall be incorporated into the Contract by a Contract Change Order prepared by the Architect and signed by the Contractor, Owner, and other signatories to the Construction Contract or, at closeout of the Contract, by mutual

written agreement between the Contractor and Owner. The adjustment of the Contract Time shall not exceed the extent to which the delay extends the time required to complete the entire Work of the Contract.

- D. The Contractor shall not be entitled to any adjustment of the Contract Sum for damage due to delays claimed pursuant to this Article unless the delay was caused by the Owner or Architect and was either:
- (1) the result of bad faith or active interference or
 - (2) beyond the contemplation of the parties and not remedied within a reasonable time after notification by the Contractor of its presence.

ARTICLE 24

RESOLUTION of CLAIMS and DISPUTES

A. APPLICABILITY of ARTICLE

(1) As used in this Article, “Claims and Disputes” include claims or disputes asserted by the Contractor, its Surety, or Owner arising out of or related to the Contract, or its breach, including without limitation claims seeking, under the provisions of the Contract, equitable adjustment of the Contract Sum or Contract Time and claims and disputes arising between the Contractor (or its Surety) and Owner regarding interpretation of the Contract Documents, performance of the Work, or breach of or compliance with the terms of the Contract.

(2) “Resolution” addressed in this Article applies only to Claims and Disputes arising between the Contractor (or its Surety) and Owner and asserted after execution of the Construction Contract and prior to the date upon which final payment is made. Upon making application for final payment the Contractor may reserve the right to subsequent Resolution of existing Claims by including a list of all Claims, in stated amounts, which remain to be resolved and specifically excluding them from any release of claims executed by the Contractor, and in that event Resolution may occur after final payment is made.

B. CONTINUANCE of PERFORMANCE

An unresolved Claim or Dispute shall not be just cause for the Contractor to fail or refuse to proceed diligently with performance of the Contract or for the Owner to fail or refuse to continue to make payments in accordance with the Contract Documents.

C. GOOD FAITH EFFORT to SETTLE

The Contractor and Owner agree that, upon the assertion of a Claim by the other, they will make a good faith effort, with the Architect’s assistance and advice, to achieve mutual resolution of the Claim. If mutually agreed, the Contractor and Owner may endeavor to resolve a Claim through mediation. If efforts to settle are not successful, the Claim shall be resolved in accordance with paragraph D or E below, whichever applies.

D. FINAL RESOLUTION for STATE-FUNDED CONTRACTS

(1) If the Contract is funded in whole or in part with state funds, the final Resolution of Claims

and Disputes which cannot be resolved by the Contractor (or its Surety) and Owner shall be by the Director, whose decision shall be final, binding, and conclusive upon the Contractor, its Surety, and the Owner.

(2) When it becomes apparent to the party asserting a Claim (the Claimant) that an impasse to mutual resolution has been reached, the Claimant may request in writing to the Director that the Claim be resolved by decision of the Director. Such request by the Contractor (or its Surety) shall be submitted through the Owner. Should the Owner fail or refuse to submit the Contractor's request within ten days of receipt of same, the Contractor may forward such request directly to the Director. Upon receipt of a request to resolve a Claim, the Director will instruct the parties as to procedures to be initiated and followed.

(3) If the respondent to a Claim fails or refuses to participate or cooperate in the Resolution procedures to the extent that the Claimant is compelled to initiate legal proceedings to induce the Respondent to participate or cooperate, the Claimant will be entitled to recover, and may amend its Claim to include, the expense of reasonable attorney's fees so incurred.

E. FINAL RESOLUTION for LOCALLY-FUNDED CONTRACTS

If the Contract is funded in whole with funds provided by a city or county board of education or other local governmental authority and the Contract Documents do not stipulate a binding alternative dispute resolution method, the final resolution of Claims and Disputes which cannot be resolved by the Contractor (or its Surety) and Owner may be by any legal remedy available to the parties. Alternatively, upon the written agreement of the Contractor (or its Surety) and the Owner, final Resolution of Claims and Disputes may be by submission to binding arbitration before a neutral arbitrator or panel or by submission to the Director in accordance with preceding Paragraph D.

ARTICLE 25

OWNER'S RIGHT to CORRECT DEFECTIVE WORK

If the Contractor fails or refuses to correct Defective Work in a timely manner that will avoid delay of completion, use, or occupancy of the Work or work by the Owner or separate contractors, the Architect may give the Contractor written Notice to Cure the Defective Work within a reasonable, stated time. If within ten days after receipt of the Notice to Cure the Contractor has not proceeded and satisfactorily continued to cure the Defective Work or provided the Architect with written verification that satisfactory positive action is in process to cure the Defective Work, the Owner may, without prejudice to any other remedy available to the Owner, correct the Defective Work and deduct the actual cost of the correction from payment then or thereafter due to the Contractor.

ARTICLE 26

OWNER'S RIGHT to STOP or SUSPEND the WORK

A. STOPPING the WORK for CAUSE

If the Contractor fails to correct Defective Work or persistently fails to carry out Work in accordance with the Contract Documents, the Owner may direct the Contractor in writing to stop the Work, or any part of the Work, until the cause for the Owner's directive has been eliminated;

however, the Owner's right to stop the Work shall not be construed as a duty of the Owner to be exercised for the benefit of the Contractor or any other person or entity.

B. SUSPENSION by the OWNER for CONVENIENCE

(1) The Owner may, at any time and without cause, direct the Contractor in writing to suspend, delay or interrupt the Work, or any part of the Work, for a period of time as the Owner may determine.

(2) The Contract Sum and Contract Time shall be adjusted, pursuant to Article 19, for reasonable increases in the cost and time caused by an Owner-directed suspension, delay or interruption of Work for the Owner's convenience. However, no adjustment to the Contract Sum shall be made to the extent that the same or concurrent Work is, was or would have been likewise suspended, delayed or interrupted for other reasons not caused by the Owner.

ARTICLE 27

OWNER'S RIGHT to TERMINATE CONTRACT

A. TERMINATION by the OWNER for CAUSE

(1) **Causes:** The Owner may terminate the Contractor's right to complete the Work, or any designated portion of the Work, if the Contractor:

- (a) should be adjudged bankrupt, or should make a general assignment for the benefit of the Contractor's creditors, or if a receiver should be appointed on account of the Contractor's insolvency to the extent termination for these reasons is permissible under applicable law;
- (b) refuses or fails to prosecute the Work, or any part of the Work, with the diligence that will insure its completion within the Contract Time, including any extensions, or fails to complete the Work within the Contract Time;
- (c) refuses or fails to perform the Work, including prompt correction of Defective Work, in a manner that will insure that the Work, when fully completed, will be in accordance with the Contract Documents;
- (d) fails to pay for labor or materials supplied for the Work or to pay Subcontractors in accordance with the respective Subcontract;
- (e) persistently disregards laws, ordinances, or rules, regulations or orders of a public authority having jurisdiction, or the instructions of the Architect or Owner; or
- (f) is otherwise guilty of a substantial breach of the Contract.

(2) **Procedure for Unbonded Construction Contracts (Generally, contracts less than \$50,000):**

(a) **Notice to Cure:** In the presence of any of the above conditions the Architect may give the Contractor written notice to cure the condition within a reasonable, stated time, but not less than ten days after the Contractor receives the notice.

(b) **Notice of Termination:** If, at the expiration of the time stated in the Notice to Cure, the Contractor has not proceeded and satisfactorily continued to cure the condition or provided the Architect with written verification that satisfactory positive action is in process to cure the condition, the Owner may, without prejudice to any other rights or remedies of the Owner, give the Contractor written notice that the Contractor's right to complete the Work, or a designated portion of the Work, shall terminate seven days after the Contractor's receipt of the

written Notice of Termination.

(c) If the Contractor satisfies a Notice to Cure, but the condition for which the notice was first given reoccurs, the Owner may give the Contractor a seven day Notice of Termination without giving the Contractor another Notice to Cure.

(d) At the expiration of the seven days of the termination notice, the Owner may:

.1 take possession of the site, of all materials and equipment stored on and off site, and of all Contractor-owned tools, construction equipment and machinery, and facilities located at the site, and

.2 finish the Work by whatever reasonable method the Owner may deem expedient.

(e) The Contractor shall not be entitled to receive further payment under the Contract until the Work is completed.

(f) If the Owner's cost of completing the Work, including correction of Defective Work, compensation for additional architectural, engineering, managerial, and administrative services, and reasonable attorneys' fees due to the default and termination, is less than the unpaid balance of the Contract Sum, the excess balance less liquidated damages for delay shall be paid to the Contractor. If such cost to the Owner including attorney's fees, plus liquidated damages, exceeds the unpaid balance of the Contract Sum, the Contractor shall pay the difference to the Owner. Final Resolution of any claim or Dispute involving the termination or any amount due any party as a result of the termination shall be pursuant to Article 24.

(g) Upon the Contractor's request, the Owner shall furnish to the Contractor a detailed accounting of the Owner's cost of completing the Work.

(3) Procedure for Bonded Construction Contracts (Generally, contracts over \$50,000):

(a) **Notice to Cure:** In the presence of any of the above conditions the Architect may give the Contractor and its Surety written Notice to Cure the condition within a reasonable, stated time, but not less than ten days after the Contractor receives the notice.

(b) **Notice of Termination:** If, at the expiration of the time stated in the Notice to Cure, the Contractor has not proceeded and satisfactorily continued to cure the condition or provided the Architect with written verification that satisfactory positive action is in process to cure the condition, the Owner may, without prejudice to any other rights or remedies of the Owner, give the Contractor and its Surety written notice declaring the Contractor to be in default under the Contract and stating that the Contractor's right to complete the Work, or a designated portion of the Work, shall terminate seven days after the Contractor's receipt of the written Notice of Termination.

(c) If the Contractor satisfies a Notice to Cure, but the condition for which the notice was first given reoccurs, the Owner may give the Contractor a Notice of Termination without giving the Contractor another Notice to Cure.

(d) **Demand on the Performance Bond:** With the Notice of Termination the Owner shall give the Surety a written demand that, upon the effective date of the Notice of Termination, the Surety promptly fulfill its obligation to take charge of and complete the Work in accordance with the terms of the Performance Bond.

(e) **Surety Claims:** Upon receiving the Owner's demand on the Performance Bond, the Surety shall assume all rights and obligations of the Contractor under the Contract. However, the Surety shall also have the right to assert "Surety Claims" to the Owner, which are defined as claims relating to acts or omissions of the Owner or Architect prior to termination of the Contractor which may have prejudiced its rights as Surety or its interest in the unpaid balance of the Contract Sum. If the Surety wishes to assert a Surety Claim, it shall give the Owner, through the Architect, written notice within twenty-one days after first recognizing the

condition giving rise to the Surety Claim. The Surety Claim shall then be submitted to the Owner, through the Architect, no later than sixty days after giving notice thereof, but no such Surety Claims shall be considered if submitted after the date upon which final payment becomes due. Final resolution of Surety Claims shall be pursuant to Article 24, Resolution of Claims and Disputes. The presence or possibility of a Surety Claim shall not be just cause for the Surety to fail or refuse to take charge of and complete the Work or for the Owner to fail or refuse to continue to make payments in accordance with the Contract Documents.

(f) Payments to Surety: The Surety shall be paid for completing the Work in accordance with the Contract Documents as if the Surety were the Contractor. The Owner shall have the right to deduct from payments to the Surety any reasonable costs incurred by the Owner, including compensation for additional architectural, engineering, managerial, and administrative services, and attorneys' fees as necessitated by termination of the Contractor and completion of the Work by the Surety. No further payments shall be made to the Contractor by the Owner. The Surety shall be solely responsible for any accounting to the Contractor for the portion of the Contract Sum paid to Surety by Owner or for the costs and expenses of completing the Work.

(4) Wrongful Termination: If any notice of termination by the Owner for cause, made in good faith, is determined to have been wrongly given, such termination shall be effective and compensation therefore determined as if it had been a termination for convenience pursuant to Paragraph B below.

B. TERMINATION by the OWNER for CONVENIENCE

(1) The Owner may, without cause and at any time, terminate the performance of Work under the Contract in whole, or in part, upon determination by the Owner that such termination is in the Owner's best interest. Such termination is referred to herein as Termination for Convenience.

(2) Upon receipt of a written notice of Termination for Convenience from the Owner, the Contractor shall:

- (a)** stop Work as specified in the notice;
- (b)** enter into no further subcontracts or purchase orders for materials, services, or facilities, except as may be necessary for Work directed to be performed prior to the effective date of the termination or to complete Work that is not terminated;
- (c)** terminate all existing subcontracts and purchase orders to the extent they relate to the terminated Work;
- (d)** take such actions as are necessary, or directed by the Architect or Owner, to protect, preserve, and make safe the terminated Work; and
- (e)** complete performance of the Work that is not terminated.

(3) In the event of Termination for Convenience, the Contractor shall be entitled to receive payment for the Work performed prior to its termination, including materials and equipment purchased and delivered for incorporation into the terminated Work, and any reasonable costs incurred because of the termination. Such payment shall include reasonable mark-up of costs for overhead and profit, not to exceed the limits stated in Article 19, Changes in the Work. The Contractor shall be entitled to receive payment for reasonable anticipated overhead ("home office") and shall not be entitled to receive payment for any profits anticipated to have been gained from the terminated Work. A proposal for decreasing the Contract Sum shall be submitted to the Architect by the Contractor in such time and detail, and with such supporting documentation, as is reasonably

directed by the Owner. Final modification of the Contract shall be by Contract Change Order pursuant to Article 19. Any Claim or Dispute involving the termination or any amount due a party as a result shall be resolved pursuant to Article 24.

ARTICLE 28
CONTRACTOR'S RIGHT to SUSPEND or TERMINATE the CONTRACT

A. SUSPENSION by the OWNER

If all of the Work is suspended or delayed for the Owner's convenience or under an order of any court, or other public authority, for a period of sixty days, through no act or fault of the Contractor or a Subcontractor, or anyone for whose acts they may be liable, then the Contractor may give the Owner a written Notice of Termination which allows the Owner fourteen days after receiving the Notice in which to give the Contractor appropriate written authorization to resume the Work. Absent the Contractor's receipt of such authorization to resume the Work, the Contract shall terminate upon expiration of this fourteen day period and the Contractor will be compensated by the Owner as if the termination had been for the Owner's convenience pursuant to Article 27.B.

B. NONPAYMENT

The Owner's failure to pay the undisputed amount of an Application for Payment within sixty days after receiving it from the Architect (Certified pursuant to Article 30) shall be just cause for the Contractor to give the Owner fourteen days' written notice that the Work will be suspended pending receipt of payment but that the Contract shall terminate if payment is not received within fourteen days (or a longer period stated by the Contractor) of the expiration of the fourteen day notice period.

(1) If the Work is then suspended for nonpayment, but resumed upon receipt of payment, the Contractor will be entitled to compensation as if the suspension had been by the Owner pursuant to Article 26, Paragraph B.

(2) If the Contract is then terminated for nonpayment, the Contractor will be entitled to compensation as if the termination had been by the Owner pursuant to Article 27, Paragraph B.

ARTICLE 29
PROGRESS PAYMENTS

A. FREQUENCY of PROGRESS PAYMENTS

Unless otherwise provided in the Contract Documents, the Owner will make payments to the Contractor as the Work progresses based on monthly estimates prepared and certified by the Contractor, approved and certified by the Architect, and approved by the Owner and other authorities whose approval is required.

B. SCHEDULE of VALUES

Within ten days after receiving the Notice to Proceed the Contractor shall submit to the Architect a

DCM Form C-10SOV, Schedule of Values, which is a breakdown of the Contract Sum showing the value of the various parts of the Work for billing purposes. The Schedule of Values shall be printable on 8.5" × 11" for DCM's scanning purposes and shall divide the Contract Sum into as many parts ("line items") as the Architect and Owner determine necessary to permit evaluation and to show amounts attributable to Subcontractors. The Contractor's overhead and profit are to be proportionately distributed throughout the line items of the Schedule of Values. Upon approval, the Schedule of Values shall be used as a basis for monthly Applications for Payment, unless it is later found to be in error. Approved change order amounts shall be added to or incorporated into the Schedule of Values as mutually agreed by the Contractor and Architect.

C. APPLICATIONS for PAYMENTS

(1) Based on the approved Schedule of Values, each DCM Form C-10, Application and Certificate for Payment shall show the Contractor's estimate of the value of Work performed in each line item as of the end of the billing period. The Contractor's cost of materials and equipment not yet incorporated into the Work, but delivered and suitably stored on the site, may be considered in monthly Applications for Payment. One payment application per month may be submitted. Each DCM Form C-10, Application and Certificate for Payment shall match to the penny and be accompanied by an attached DCM Form C-10SOV, Schedule of Values.

(2) The Contractor's estimate of the value of Work performed and stored materials must represent such reasonableness as to warrant certification by the Architect to the Owner in accordance with Article 30. Each monthly Application for Payment shall be supported by such data as will substantiate the Contractor's right to payment, including without limitation copies of requisitions from subcontractors and material suppliers.

(3) If no other date is stated in the Contract Documents or agreed upon by the parties, each Application for Payment shall be submitted to the Architect on or about the first day of each month and payment shall be issued to the Contractor within thirty days after an Application for Payment is Certified pursuant to Article 30 and delivered to the Owner.

(4) Four copies of DCM Form C-10, Application and Certificate for Payment containing original signatures, with each copy of DCM Form C-10 to include all attachments, shall be submitted to DCM for review following the Contractor's, Notary's, Architect's and Owner's signatures.

D. MATERIALS STORED OFF SITE

Unless otherwise provided in the Contract Documents, the Contractor's cost of materials and equipment to be incorporated into the Work, which are stored off the site, may also be considered in monthly Applications for Payment under the following conditions:

- (1) the contractor has received written approval from the Architect and Owner to store the materials or equipment off site in advance of delivering the materials to the off site location;
- (2) a Certificate of Insurance is furnished to the Architect evidencing that a special insurance policy, or rider to an existing policy, has been obtained by the Contractor providing all-risk property insurance coverage, specifically naming the materials or equipment stored, and naming the Owner as an additionally insured party;
- (3) the Architect is provided with a detailed inventory of the stored materials or equipment and the materials or equipment are clearly marked in correlation to the inventory to facilitate inspection and verification of the presence of the materials or equipment by the Architect or

Owner;

- (4) the materials or equipment are properly and safely stored in a bonded warehouse, or a facility otherwise approved in advance by the Architect and Owner; and
- (5) 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.

E. RETAINAGE

(1) "Retainage" is defined as the money earned and, therefore, belonging to the Contractor (subject to final settlement of the Contract) which has been retained by the Owner conditioned on final completion and acceptance of all Work required by the Contract Documents. Retainage shall not be relied upon by Contractor (or Surety) to cover or off-set unearned monies attributable to uncompleted or uncorrected Work.

(2) In making progress payments the Owner shall retain five percent of the estimated value of Work performed and the value of the materials stored for the Work; but after retainage has been held upon fifty percent of the Contract Sum, no additional retainage will be withheld.

F. CONTRACTOR'S CERTIFICATION

(1) Each Application for Payment shall bear the Contractor's notarized certification that, to the best of the Contractor's knowledge, information, and belief, the Work covered by the Application for Payment has been completed in accordance with the Contract Documents, that all amounts have been paid by the Contractor for Work for which previous Certificates for Payments were issued and payments received from the Owner and that the current payment shown in the Application for Payment has not yet been received.

(2) By making this certification the Contractor represents to the Architect and Owner that, upon receipt of previous progress payments from the Owner, the Contractor has promptly paid each Subcontractor, in accordance with the terms of its agreement with the Subcontractor, the amount due the Subcontractor from the amount included in the progress payment on account of the Subcontractor's Work and stored materials. The Architect and Owner may advise Subcontractors and suppliers regarding percentages of completion or amounts requested and/or approved in an Application for Payment on account of the Subcontractor's Work and stored materials.

G. PAYMENT ESTABLISHES OWNERSHIP

All material and Work covered by progress payments shall become the sole property of the Owner, but the Contractor shall not be relieved from the sole responsibility for the care and protection of material and Work upon which payments have been made and for the restoration of any damaged material and Work.

ARTICLE 30
CERTIFICATION and APPROVALS for PAYMENT

- A. The Architect's review, approval, and certification of Applications for Payment shall be based on the Architect's general knowledge of the Work obtained through site visits and the information provided by the Contractor with the Application. The Architect shall not be required to perform

- exhaustive examinations, evaluations, or estimates of the cost of completed or uncompleted Work or stored materials to verify the accuracy of amounts requested by the Contractor, but the Architect shall have the authority to adjust the Contractor's estimate when, in the Architect's reasonable opinion, such estimates are overstated or understated.
- B.** Within seven days after receiving the Contractor's monthly Application for Payment, or such other time as may be stated in the Contract Documents, the Architect will take one of the following actions:
- (1)** The Architect will approve and certify the Application as submitted and forward it to the Owner as a Certification for Payment for approval by the Owner (and other approving authorities, if any) and payment.
 - (2)** If the Architect takes exception to any amounts claimed by the Contractor and the Contractor and Architect cannot agree on revised amounts, the Architect will promptly issue a Certificate for Payment for the amount for which the Architect is able to certify to the Owner, transmitting a copy of same to the Contractor.
 - (3)** To the extent the Architect determines may be necessary to protect the Owner from loss on account of any of the causes stated in Article 31, the Architect may subtract from the Contractor's estimates and will issue a Certificate for Payment to the Owner, with a copy to the Contractor, for such amount as the Architect determines is properly due and notify the Contractor and Owner in writing of the Architect's reasons for withholding payment in whole or in part.
- C.** Neither the Architect's issuance of a Certificate for Payment nor the Owner's resulting progress payment shall be a representation to the Contractor that the Work in progress or completed at that time is accepted or deemed to be in conformance with the Contract Documents.
- D.** The Architect shall not be required to determine that the Contractor has promptly or fully paid Subcontractors and suppliers or how or for what purpose the Contractor has used monies paid under the Construction Contract. However, the Architect may, upon request and if practical, inform any Subcontractor or supplier of the amount, or percentage of completion, approved or paid to the Contractor on account of the materials supplied or the Work performed by the Subcontractor.

ARTICLE 31
PAYMENTS WITHHELD

- A.** The Architect may nullify or revise a previously issued Certificate for Payment prior to Owner's payment thereunder to the extent as may be necessary in the Architect's opinion to protect the Owner from loss on account of any of the following causes not discovered or fully accounted for at the time of the certification or approval of the Application for Payment:
- (1)** Defective Work;
 - (2)** filed, or reasonable evidence indicating probable filing of, claims arising out of the Contract by other parties against the Contractor;
 - (3)** the Contractor's failure to pay for labor, materials or equipment or to pay Subcontractors;
 - (4)** reasonable evidence that the Work cannot be completed for the unpaid balance of the Contract Sum;
 - (5)** damage suffered by the Owner or another contractor caused by the Contractor, a

- Subcontractor, or anyone for whose acts they may be liable;
- (6) reasonable evidence that the Work will not be completed within the Contract Time, and that the unpaid balance is insufficient to cover applicable liquidated damages; or
 - (7) the Contractor's persistent failure to conform to the requirements of the Contract Documents.
- B.** If the Owner deems it necessary to withhold payment pursuant to preceding Paragraph A, the Owner will notify the Contractor and Architect in writing of the amount to be withheld and the reason for same.
- C.** The Architect shall not be required to withhold payment for completed or partially completed Work for which compliance with the Contract Documents remains to be determined by Specified Inspections or Final Inspections to be performed in their proper sequence. However, if Work for which payment has been approved, certified, or made under an Application for Payment is subsequently determined to be Defective Work, the Architect shall determine an appropriate amount that will protect the Owner's interest against the Defective Work.
- (1) If payment has not been made against the Application for Payment first including the Defective Work, the Architect will notify the Owner and Contractor of the amount to be withheld from the payment until the Defective Work is brought into compliance with the Contract Documents.
 - (2) If payment has been made against the Application for Payment first including the Defective Work, the Architect will withhold the appropriate amount from the next Application for Payment submitted after the determination of noncompliance, such amount to then be withheld until the Defective Work is brought into compliance with the Contract Documents.
- D.** The amount withheld will be paid with the next Application for Payment certified and approved after the condition for which the Owner has withheld payment is removed or otherwise resolved to the Owner's satisfaction.
- E.** The Owner shall have the right to withhold from payments due the Contractor under this Contract an amount equal to any amount which the Contractor owes the Owner under another contract.

ARTICLE 32

SUBSTANTIAL COMPLETION

- A.** Substantial Completion is the stage in the progress of the Work when the Work or designated portion of the Work is sufficiently complete in accordance with the Contract Documents so that the Owner can occupy or utilize the Work for its intended use without disruption or interference by the Contractor in completing or correcting any remaining unfinished Work ("punch list" items). Substantial Completion of the Work, or a designated portion of the Work, is not achieved until so agreed in a Certificate of Substantial Completion signed by the Contractor, Architect, Owner, and Technical Staff of the Alabama Division of Construction Management.
- B.** The Contractor shall notify the Architect in writing when it considers the Work, or a portion of the Work which the Owner has agreed to accept separately, to be substantially complete and ready for a Final Inspection pursuant to Article 16. In this notification the Contractor shall identify any items remaining to be completed or corrected for Final Acceptance prior to final payment.

- C. Substantial Completion is achieved and a Final Inspection is appropriate only when a minimal number of punch list items exists and only a short period of time will be required to correct or complete them. Upon receipt of the Contractor's notice for a Final Inspection, the Architect will advise the Contractor in writing of any conditions of the Work which the Architect or Owner is aware do not constitute Substantial Completion, otherwise, a Final Inspection will proceed within a reasonable time after the Contractor's notice is given. However, the Architect will not be required to prepare lengthy listings of punch list items; therefore, if the Final Inspection discloses that Substantial Completion has not been achieved, the Architect may discontinue or suspend the inspection until the Contractor does achieve Substantial Completion.

D. CERTIFICATE of SUBSTANTIAL COMPLETION

- (1) When the Work or a designated portion of the Work is substantially complete, the Architect will prepare and sign a Certificate of Substantial Completion to be signed in order by the Contractor, Owner, and Alabama Division of Construction Management.
- (2) When signed by all parties, the Certificate of Substantial Completion shall establish the Date of Substantial Completion which is the date upon which:
- (a) the Work, or designated portion of the Work, is accepted by the Architect, Owner, and Alabama Division of Construction Management as being ready for occupancy,
 - (b) the Contractor's one-year and special warranties for the Work covered by the Certificate commence, unless stated otherwise in the Certificate (the one-year warranty for punch list items completed or corrected after the period allowed in the Certificate shall commence on the date of their Final Acceptance), and
 - (c) Owner becomes responsible for building security, maintenance, utility services, and insurance, unless stated otherwise in the Certificate.
- (3) The Certificate of Substantial Completion shall set the time within which the Contractor shall finish all items on the "punch list" accompanying the Certificate. The completion of punch list items shall be a condition precedent to Final Payment.
- (4) If the Work or designated portion covered by a Certificate of Substantial Completion includes roofing work, the General Contractor's (5-year) Roofing Guarantee, DCM Form C-9, must be executed by the Contractor and attached to the Certificate of Substantial Completion. If the Contract Documents specify any other roofing warranties to be provided by the roofing manufacturer, Subcontractor, or Contractor, they must also be attached to the Certificate of Substantial Completion. The Alabama Division of Construction Management will not sign the Certificate of Substantial Completion in the absence of the roofing guarantees.
- E. The Date of Substantial Completion of the Work, as set in the Certificate of Substantial Completion of the Work or of the last completed portion of the Work, establishes the extent to which the Contractor is liable for Liquidated Damages, if any; however, should the Contractor fail to complete all punch list items within thirty days, or such other time as may be stated in the respective Certificate of Substantial Completion, the Contractor shall bear any expenses, including additional Architectural services and expenses, incurred by the Owner as a result of such failure to complete punch list items in a timely manner.

ARTICLE 33
OCCUPANCY or USE PRIOR to COMPLETION

A. UPON SUBSTANTIAL COMPLETION

Prior to completion of the entire Work, the Owner may occupy or begin utilizing any designated portion of the Work on the agreed Date of Substantial Completion of that portion of the Work.

B. BEFORE SUBSTANTIAL COMPLETION

(1) The Owner shall not occupy or utilize any portion of the Work before Substantial Completion of that portion has been achieved.

(2) The Owner may deliver furniture and equipment and store, or install it in place ready for occupancy and use, in any designated portion of the Work before it is substantially completed under the following conditions:

(a) The Owner's storage or installation of furniture and equipment will not unreasonably disrupt or interfere with the Contractor's completion of the designated portion of the Work.

(b) The Contractor consents to the Owner's planned action (such consent shall not be unreasonably withheld).

(c) The Owner shall be responsible for insurance coverage of the Owner's furniture and equipment, and the Contractor's liability shall not be increased.

(d) The Contractor, Architect, and Owner will jointly inspect and record the condition of the Work in the area before the Owner delivers and stores or installs furniture and equipment; the Owner will equitably compensate the Contractor for making any repairs to the Work that may subsequently be required due to the Owner's delivery and storage or installation of furniture and equipment.

(e) The Owner's delivery and storage or installation of furniture and equipment shall not be deemed an acceptance of any Work not completed in accordance with the requirements of the Contract Documents.

ARTICLE 34
FINAL PAYMENT

A. PREREQUISITES to FINAL PAYMENT

The following conditions are prerequisites to Final Payment becoming due the Contractor:

(1) Full execution of a Certificate of Substantial Completion for the Work, or each designated portion of the Work.

(2) Final Acceptance of the Work.

(3) The Contractor's completion, to the satisfaction of the Architect and Owner, of all documentary requirements of the Contract Documents; such as delivery of "as-built" documents, operating and maintenance manuals, warranties, etc.

(4) Delivery to the Owner of a final Application for Payment, prepared by the Contractor and approved and certified by the Architect. Architect prepares DCM Form B-13: Final Payment Checklist and forwards it to the Owner along with the final Application for Payment.

(5) Completion of an Advertisement for Completion pursuant to Paragraph C below.

(6) Delivery by the Contractor to the Owner through the Architect of DCM Form C-18: Contractor's Affidavit of Payment of Debts and Claims, and a Release of Claims, if any, and

such other documents as may be required by Owner, satisfactory in form to the Owner pursuant to Paragraph D below.

- (7) Consent of Surety to Final Payment, if any, to Contractor. This Consent of Surety is required for projects which have Payment and Performance Bonds.
- (8) Delivery by the Contractor to the Architect and Owner of other documents, if any, required by the Contract Documents as prerequisites to Final Payment.
- (9) See Manual of Procedures Chapter 7, Section L.7 concerning reconciliation of contract time, if any.

B. FINAL ACCEPTANCE of the WORK

“Final Acceptance of the Work” shall be achieved when all “punch list” items recorded with the Certificate(s) of Substantial Completion are accounted for by either: (1) their completion or correction by the Contractor and acceptance by the Architect, Owner, and DCM Project Inspector, or (2) their resolution under Article 18, Deductions for Uncorrected Work.

C. ADVERTISEMENT for COMPLETION

(1) **If the Contract Sum is \$50,000 or less:** The Owner, immediately after being notified by the Architect that all other requirements of the Contract have been completed, shall give public notice of completion of the Contract by having an Advertisement for Completion published one time in a newspaper of general circulation, published in the county in which the Owner is located for one week, and shall require the Contractor to certify under oath that all bills have been paid in full. Final payment may be made at any time after the notice has been posted for one entire week.

(2) **If the Contract Sum is more than \$50,000:** The Contractor, immediately after being notified by the Architect that all other requirements of the Contract have been completed, shall give public notice of completion of the Contract by having an Advertisement for Completion, similar to the sample contained in the Project Manual, published for a period of four successive weeks in some newspaper of general circulation published within the city or county where the Work was performed. Proof of publication of the Advertisement for Completion shall be made by the Contractor to the Architect by affidavit of the publisher, in duplicate, and a printed copy of the Advertisement for Completion published, in duplicate. If no newspaper is published in the county where the work was done, the notice may be given by posting at the Court House for thirty days and proof of same made by Probate Judge or Sheriff and the Contractor. Final payment shall not be due until thirty days after this public notice is completed.

D. RELEASE of CLAIMS

The Release of Claims and other documents referenced in Paragraph A(6) above are as follows:

(1) A release executed by Contractor of all claims and claims of lien against the Owner arising under and by virtue of the Contract, other than such claims of the Contractor, if any, as may have been previously made in writing and as may be specifically excepted by the Contractor from the operation of the release in stated amounts to be set forth therein.

(2) An affidavit under oath, if required, stating that so far as the Contractor has knowledge or information, there are no claims or claims of lien which have been or will be filed by any Subcontractor, Supplier or other party for labor or material for which a claim or claim of lien could be filed.

(3) A release, if required, of all claims and claims of lien made by any Subcontractor, Supplier or other party against the Owner or unpaid Contract funds held by the Owner arising under or related to the Work on the Project; provided, however, that if any Subcontractor, Supplier or others refuse to furnish a release of such claims or claims of lien, the Contractor may furnish a bond executed by Contractor and its Surety to the Owner to provide an unconditional obligation to defend, indemnify and hold harmless the Owner against any loss, cost or expense, including attorney's fees, arising out of or as a result of such claims, or claims of lien, in which event Owner may make Final Payment notwithstanding such claims or claims of lien. If Contractor and Surety fail to fulfill their obligations to Owner under the bond, the Owner shall be entitled to recover damages as a result of such failure, including all costs and reasonable attorney's fees incurred to recover such damages.

E. EFFECT of FINAL PAYMENT

(1) The making of Final Payment shall constitute a waiver of Claims by the Owner except those arising from:

- (a) liens, claims, security interests or encumbrances arising out of the Contract and unsettled;
- (b) failure of the Work to comply with the requirements of the Contract Documents;
- (c) terms of warranties or indemnities required by the Contract Documents, or
- (d) latent defects.

(2) Acceptance of Final Payment by the Contractor shall constitute a waiver of claims by Contractor except those previously made in writing, identified by Contractor as unsettled at the time of final Application for Payment, and specifically excepted from the release provided for in Paragraph D(1), above.

ARTICLE 35
CONTRACTOR'S WARRANTY

A. GENERAL WARRANTY

The Contractor warrants to the Owner and Architect that all materials and equipment furnished under the Contract will be of good quality and new, except such materials as may be expressly provided or allowed in the Contract Documents to be otherwise, and that none of the Work will be Defective Work as defined in Article 1.

B. ONE-YEAR WARRANTY

(1) If, within one year after the date of Substantial Completion of the Work or each designated portion of the Work (or otherwise as agreed upon in a mutually-executed Certificate of Substantial Completion), any of the Work is found to be Defective Work, the Contractor shall promptly upon receipt of written notice from the Owner or Architect, and without expense to either, replace or correct the Defective Work to conform to the requirements of the Contract Documents, and repair all damage to the site, the building and its contents which is the result of Defective Work or its replacement or correction.

(2) The one-year warranty for punch list items shall begin on the Date of Substantial Completion if they are completed or corrected within the time period allowed in the Certificate of Substantial Completion in which they are recorded. The one-year warranty for punch list items that are not

completed or corrected within the time period allowed in the Certificate of Substantial Completion, and other Work performed after Substantial Completion, shall begin on the date of Final Acceptance of the Work. The Contractor's correction of Work pursuant to this warranty does not extend the period of the warranty. The Contractor's one-year warranty does not apply to defects or damages due to improper or insufficient maintenance, improper operation, or wear and tear during normal usage.

(3) Upon recognizing a condition of Defective Work, the Owner shall promptly notify the Contractor of the condition. If the condition is causing damage to the building, its contents, equipment, or site, the Owner shall take reasonable actions to mitigate the damage or its continuation, if practical. If the Contractor fails to proceed promptly to comply with the terms of the warranty, or to provide the Owner with satisfactory written verification that positive action is in process, the Owner may have the Defective Work replaced or corrected and the Contractor and the Contractor's Surety shall be liable for all expense incurred.

(4) **Year-end Inspection(s):** An inspection of the Work, or each separately completed portion thereof, is required near the end of the Contractor's one-year warranty period(s). The inspection must be scheduled with the Owner, Architect and DCM Inspector. The subsequent delivery of the Architect's report of a Year-end Inspection will serve as confirmation that the Contractor was notified of Defective Work found within the warranty period.

(5) The Contractor's warranty of one year is in addition to, and not a limitation of, any other remedy stated herein or available to the Owner under applicable law.

C. GENERAL CONTRACTOR'S ROOFING GUARANTEE

(1) In addition to any other roof related warranties or guarantees that may be specified in the Contract Documents, the roof and associated work shall be guaranteed by the General Contractor against leaks and defects of materials and workmanship for a period of five (5) years, starting on the Date of Substantial Completion of the Project as stated in the Certificate of Substantial Completion. This guarantee for punch list items shall begin on the Date of Substantial Completion if they are completed or corrected within the time period allowed in the Certificate of Substantial Completion in which they are recorded. The guarantee for punch list items that are not completed or corrected within the time period allowed in the Certificate of Substantial Completion shall begin on the date of Final Acceptance of the Work.

(2) The "General Contractor's Roofing Guarantee" (DCM Form C-9), included in the Project Manual, shall be executed in triplicate, signed by the appropriate party and submitted to the Architect for submission with the Certificate of Substantial Completion to the Owner and the Division of Construction Management.

(3) This guarantee does not include costs which might be incurred by the General Contractor in making visits to the site requested by the Owner regarding roof problems that are due to lack of proper maintenance (keeping roof drains and/or gutters clear of debris that cause a stoppage of drainage which results in water ponding, overflowing of flashing, etc.), or damages caused by vandalism or misuse of roof areas. Should the contractor be required to return to the job to correct problems of this nature that are determined not to be related to faulty workmanship and materials in the installation of the roof, payment for actions taken by the Contractor in response to such request will be the responsibility of the Owner. A detailed written report shall be made by the General Contractor on each of these 'Service Calls' with copies to the Architect, Owner and Division of

Construction Management.

D. SPECIAL WARRANTIES

(1) The Contractor shall deliver to the Owner through the Architect all special or extended warranties required by the Contract Documents from the Contractor, Subcontractors, and suppliers.

(2) The Contractor and the Contractor's Surety shall be liable to the Owner for such special warranties during the Contractor's one-year warranty; thereafter, the Contractor's obligations relative to such special warranties shall be to provide reasonable assistance to the Owner in their enforcement.

E. ASSUMPTION of GUARANTEES of OTHERS

If the Contractor disturbs, alters, or damages any work guaranteed under a separate contract, thereby voiding the guarantee of that work, the Contractor shall restore the work to a condition satisfactory to the Owner and shall also guarantee it to the same extent that it was guaranteed under the separate contract.

ARTICLE 36
INDEMNIFICATION AGREEMENT

To the fullest extent permitted by law, the Contractor shall defend, indemnify, and hold harmless the Owner, Architect, Architect's consultants, Alabama Division of Construction Management, State Department of Education (if applicable), and their agents, employees, and consultants (hereinafter collectively referred to as the "Indemnitees") from and against all claims, damages, losses and expenses, including but not limited to attorneys' fees, arising out of, related to, 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, including loss of use resulting therefrom, and is caused in whole or in part by 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 such claim, damage, loss or expense is caused in part, or is alleged but not legally established to have been caused in whole or in part by the negligence or other fault of a party indemnified hereunder.

- A. This indemnification shall extend to all claims, damages, losses and expenses for injury or damage to adjacent or neighboring property, or persons injured thereon, that arise out of, relate to, or result from performance of the Work.
- B. This indemnification does not extend to the liability of the Architect, or the Architect's Consultants, agents, or employees, arising out of (1) the preparation or approval of maps, shop drawings, opinions, reports, surveys, field orders, Change Orders, drawings or specifications, or (2) the giving of or the failure to give directions or instructions, provided such giving or failure to give instructions is the primary cause of the injury or damage.
- C. This indemnification does not apply to the extent of the sole negligence of the Indemnitees.

ARTICLE 37
CONTRACTOR'S and SUBCONTRACTORS' INSURANCE

(Provide entire Article 37 to Contractor's insurance representative.)

A. GENERAL

(1) RESPONSIBILITY. The Contractor shall be responsible to the Owner from the time of the signing of the Construction Contract or from the beginning of the first work, whichever shall be earlier, for all injury or damage of any kind resulting from any negligent act or omission or breach, failure or other default regarding the work by the Contractor, a Subcontractor, anyone directly or indirectly employed by them or anyone for whose acts they may be liable, regardless of who may be the owner of the property.

(2) INSURANCE PROVIDERS. Each of the insurance coverages required below shall be issued by an insurer licensed by the Insurance Commissioner to transact the business of insurance in the State of Alabama for the applicable line of insurance, and such insurer (or, for qualified self-insureds or group self-insureds, a specific excess insurer providing statutory limits) must have a Best Policyholders Rating of "A-" or better and a financial size rating of Class V or larger.

(3) NOTIFICATION ENDORSEMENT. Each policy shall be endorsed to provide that the insurance company agrees that the policy shall not be canceled, changed, allowed to lapse or allowed to expire for any reason until thirty days after the Owner has received written notice by certified mail as evidenced by return receipt or until such time as other insurance coverage providing protection equal to protection called for in the Contract Documents shall have been received, accepted and acknowledged by the Owner. Such notice shall be valid only as to the Project as shall have been designated by Project Name and Number in said notice.

(4) INSURANCE CERTIFICATES. The Contractor shall procure the insurance coverages identified below, or as otherwise required in the Contract Documents, at the Contractor's own expense, and to evidence that such insurance coverages are in effect, the Contractor shall furnish the Owner an insurance certificate(s) acceptable to the Owner and listing the Owner as the certificate holder. The insurance certificate(s) must be delivered to the Owner with the Construction Contract and Bonds for final approval and execution of the Construction Contract. The insurance certificate must provide the following:

- (a) Name and address of authorized agent of the insurance company
- (b) Name and address of insured
- (c) Name of insurance company or companies
- (d) Description of policies
- (e) Policy Number(s)
- (f) Policy Period(s)
- (g) Limits of liability
- (h) Name and address of Owner as certificate holder
- (i) Project Name and Number, if any
- (j) Signature of authorized agent of the insurance company
- (k) Telephone number of authorized agent of the insurance company
- (l) Mandatory thirty day notice of cancellation / non-renewal / change

(5) MAXIMUM DEDUCTIBLE. Self-insured retention, except for qualified self-insurers or

group self-insurers, in any policy shall not exceed \$25,000.00.

B. INSURANCE COVERAGES

Unless otherwise provided in the Contract Documents, the Contractor shall purchase the types of insurance coverages with liability limits not less than as follows:

(1) WORKERS' COMPENSATION and EMPLOYER'S LIABILITY INSURANCE

(a) Workers' Compensation coverage shall be provided in accordance with the statutory coverage required in Alabama. A group insurer must submit a certificate of authority from the Alabama Department of Industrial Relations approving the group insurance plan. A self-insurer must submit a certificate from the Alabama Department of Industrial Relations stating the Contractor qualifies to pay its own workers' compensation claims.

(b) Employer's Liability Insurance limits shall be at least:

- .1 Bodily Injury by Accident - \$1,000,000 each accident
- .2 Bodily Injury by Disease - \$1,000,000 each employee

(2) COMMERCIAL GENERAL LIABILITY INSURANCE

(a) Commercial General Liability Insurance, written on an ISO Occurrence Form (current edition as of the date of Advertisement for Bids) or equivalent, shall include, but need not be limited to, coverage for bodily injury and property damage arising from premises and operations liability, products and completed operations liability, blasting and explosion, collapse of structures, underground damage, personal injury liability and contractual liability. The Commercial General Liability Insurance shall provide at minimum the following limits:

<u>Coverage</u>	<u>Limit</u>
.1 General Aggregate	\$ 2,000,000.00 per Project
.2 Products, Completed Operations Aggregate	\$ 2,000,000.00 per Project
.3 Personal and Advertising Injury	\$ 1,000,000.00 per Occurrence
.4 Each Occurrence	\$ 1,000,000.00

(b) Additional Requirements for Commercial General Liability Insurance:

- .1 The policy shall name the Owner, Architect, Alabama Division of Construction Management, State Department of Education (if applicable), and their agents, consultants and employees as additional insureds, state that this coverage shall be primary insurance for the additional insureds; and contain no exclusions of the additional insureds relative to job accidents.
- .2 The policy must include separate per project aggregate limits.

(3) COMMERCIAL BUSINESS AUTOMOBILE LIABILITY INSURANCE

(a) Commercial Business Automobile Liability Insurance which shall include coverage for bodily injury and property damage arising from the operation of any owned, non-owned or hired automobile. The Commercial Business Automobile Liability Insurance Policy shall provide not less than \$1,000,000 Combined Single Limits for each occurrence.

(b) The policy shall name the Owner, Architect, Alabama Division of Construction Management, State Department of Education (if applicable), and their agents, consultants, and employees as additional insureds.

(4) COMMERCIAL UMBRELLA LIABILITY INSURANCE

(a) Commercial Umbrella Liability Insurance to provide excess coverage above the

Commercial General Liability, Commercial Business Automobile Liability and the Workers' Compensation and Employer's Liability to satisfy the minimum limits set forth herein.

(b) Minimum Combined Primary Commercial General Liability and Commercial/Excess Umbrella Limits of:

- .1 \$ 5,000,000 per Occurrence
- .2 \$ 5,000,000 Aggregate

(c) Additional Requirements for Commercial Umbrella Liability Insurance:

- .1 The policy shall name the Owner, Architect, Alabama Division of Construction Management, State Department of Education (if applicable), and their agents, consultants, and employees as additional insureds.
- .2 The policy must be on an "occurrence" basis.

(5) BUILDER'S RISK INSURANCE

(a) The Builder's Risk Policy shall be made payable to the Owner and Contractor, as their interests may appear. The policy amount shall be equal to 100% of the Contract Sum, written on a Causes of Loss - Special Form (current edition as of the date of Advertisement for Bids), or its equivalent. All deductibles shall be the sole responsibility of the Contractor.

(b) The policy shall be endorsed as follows:

"The following may occur without diminishing, changing, altering or otherwise affecting the coverage and protection afforded the insured under this policy:

- (i) Furniture and equipment may be delivered to the insured premises and installed in place ready for use; or
- (ii) Partial or complete occupancy by Owner; or
- (iii) Performance of work in connection with construction operations insured by the Owner, by agents or lessees or other contractors of the Owner, or by contractors of the lessee of the Owner."

C. SUBCONTRACTORS' INSURANCE

(1) WORKERS' COMPENSATION and EMPLOYER'S LIABILITY INSURANCE. The Contractor shall require each Subcontractor to obtain and maintain Workers' Compensation and Employer's Liability Insurance coverages as described in preceding Paragraph B, or to be covered by the Contractor's Workers' Compensation and Employer's Liability Insurance while performing Work under the Contract.

(2) LIABILITY INSURANCE. The Contractor shall require each Subcontractor to obtain and maintain adequate General Liability, Automobile Liability, and Umbrella Liability Insurance coverages similar to those described in preceding Paragraph B. Such coverage shall be in effect at all times that a Subcontractor is performing Work under the Contract.

(3) ENFORCEMENT RESPONSIBILITY. The Contractor shall have responsibility to enforce its Subcontractors' compliance with these or similar insurance requirements; however, the Contractor shall, upon request, provide the Architect or Owner acceptable evidence of insurance for any Subcontractor.

D. TERMINATION of OBLIGATION to INSURE

Unless otherwise expressly provided in the Contract Documents, the obligation to insure as provided herein shall continue as follows:

(1) BUILDER’S RISK INSURANCE. The obligation to insure under Subparagraph B(5) shall remain in effect until the Date of Substantial Completion as shall be established in the Certificate of Substantial Completion. In the event that multiple Certificates of Substantial Completion covering designated portions of the Work are issued, Builder’s Risk coverage shall remain in effect until the Date of Substantial Completion as shall be established in the last issued Certificate of Substantial Completion. However, in the case that the Work involves separate buildings, Builder’s Risk coverage of each separate building may terminate on the Date of Substantial Completion as established in the Certificate of Substantial Completion issued for each building.

(2) PRODUCTS and COMPLETED OPERATIONS. The obligation to carry Products and Completed Operations coverage specified under Subparagraph B(2) shall remain in effect for two years after the Date(s) of Substantial Completion.

(3) ALL OTHER INSURANCE. The obligation to carry other insurance coverages specified under Subparagraphs B(1) through B(4) and Paragraph C shall remain in effect after the Date(s) of Substantial Completion until such time as all Work required by the Contract Documents is completed. Equal or similar insurance coverages shall remain in effect if, after completion of the Work, the Contractor, a Subcontractor, anyone directly or indirectly employed by them or anyone for whose acts they may be liable, returns to the Project to perform warranty or maintenance work pursuant to the terms of the Contract Documents.

E. 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 performing construction or operations related to the Project, if any, and any of their subcontractors, sub-subcontractors, agents and employees, for damages caused by fire or other causes of loss. But said waiver shall apply only to the extent the loss or damage is covered by builder’s risk insurance applicable to the Work or to other property located within or adjacent to the Project, except such rights as they may have to proceeds of such insurance held by the Owner or Contractor as fiduciary. The Owner or Contractor, as appropriate, shall require of the Architect, Architect’s consultants, separate contractors, if any, and the subcontractor, sub-subcontractors, suppliers, 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 the 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. The waivers provided for in this paragraph shall not be applicable to loss or damage that occurs after final acceptance of the Work.

ARTICLE 38
PERFORMANCE and PAYMENT BONDS

A. GENERAL

Upon signing and returning the Construction Contract to the Owner for final approval and execution, the Contractor shall, at the Contractor’s expense, furnish to the Owner a Performance Bond and a Payment Bond (P&P Bonds), DCM Forms C-6 and C-7 as contained in the Project

Manual, each in a penal sum equal to 100% of the Contract Sum. Each bond shall be on the form contained in the Project Manual, shall be executed by a surety company (Surety) acceptable to the Owner and duly authorized and qualified to make such bonds in the State of Alabama in the required amount. There shall be six original P&P Bonds submitted with original signatures for each of the six contracts required. The P&P bonds must be signed either on the same day or after the construction contract date. Each P&P Bond shall have attached thereto an original power of attorney (POA) of the signing official. The POA signature date must be the same day as the P&P Bond's signature date. All signatures must be present.

The provisions of this Article are not applicable to this Contract if the Contract Sum is less than \$50,000, unless bonds are required for this Contract in the Supplemental General Conditions.

B. PERFORMANCE BOND

Through the Performance Bond, the Surety's obligation to the Owner shall be to assure the prompt and faithful performance of the Contract and Contract Change Orders. The Penal Sum shall remain equal to the Contract Sum as the Contract Sum is adjusted by Contract Change Orders. In case of default on the part of the Contractor, the Surety shall take charge of and complete the Work in accordance with the terms of the Performance Bond. Any reasonable expenses incurred by the Owner as a result of default on the part of the Contractor, including architectural, engineering, administrative, and legal services, shall be recoverable under the Performance Bond.

C. PAYMENT BOND

Through the Payment Bond the Surety's obligation to the Owner shall be to guarantee that the Contractor and its Subcontractors shall promptly make payment to all persons supplying labor, materials, or supplies for, or in, the prosecution of the Work, including the payment of reasonable attorneys fees incurred by successful claimants or plaintiffs in civil actions on the Bond. Any person or entity indicating that they have a claim of nonpayment under the Bond shall, upon written request, be promptly furnished a certified copy of the Bond and Construction Contract by the Contractor, Architect, Owner, or Alabama Division of Construction Management, whomever is recipient of the request.

D. CHANGE ORDERS

The Penal Sum shall remain equal to the Contract Sum as the Contract Sum is adjusted by Contract Change Orders. All Contract Change Orders involving an increase in the Contract Sum will require consent of Surety by endorsement of the Contract Change Order form. The Surety waives notification of any Contract Change Orders involving only extension of the Contract Time.

E. EXPIRATION

The obligations of the Contractor's performance bond surety shall be coextensive with the contractor's performance obligations under the Contract Documents; provided, however, that the surety's obligation shall expire at the end of the one-year warranty period(s) of Article 35.

ARTICLE 39
ASSIGNMENT

The Contractor shall not assign the Contract or sublet it as a whole nor assign any moneys due or to

become due to the Contractor thereunder without the previous written consent of the Owner (and of the Surety, in the case of a bonded Construction Contract). As prescribed by the Public Works Law, the Contract shall in no event be assigned to an unsuccessful bidder for the Contract whose bid was rejected because the bidder was not a responsible or responsive bidder.

ARTICLE 40
CONSTRUCTION by OWNER or SEPARATE CONTRACTORS

A. OWNER'S RESERVATION of RIGHT

(1) The Owner reserves the right to self-perform, or to award separate contracts for, other portions of the Project and other Project related construction and operations on the site. The contractual conditions of such separate contracts shall be substantially similar to those of this Contract, including insurance requirements and the provisions of this Article. If the Contractor considers such actions to involve delay or additional cost under this Contract, notifications and assertion of claims shall be as provided in Article 20 and Article 23.

(2) When separate contracts are awarded, the term "Contractor" in the separate Contract Documents shall mean the Contractor who executes the respective Construction Contract.

B. COORDINATION

Unless otherwise provided in the Contract Documents, the Owner shall be responsible for coordinating the activities of the Owner's forces and separate contractors with the Work of the Contractor. The Contractor shall cooperate with the Owner and separate contractors, shall participate in reviewing and comparing their construction schedules relative to that of the Contractor when directed to do so, and shall make and adhere to any revisions to the construction schedule resulting from a joint review and mutual agreement.

C. CONDITIONS APPLICABLE to WORK PERFORMED by OWNER

Unless otherwise provided in the Contract Documents, when the Owner self-performs construction or operations related to the Project, the Owner shall be subject to the same obligations to Contractor as Contractor would have to a separate contractor under the provision of this Article 40.

D. MUTUAL RESPONSIBILITY

(1) The Contractor shall reasonably accommodate the required introduction and storage of materials and equipment and performance of activities by the Owner and separate contractors and shall connect and coordinate the Contractor's Work with theirs as required by the Contract Documents.

(2) By proceeding with an element or portion of the Work that is applied to or performed on construction by the Owner or a separate contractor, or which relies upon their operations, the Contractor accepts the condition of such construction or operations as being suitable for the Contractor's Work, except for conditions that are not reasonably discoverable by the Contractor. If the Contractor discovers any condition in such construction or operations that is not suitable for the proper performance of the Work, the Contractor shall not proceed, but shall instead promptly notify

the Architect in writing of the condition discovered.

(3) The Contractor shall reimburse the Owner for any costs incurred by a separate contractor and payable by the Owner because of acts or omissions of the Contractor. Likewise, the Owner shall be responsible to the Contractor for any costs incurred by the Contractor because of the acts or omissions of a separate contractor.

(4) The Contractor shall not cut or otherwise alter construction by the Owner or a separate contractor without the written consent of the Owner and separate contractor; such consent shall not be unreasonably withheld. Likewise, the Contractor shall not unreasonably withhold its consent allowing the Owner or a separate contractor to cut or otherwise alter the Work.

(5) The Contractor shall promptly remedy any damage caused by the Contractor to the construction or property of the Owner or separate contractors.

ARTICLE 41 **SUBCONTRACTS**

A. AWARD of SUBCONTRACTS and OTHER CONTRACTS for PORTIONS of the WORK

(1) Unless otherwise provided in the Contract Documents, when delivering the executed Construction Contract, bonds, and evidence of insurance to the Architect, the Contractor shall also submit a listing of Subcontractors proposed for each principal portion of the Work and fabricators or suppliers proposed for furnishing materials or equipment fabricated to the design of the Contract Documents. This listing shall be in addition to any naming of Subcontractors, fabricators, or suppliers that may have been required in the bid process. The Architect will promptly reply to the Contractor in writing stating whether or not the Owner, after due investigation, has reasonable objection to any Subcontractor, fabricator, or supplier proposed by the Contractor. The issuance of the Notice to Proceed in the absence of such objection by the Owner shall constitute notice that no reasonable objection to them is made.

(2) The Contractor shall not contract with a proposed Subcontractor, fabricator, or supplier to whom the Owner has made reasonable and timely objection. Except in accordance with prequalification procedures as may be contained in the Contract Documents, through specified qualifications, or on the grounds of reasonable objection, the Owner may not restrict the Contractor's selection of Subcontractors, fabricators, or suppliers.

(3) Upon the Owner's reasonable objection to a proposed Subcontractor, fabricator, or supplier, the Contractor shall promptly propose another to whom the Owner has no reasonable objection. If the proposed Subcontractor, fabricator, or supplier to whom the Owner made reasonable objection was reasonably capable of performing the Work, the Contract Sum and Contract Time shall be equitably adjusted by Contract Change Order for any resulting difference if the Contractor has acted promptly and responsively in this procedure.

(4) The Contractor shall not change previously selected Subcontractors, fabricators, or suppliers without notifying the Architect and Owner in writing of proposed substitute Subcontractors, fabricators, or suppliers. If the Owner does not make a reasonable objection to a proposed substitute within three working days, the substitute shall be deemed approved.

B. SUBCONTRACTUAL RELATIONS

(1) The Contractor agrees to bind every Subcontractor and material supplier (and require every Subcontractor to so bind its subcontractors and material suppliers) to all the provisions of the Contract Documents as they apply to the Subcontractor's and material supplier's portion of the Work.

(2) Nothing contained in the Contract Documents shall be construed as creating any contractual relationship between any Subcontractor and the Owner, nor to create a duty of the Architect, Owner, or Director to resolve disputes between or among the Contractor or its Subcontractors and suppliers or any other duty to such Subcontractors or suppliers.

ARTICLE 42 **ARCHITECT'S STATUS**

A. The Architect is an independent contractor performing, with respect to this Contract, pursuant to an agreement executed between the Owner and the Architect. The Architect has prepared the Drawings and Specifications and assembled the Contract Document and is, therefore, charged with their interpretation and clarification as described in the Contract Documents. As a representative of the Owner, the Architect will endeavor to guard the Owner against variances from the requirements of the Contract Documents by the Contractor. On behalf of the Owner, the Architect will administer the Contract as described in the Contract Documents during construction and the Contractor's one-year warranty.

B. So as to maintain continuity in administration of the Contract and performance of the Work, and to facilitate complete documentation of the project record, all communications between the Contractor and Owner regarding matters of or related to the Contract shall be directed through the Architect, unless direct communication is otherwise required to provide a legal notification. Unless otherwise authorized by the Architect, communications by and with the Architect's consultants shall be through the Architect. Unless otherwise authorized by the Contractor, communications by and with Subcontractors and material suppliers shall be through the Contractor.

C. ARCHITECT'S AUTHORITY

Subject to other provisions of the Contract Documents, the following summarizes some of the authority vested in the Architect by the Owner with respect to the Construction Contract and as further described or conditioned in other Articles of these General Conditions of the Contract.

(1) The Architect is authorized to:

- (a) approve "minor" deviations as defined in Article 9, Submittals,
- (b) make "minor" changes in the Work as defined in Article 19, Changes in the Work,
- (c) reject or require the correction of Defective Work,
- (d) require the Contractor to stop the performance of Defective Work,
- (e) adjust an Application for Payment by the Contractor pursuant to Article 30, Certification and Approval of payments, and
- (f) issue Notices to Cure pursuant to Article 27.

(2) The Architect is not authorized to:

- (a) revoke, alter, relax, or waive any requirements of the Contract Documents (other than "minor" deviations and changes) without concurrence of the Owner,

- (b) finally approve or accept any portion of the Work without concurrence of the Owner,
- (c) issue instructions contrary to the Contract Documents,
- (d) issue Notice of Termination or otherwise terminate the Contract, or
- (e) require the Contractor to stop the Work except only to avoid the performance of Defective Work.

D. LIMITATIONS of RESPONSIBILITIES

(1) The Architect shall not be responsible to Contractors or to others for supervising or coordinating the performance of the Work or for the Construction Methods or safety of the Work, unless the Contract Documents give other specific instructions concerning these matters.

(2) The Architect will not be responsible to the Contractor (nor the Owner) for the Contractor's failure to perform the Work in accordance with the requirements of the Contract Documents or for acts or omissions of the Contractor, a Subcontractor, or anyone for whose acts they may be liable. However, the Architect will report to the Owner and Contractor any Defective Work recognized by the Architect.

(3) The Architect will endeavor to secure faithful performance by Owner and Contractor, and the Architect will not show partiality to either or be liable to either for results of interpretations or decisions rendered in good faith.

(4) The Contractor's remedies for additional time or expense arising out of or related to this Contract, or the breach thereof, shall be solely as provided for in the Contract Documents. The Contractor shall have no claim or cause of action against the Owner, Architect, or its consultants for any actions or failures to act, whether such claim may be in contract, tort, strict liability, or otherwise, it being the agreement of the parties that the Contractor shall make no claim against the Owner or any agents of the Owner, including the Architect or its consultants, except as may be provided for claims or disputes submitted in accordance with Article 24. The Architect and Architect's consultants shall be considered third party beneficiaries of this provision of the Contract and entitled to enforce same.

E. ARCHITECT'S DECISIONS

Decisions by the Architect shall be in writing. The Architect's decisions on matters relating to aesthetic effect will be final and binding if consistent with the intent expressed in the Contract Documents. The Architect's decisions regarding disputes arising between the Contractor and Owner shall be advisory.

**ARTICLE 43
CASH ALLOWANCES**

A. All allowances stated in the Contract Documents shall be included in the Contract Sum. Items covered by allowances shall be supplied by the Contractor as directed by the Architect or Owner and the Contractor shall afford the Owner the economy of obtaining competitive pricing from responsible bidders for allowance items unless other purchasing procedures are specified in the Contract Documents.

B. Unless otherwise provided in the Contract Documents:

(1) allowances shall cover the cost to the Contractor of materials and equipment delivered to the

- Project site and all applicable taxes, less applicable trade discounts;
- (2) the Contractor's costs for unloading, storing, protecting, and handling at the site, labor, installation, overhead, profit and other expenses related to materials or equipment covered by an allowance shall be included in the Contract Sum but not in the allowances;
 - (3) if required, the Contract Sum shall be adjusted by Change Order to reflect the actual costs of an allowance.
- C. Any selections of materials or equipment required of the Architect or Owner under an allowance shall be made in sufficient time to avoid delay of the Work.

ARTICLE 44

PERMITS, LAWS, and REGULATIONS

A. PERMITS, FEES AND NOTICES

(1) Unless otherwise provided in the Contract Documents, the Contractor shall secure and pay for the building permit and other permits and governmental fees, licenses, and inspections necessary for proper execution and completion of the Work which are customarily secured after award of the Construction Contract and which are in effect on the date of receipt of bids.

(2) The Contractor shall comply with and give notices required by all laws, ordinances, rules, regulations, and lawful orders of public authorities applicable to performance of the Work.

B. TAXES

Unless stated otherwise in the Contract Documents, materials incorporated into the Work are exempt from sales and use tax pursuant to Section 40-9-33, Code of Alabama, 1975 as amended. The Owner, Contractor and its subcontractors shall be responsible for complying with rules and regulations of the Sales, Use, & Business Tax Division of the Alabama Department of Revenue regarding certificates and other qualifications necessary to claim such exemption when making qualifying purchases from vendors. The Contractor shall pay all applicable taxes that are not covered by the exemption of Section 40-9-33 and which are imposed as of the date of receipt of bids, including those imposed as of the date of receipt of bids but scheduled to go into effect after that date.

C. COMPENSATION for INCREASES

The Contractor shall be compensated for additional costs incurred because of increases in tax rates imposed after the date of receipt of bids.

D. ALABAMA IMMIGRATION LAW

Per ACT 2011-535 as codified in Title 31, Chapter 13 of the Code of Alabama, 1975, as amended:

The contracting parties affirm, for the duration of the agreement, that they will not violate federal immigration law or knowingly employ, hire for employment, or continue to employ an unauthorized alien within the State of Alabama. Furthermore, a contracting party found to be in violation of this provision shall be deemed in breach of the agreement and shall be responsible for

all damages resulting therefrom.

E. ALABAMA BOYCOTT LAW

Per Act 2016-312as codified in Title 41, Chapter 16, Article 1, of the Code of Alabama, 1975, as amended:

The contracting parties affirm, for the duration of the agreement, that they are not currently engaged in, and will not engage in, the boycott of a person or an entity based in or doing business with a jurisdiction with which this state can enjoy open trade.

F. ACCOUNTING OF SALES TAX EXEMPT PROJECTS

Per Act 2013-205 as codified in Title 40, Chapter 9, Article 1, of the Code of Alabama, 1975, as amended:

In bidding the work on a tax exempt project, the bid form shall provide an accounting for the tax savings.

ARTICLE 45
ROYALTIES, PATENTS, and COPYRIGHTS

The Contractor shall pay all royalties and license fees. The Contractor shall defend, indemnify and hold harmless the Owner, Architect, Architect's consultants, Alabama Division of Construction Management, State Department of Education (if applicable), and their agents, employees, and consultants from and against all claims, damages, losses and expenses, including but not limited to attorney's fees, arising out of, related to, or resulting from all suits or claims for infringement of any patent rights or copyrights arising out of the inclusion of any patented or copyrighted materials, methods, or systems selected by the Contractor and used during the execution of or incorporated into the Work. This indemnification does not apply to any suits or claims of infringement of any patent rights or copyrights arising out of any patented or copyrighted materials, methods, or systems specified in the Contract Documents. However, if the Contractor has information that a specified material, method, or system is or may constitute an infringement of a patent or copyright, the Contractor shall be responsible for any resulting loss unless such information is promptly furnished to the Architect.

ARTICLE 46
USE of the SITE

- A. The Contractor shall confine its operations at the Project site to areas permitted by the Owner and by law, ordinances, permits and the Contract Documents and shall not unreasonably encumber the site with materials, equipment, employees' vehicles, or debris. The Contractor's operations at the site shall be restricted to the sole purpose of constructing the Work, use of the site as a staging, assembly, or storage area for other business which the Contractor may undertake shall not be permitted.
- B. Unless otherwise provided in the Contract Documents, temporary facilities, such as storage sheds, shops, and offices may be erected on the Project site with the approval of the Architect and Owner.

Such temporary buildings and/or utilities shall remain the property of the Contractor, and be removed at the Contractor's expense upon completion of the Work, unless the Owner authorizes their abandonment without removal.

ARTICLE 47
CUTTING and PATCHING

- A. The Contractor shall be responsible for all cutting, fitting, or patching that may be required to execute the Work to the results indicated in the Contract Documents or to make its parts fit together properly.
- B. Any cutting, patching, or excavation by the Contractor shall be supervised and performed in a manner that will not endanger persons nor damage or endanger the Work or any fully or partially completed construction of the Owner or separate contractors.

ARTICLE 48
IN-PROGRESS and FINAL CLEANUP

A. IN-PROGRESS CLEAN-UP

(1) The Contractor shall at all times during the progress of the Work keep the premises and surrounding area free from rubbish, scrap materials and debris resulting from the Work. Trash and combustible materials shall not be allowed to accumulate inside buildings or elsewhere on the premises. At no time shall any rubbish be thrown from window openings. Burning of trash and debris on site is not permitted.

(2) The Contractor shall make provisions to minimize and confine dust and debris resulting from construction activities.

B. FINAL CLEAN-UP

(1) Before Substantial Completion or Final Acceptance is achieved, the Contractor shall have removed from the Owner's property all construction equipment, tools, and machinery; temporary structures and/or utilities including the foundations thereof (except such as the Owner permits in writing to remain); rubbish, debris, and waste materials; and all surplus materials, leaving the site clean and true to line and grade, and the Work in a safe and clean condition, ready for use and operation.

(2) In addition to the above, and unless otherwise provided in the Contract Documents, the Contractor shall be responsible for the following special cleaning for all trades as the Work is completed:

- (a) **Cleaning of all painted, enameled, stained, or baked enamel work:** Removal of all marks, stains, finger prints and splatters from such surfaces.
- (b) **Cleaning of all glass:** Cleaning and removing of all stickers, labels, stains, and paint from all glass, and the washing and polishing of same on interior and exterior.
- (c) **Cleaning or polishing of all hardware:** Cleaning and polishing of all hardware.
- (d) **Cleaning all tile, floor finish of all kinds:** Removal of all splatters, stains, paint, dirt,

and dust, the washing and polishing of all floors as recommended by the manufacturer or required by the Architect.

(e) Cleaning of all manufactured articles, materials, fixtures, appliances, and equipment: Removal of all stickers, rust stains, labels, and temporary covers, and cleaning and conditioning of all manufactured articles, material, fixtures, appliances, and electrical, heating, and air conditioning equipment as recommended or directed by the manufacturers, unless otherwise required by the Architect; blowing out or flushing out of all foreign matter from all equipment, piping, tanks, pumps, fans, motors, devices, switches, panels, fixtures, boilers, sanitizing potable water systems; and freeing identification plates on all equipment of excess paint and the polishing thereof.

C. OWNER'S RIGHT to CLEAN-UP

If the Contractor fails to comply with these clean-up requirements and then fails to comply with a written directive by the Architect to clean-up the premises within a specified time, the Architect or Owner may implement appropriate clean-up measures and the cost thereof shall be deducted from any amounts due or to become due the Contractor.

ARTICLE 49
LIQUIDATED DAMAGES

- A. Time is the essence of the Contract. Any delay in the completion of the Work required by the Contract Documents may cause inconvenience to the public and loss and damage to the Owner including but not limited to interest and additional administrative, architectural, inspection and supervision charges. By executing the Construction Contract, the Contractor agrees that the Contract Time is sufficient for the achievement of Substantial Completion.
- B. The Contract Documents may provide in the Construction Contract or elsewhere for a certain dollar amount for which the Contractor and its Surety (if any) will be liable to the Owner as liquidated damages for each calendar day after expiration of the Contract Time that the Contractor fails to achieve Substantial Completion of the Work. If such daily liquidated damages are provided for, Owner and Contractor, and its Surety, agree that such amount is reasonable and agree to be bound thereby.
- C. If a daily liquidated damage amount is not otherwise provided for in the Contract Documents, a time charge equal to six percent interest per annum on the total Contract Sum may be made against the Contractor for the entire period after expiration of the Contract Time that the Contractor fails to achieve Substantial Completion of the Work.
- D. The amount of liquidated damages due under either paragraph B or C, above, may be deducted by the Owner from the moneys otherwise due the Contractor in the Final Payment, not as a penalty, but as liquidated damages sustained, or the amount may be recovered from Contractor or its Surety. If part of the Work is substantially completed within the Contract Time and part is not, the stated charge for liquidated damages shall be equitably prorated to that portion of the Work that the Contractor fails to substantially complete within the Contract Time. It is mutually understood and agreed between the parties hereto that such amount is reasonable as liquidated damages.

ARTICLE 50
USE of FOREIGN MATERIALS

- A. In the performance of the Work the Contractor agrees to use materials, supplies, and products manufactured, mined, processed or otherwise produced in the United States or its territories, if same are available at reasonable and competitive prices and are not contrary to any sole source specification implemented under the Public Works Law.
- B. In the performance of the Work the Contractor agrees to use steel produced in the United States if the Contract Documents require the use of steel and do not limit its supply to a sole source pursuant to the Public Works Law. If the Owner decides that the procurement of domestic steel products becomes impractical as a result of national emergency, national strike, or other cause, the Owner shall waive this restriction.
- C. If domestic steel or other domestic materials, supplies, and products are not used in accordance with preceding Paragraphs A and B, the Contract Sum shall be reduced by an amount equal to any savings or benefits realized by the Contractor.
- D. This Article applies only to Public Works projects financed entirely by the State of Alabama or any political subdivision of the state.

ARTICLE 51
PROJECT SIGN

- A. Fully locally-funded State Agency and Public Higher Education projects: DCM Form C-15: Detail of Project Sign must be included in the project manual regardless of expected bid amount. If the awarded contract sum is \$100,000.00 or more, Contractor shall furnish and erect a project sign. Other conditions besides the contract sum may warrant waiver of this requirement, but only with approval of the Technical Staff.
- B. Fully locally-funded K-12 school projects: Project sign is not required unless requested by Owner; if project sign is requested by Owner, include DCM Form C-15: Detail of Project Sign in the project manual.
- C. Partially or fully PSCA-funded projects: DCM Form C-15: Detail of Project Sign must be included in the project manual. Contractor shall furnish and erect a project sign for all PSCA-funded projects, regardless of the contract sum. "Alabama Public School and College Authority" as well as the local owner entity must be included as awarding authorities on the project sign of all PSCA-funded projects.

When required per the above conditions, the project sign shall be erected in a prominent location selected by the Architect and Owner and shall be maintained in good condition until completion of Work. If the Contract involves Work on multiple sites, only one project sign is required, which shall be erected on one of the sites in a location selected by the Architect and Owner. Slogan: The title of the current PSCA Act should be placed on the project sign of all PSCA-funded projects, otherwise the Awarding Authority/Owner's slogan, if any, should be used. If the Awarding Authority/Owner of a fully locally-funded project does not have a slogan, the project sign does not require a slogan.

ARTICLE 37
CONTRACTOR'S and SUBCONTRACTORS' INSURANCE

(Provide entire Article 37 to Contractor's insurance representative.)

A. GENERAL

(1) RESPONSIBILITY. The Contractor shall be responsible to the Owner from the time of the signing of the Construction Contract or from the beginning of the first work, whichever shall be earlier, for all injury or damage of any kind resulting from any negligent act or omission or breach, failure or other default regarding the work by the Contractor, a Subcontractor, anyone directly or indirectly employed by them or anyone for whose acts they may be liable, regardless of who may be the owner of the property.

(2) INSURANCE PROVIDERS. Each of the insurance coverages required below shall be issued by an insurer licensed by the Insurance Commissioner to transact the business of insurance in the State of Alabama for the applicable line of insurance, and such insurer (or, for qualified self-insureds or group self-insureds, a specific excess insurer providing statutory limits) must have a Best Policyholders Rating of "A-" or better and a financial size rating of Class V or larger.

(3) NOTIFICATION ENDORSEMENT. Each policy shall be endorsed to provide that the insurance company agrees that the policy shall not be canceled, changed, allowed to lapse or allowed to expire for any reason until thirty days after the Owner has received written notice by certified mail as evidenced by return receipt or until such time as other insurance coverage providing protection equal to protection called for in the Contract Documents shall have been received, accepted and acknowledged by the Owner. Such notice shall be valid only as to the Project as shall have been designated by Project Name and Number in said notice.

(4) INSURANCE CERTIFICATES. The Contractor shall procure the insurance coverages identified below, or as otherwise required in the Contract Documents, at the Contractor's own expense, and to evidence that such insurance coverages are in effect, the Contractor shall furnish the Owner an insurance certificate(s) acceptable to the Owner and listing the Owner as the certificate holder. The insurance certificate(s) must be delivered to the Owner with the Construction Contract and Bonds for final approval and execution of the Construction Contract. The insurance certificate must provide the following:

- (a)** Name and address of authorized agent of the insurance company
- (b)** Name and address of insured
- (c)** Name of insurance company or companies
- (d)** Description of policies
- (e)** Policy Number(s)
- (f)** Policy Period(s)
- (g)** Limits of liability
- (h)** Name and address of Owner as certificate holder
- (i)** Project Name and Number, if any
- (j)** Signature of authorized agent of the insurance company
- (k)** Telephone number of authorized agent of the insurance company
- (l)** Mandatory thirty day notice of cancellation / non-renewal / change

(5) MAXIMUM DEDUCTIBLE. Self-insured retention, except for qualified self-insurers or

group self-insurers, in any policy shall not exceed \$25,000.00.

B. INSURANCE COVERAGES

Unless otherwise provided in the Contract Documents, the Contractor shall purchase the types of insurance coverages with liability limits not less than as follows:

(1) WORKERS' COMPENSATION and EMPLOYER'S LIABILITY INSURANCE

(a) Workers' Compensation coverage shall be provided in accordance with the statutory coverage required in Alabama. A group insurer must submit a certificate of authority from the Alabama Department of Industrial Relations approving the group insurance plan. A self-insurer must submit a certificate from the Alabama Department of Industrial Relations stating the Contractor qualifies to pay its own workers' compensation claims.

(b) Employer's Liability Insurance limits shall be at least:

- .1 Bodily Injury by Accident - \$1,000,000 each accident
- .2 Bodily Injury by Disease - \$1,000,000 each employee

(2) COMMERCIAL GENERAL LIABILITY INSURANCE

(a) Commercial General Liability Insurance, written on an ISO Occurrence Form (current edition as of the date of Advertisement for Bids) or equivalent, shall include, but need not be limited to, coverage for bodily injury and property damage arising from premises and operations liability, products and completed operations liability, blasting and explosion, collapse of structures, underground damage, personal injury liability and contractual liability. The Commercial General Liability Insurance shall provide at minimum the following limits:

<u>Coverage</u>	<u>Limit</u>
.1 General Aggregate	\$ 2,000,000.00 per Project
.2 Products, Completed Operations Aggregate	\$ 2,000,000.00 per Project
.3 Personal and Advertising Injury	\$ 1,000,000.00 per Occurrence
.4 Each Occurrence	\$ 1,000,000.00

(b) Additional Requirements for Commercial General Liability Insurance:

- .1 The policy shall name the Owner, Architect, Alabama Division of Construction Management, State Department of Education (if applicable), and their agents, consultants and employees as additional insureds, state that this coverage shall be primary insurance for the additional insureds; and contain no exclusions of the additional insureds relative to job accidents.
- .2 The policy must include separate per project aggregate limits.

(3) COMMERCIAL BUSINESS AUTOMOBILE LIABILITY INSURANCE

(a) Commercial Business Automobile Liability Insurance which shall include coverage for bodily injury and property damage arising from the operation of any owned, non-owned or hired automobile. The Commercial Business Automobile Liability Insurance Policy shall provide not less than \$1,000,000 Combined Single Limits for each occurrence.

(b) The policy shall name the Owner, Architect, Alabama Division of Construction Management, State Department of Education (if applicable), and their agents, consultants, and employees as additional insureds.

(4) COMMERCIAL UMBRELLA LIABILITY INSURANCE

(a) Commercial Umbrella Liability Insurance to provide excess coverage above the

Commercial General Liability, Commercial Business Automobile Liability and the Workers' Compensation and Employer's Liability to satisfy the minimum limits set forth herein.

(b) Minimum Combined Primary Commercial General Liability and Commercial/Excess Umbrella Limits of:

- .1 \$ 5,000,000 per Occurrence
- .2 \$ 5,000,000 Aggregate

(c) Additional Requirements for Commercial Umbrella Liability Insurance:

- .1 The policy shall name the Owner, Architect, Alabama Division of Construction Management, State Department of Education (if applicable), and their agents, consultants, and employees as additional insureds.
- .2 The policy must be on an "occurrence" basis.

(5) BUILDER'S RISK INSURANCE

(a) The Builder's Risk Policy shall be made payable to the Owner and Contractor, as their interests may appear. The policy amount shall be equal to 100% of the Contract Sum, written on a Causes of Loss - Special Form (current edition as of the date of Advertisement for Bids), or its equivalent. All deductibles shall be the sole responsibility of the Contractor.

(b) The policy shall be endorsed as follows:

"The following may occur without diminishing, changing, altering or otherwise affecting the coverage and protection afforded the insured under this policy:

- (i) Furniture and equipment may be delivered to the insured premises and installed in place ready for use; or
- (ii) Partial or complete occupancy by Owner; or
- (iii) Performance of work in connection with construction operations insured by the Owner, by agents or lessees or other contractors of the Owner, or by contractors of the lessee of the Owner."

C. SUBCONTRACTORS' INSURANCE

(1) WORKERS' COMPENSATION and EMPLOYER'S LIABILITY INSURANCE. The Contractor shall require each Subcontractor to obtain and maintain Workers' Compensation and Employer's Liability Insurance coverages as described in preceding Paragraph B, or to be covered by the Contractor's Workers' Compensation and Employer's Liability Insurance while performing Work under the Contract.

(2) LIABILITY INSURANCE. The Contractor shall require each Subcontractor to obtain and maintain adequate General Liability, Automobile Liability, and Umbrella Liability Insurance coverages similar to those described in preceding Paragraph B. Such coverage shall be in effect at all times that a Subcontractor is performing Work under the Contract.

(3) ENFORCEMENT RESPONSIBILITY. The Contractor shall have responsibility to enforce its Subcontractors' compliance with these or similar insurance requirements; however, the Contractor shall, upon request, provide the Architect or Owner acceptable evidence of insurance for any Subcontractor.

D. TERMINATION of OBLIGATION to INSURE

Unless otherwise expressly provided in the Contract Documents, the obligation to insure as provided herein shall continue as follows:

(1) BUILDER’S RISK INSURANCE. The obligation to insure under Subparagraph B(5) shall remain in effect until the Date of Substantial Completion as shall be established in the Certificate of Substantial Completion. In the event that multiple Certificates of Substantial Completion covering designated portions of the Work are issued, Builder’s Risk coverage shall remain in effect until the Date of Substantial Completion as shall be established in the last issued Certificate of Substantial Completion. However, in the case that the Work involves separate buildings, Builder’s Risk coverage of each separate building may terminate on the Date of Substantial Completion as established in the Certificate of Substantial Completion issued for each building.

(2) PRODUCTS and COMPLETED OPERATIONS. The obligation to carry Products and Completed Operations coverage specified under Subparagraph B(2) shall remain in effect for two years after the Date(s) of Substantial Completion.

(3) ALL OTHER INSURANCE. The obligation to carry other insurance coverages specified under Subparagraphs B(1) through B(4) and Paragraph C shall remain in effect after the Date(s) of Substantial Completion until such time as all Work required by the Contract Documents is completed. Equal or similar insurance coverages shall remain in effect if, after completion of the Work, the Contractor, a Subcontractor, anyone directly or indirectly employed by them or anyone for whose acts they may be liable, returns to the Project to perform warranty or maintenance work pursuant to the terms of the Contract Documents.

E. 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 performing construction or operations related to the Project, if any, and any of their subcontractors, sub-subcontractors, agents and employees, for damages caused by fire or other causes of loss. But said waiver shall apply only to the extent the loss or damage is covered by builder’s risk insurance applicable to the Work or to other property located within or adjacent to the Project, except such rights as they may have to proceeds of such insurance held by the Owner or Contractor as fiduciary. The Owner or Contractor, as appropriate, shall require of the Architect, Architect’s consultants, separate contractors, if any, and the subcontractor, sub-subcontractors, suppliers, 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 the 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. The waivers provided for in this paragraph shall not be applicable to loss or damage that occurs after final acceptance of the Work.

ARTICLE 38
PERFORMANCE and PAYMENT BONDS

A. GENERAL

Upon signing and returning the Construction Contract to the Owner for final approval and execution, the Contractor shall, at the Contractor’s expense, furnish to the Owner a Performance Bond and a Payment Bond (P&P Bonds), DCM Forms C-6 and C-7 as contained in the Project

DCM (BC) No. _____

PSCA Projects: PSCA No. _____

Application No. _____

Date: _____

APPLICATION and CERTIFICATE for PAYMENT

Attach DCM Form C-10SOV: Schedule of Values

TO OWNER: Entity Name: _____ Address: _____	PROJECT _____
FROM CONTRACTOR: Company Name: _____ Address: _____	ARCHITECT/ENGINEER: Firm Name: _____ Address: _____

Total Original Contract	\$ _____
Fully Executed Change Order(s) Numbers ___ through ___	\$ _____
Total Contract To Date	\$ _____
<hr/>	
1. Work Completed to Date per attached Schedule of Values	\$ _____
2. Stored Materials <i>(Attach list or Form DCM C10-SM, Inventory of Stored Materials)</i>	\$ _____
3. Total Completed Work and Stored Materials (_____ % of Contract To Date)	\$ _____
4. Less Retainage <i>(5% of Total Completed Work & Stored Materials [TCWSM] is retained when TCWSM is less than 50% of Total Contract To Date [TCTD]. 0 is retained on final pay. app)</i>	(\$ _____)
5. Total Due	\$ _____
6. Less Total Previous Payments	(\$ _____)
7. Balance Due This Estimate	\$ _____

CONTRACTOR'S CERTIFICATION

The undersigned Contractor certifies that to the best of his knowledge, information, and belief the Work covered by this Application for Payment has been completed in accordance with the Contract Documents, that all amounts have been paid by him for Work for which previous Certificates for Payments were issued and payments received from the Owner and that current payment shown herein has not yet been received.

By: _____ Date: _____
 Contractor's Signature

Name & Title _____

Sworn and subscribed before me this _____ day of _____
 Month, Year

Seal: _____

 Notary Public's Signature

ARCHITECT'S/ENGINEER'S CERTIFICATION

In accordance with the Contract Documents, the Architect/Engineer certifies to the Owner that, to the best of the Architect's/Engineer's knowledge and belief, the Work has progressed to the point indicated herein, the quality of the Work is in accordance with the Contract Documents, and the Contractor is entitled to payment of the amount approved.

By _____
 Architect's/Engineer's Signature

Name & Title _____

Date _____

- INSTRUCTIONS**
- Four copies of pay. app, each with original signatures and all attachments required.
 - Date of first payment application cannot precede the Notice to Proceed's Begin Date.
 - Pay app must exactly match an attached DCM Form C-10SOV. Schedule of Values.
 - A change order must be fully executed before inclusion on a payment application.
 - On a final payment application, all change orders must be fully executed and included.
 - Contractor's signature date cannot precede the payment application date.
 - Progress schedules must be included with non-final payment applications.
 - One payment application per month may be submitted.
 - Retainage is released when the Certificate of Substantial Completion is fully executed, all other close-out requirements per General Conditions Article 34 are completed and the final payment application is reviewed, approved and processed.

APPROVAL

 Owner Entity

By _____
 Signature

Name & Title _____

Date _____

SCHEDULE OF VALUES

DCM Form C-10SOV

August 2021

Project:

DCM (BC) No.:

Contractor Company:

PSCA projects: PSCA No.:

Application No.:

Retainage: 5% of Completed Work and Stored Materials to Date (G) is retained when G Total is less than 50% of Scheduled Value (C) Total. 0 is retained on final payment application.

Application Date:

Period From:

Period To:

A	B	C	D		E	F		G		H	I
Item No.	Description of Work	Scheduled Value (including fully executed change orders)	Work Completed		Materials Presently Stored (Not in D or E)	Completed Work & Stored Materials to Date (D+E+F)	% of Contract to Date (G/C)	Balance to Finish (C-G)	Retainage (Variable Rate)		
			From Previous Application (D+E)	This Period							
1.						\$ -			\$ -		
2.						\$ -			\$ -		
3.						\$ -			\$ -		
4.						\$ -			\$ -		
5.						\$ -			\$ -		
6.						\$ -			\$ -		
7.						\$ -			\$ -		
8.						\$ -			\$ -		
9.						\$ -			\$ -		
10.						\$ -			\$ -		
11.						\$ -			\$ -		
12.						\$ -			\$ -		
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18.						\$ -			\$ -		
19.						\$ -			\$ -		
20.						\$ -			\$ -		
21.						\$ -			\$ -		
22.						\$ -			\$ -		
23.						\$ -			\$ -		
24.						\$ -			\$ -		
25.						\$ -			\$ -		
26.						\$ -			\$ -		
27.						\$ -			\$ -		
28.						\$ -			\$ -		
29.						\$ -			\$ -		
30.						\$ -			\$ -		
TOTALS:		\$ -	\$ -	\$ -	\$ -	\$ -		\$ -	\$ -		



State of Alabama Disclosure Statement

Required by Article 3B of Title 41, Code of Alabama 1975

ENTITY COMPLETING FORM

ADDRESS

CITY, STATE, ZIP

TELEPHONE NUMBER

STATE AGENCY/DEPARTMENT THAT WILL RECEIVE GOODS, SERVICES OR IS RESPONSIBLE FOR GRANT AWARD

ADDRESS

CITY, STATE, ZIP

TELEPHONE NUMBER

This form is provided with:

Contract Proposal Request for Proposal Invitation to Bid Grant Proposal

Have you or any of your partners, divisions, or any related business units previously performed work or provided goods to any State Agency/Department in the current or last fiscal year?

Yes No

If yes, identify below the State Agency/Department that received the goods or services, the type(s) of goods or services previously provided, and the amount received for the provision of such goods or services.

STATE AGENCY/DEPARTMENT	TYPE OF GOODS/SERVICES	AMOUNT RECEIVED

Have you or any of your partners, divisions, or any related business units previously applied and received any grants from any State Agency/Department in the current or last fiscal year?

Yes No

If yes, identify the State Agency/Department that awarded the grant, the date such grant was awarded, and the amount of the grant.

STATE AGENCY/DEPARTMENT	DATE GRANT AWARDED	AMOUNT OF GRANT

1. List below the name(s) and address(es) of all public officials/public employees with whom you, members of your immediate family, or any of your employees have a family relationship and who may directly personally benefit financially from the proposed transaction. Identify the State Department/Agency for which the public officials/public employees work. (Attach additional sheets if necessary.)

NAME OF PUBLIC OFFICIAL/EMPLOYEE	ADDRESS	STATE DEPARTMENT/AGENCY

2. List below the name(s) and address(es) of all family members of public officials/public employees with whom you, members of your immediate family, or any of your employees have a family relationship and who may directly personally benefit financially from the proposed transaction. Identify the public officials/public employees and State Department/Agency for which the public officials/public employees work. (Attach additional sheets if necessary.)

NAME OF FAMILY MEMBER	ADDRESS	NAME OF PUBLIC OFFICIAL/ PUBLIC EMPLOYEE	STATE DEPARTMENT/ AGENCY WHERE EMPLOYED
-----------------------	---------	---	--

If you identified individuals in items one and/or two above, describe in detail below the direct financial benefit to be gained by the public officials, public employees, and/or their family members as the result of the contract, proposal, request for proposal, invitation to bid, or grant proposal. (Attach additional sheets if necessary.)

Describe in detail below any indirect financial benefits to be gained by any public official, public employee, and/or family members of the public official or public employee as the result of the contract, proposal, request for proposal, invitation to bid, or grant proposal. (Attach additional sheets if necessary.)

List below the name(s) and address(es) of all paid consultants and/or lobbyists utilized to obtain the contract, proposal, request for proposal, invitation to bid, or grant proposal:

NAME OF PAID CONSULTANT/LOBBYIST	ADDRESS
----------------------------------	---------

By signing below, I certify under oath and penalty of perjury that all statements on or attached to this form are true and correct to the best of my knowledge. I further understand that a civil penalty of ten percent (10%) of the amount of the transaction, not to exceed \$10,000.00, is applied for knowingly providing incorrect or misleading information.

Signature _____ Date _____

Notary's Signature _____ Date _____ Date Notary Expires _____

Article 3B of Title 41, Code of Alabama 1975 requires the disclosure statement to be completed and filed with all proposals, bids, contracts, or grant proposals to the State of Alabama in excess of \$5,000.

SAMPLE PROGRESS SCHEDULE & REPORT		CONTRACTOR (Contractor may use own form in lieu of Form C-11):	DATE OF REPORT:
DCM (BC) No.:	ARCHITECT/ENGINEER:		PROCEED DATE:
PSCA projects: PSCA No.:			PROJECTED COMPLETION DATE:
PROJECT:			

WORK DIVISION	%	AMOUNT													
1. GENERAL REQUIREMENTS															
2. SITEWORK															
3. CONCRETE															
4. MASONRY															
5. METALS															
6. WOOD AND PLASTIC															100%
7. THERMAL AND MOISTURE PROTECTION															90%
8. DOORS AND WINDOWS															80%
9. FINISHES															70%
10. SPECIALTIES															60%
11. EQUIPMENT															50%
12. FURNISHINGS															40%
13. SPECIAL CONSTRUCTION															30%
14. CONVEYING SYSTEMS															20%
15. MECHANICAL															10%
16. ELECTRICAL															0%
TOTAL ORIG. CONTRACT	100%														
ANTICIPATED DRAW IN \$1,000															
ACTUAL DRAW IN \$1,000															

										USE ADDITIONAL SHEETS IF JOB IS SCHEDULED OVER 12 MONTHS.	DCM Form C-11 August 2021
LEGEND:	ANTICIPATED ACTIVITY	ACTUAL ACTIVITY	ANTICIPATED CASH FLOW	ACTUAL CASH FLOW							

INVENTORY OF STORED MATERIALS

Project:			DCM (BC) No.:		
			PSCA projects: PSCA No.:		
Contractor:			For Estimate No.:		
			For Period Ending:		
A	B	C	D	E	F
DESCRIPTION	MATERIALS STORED LAST PERIOD	PURCHASED THIS PERIOD	TOTAL COLUMNS B + C	MATERIALS USED THIS PERIOD	MATERIALS PRESENTLY STORED

To be used as documentation to support value of Stored Materials reported on APPLICATION AND CERTIFICATE FOR PAYMENT.

Page ___ of ___

DCM Form C-10SM
August 2021

CONTRACT CHANGE ORDER

Change Order No. _____ Date _____ DCM (BC) # _____ (required)
PSCA # _____ (required)

TO: Contractor Company Name & Address:	PROJECT:
---	-----------------

TERMS: You are hereby authorized, subject to the provisions of your Contract for this project, to make the following changes thereto in accordance with your proposal(s) dated _____

FURNISH the necessary labor, materials, and equipment to (*Description of work to be done or changes to be made. If the description is continued in an attachment, identify the attachment below.*):

Description continued from Page 1:

ORIGINAL CONTRACT SUM \$ _____

NET TOTAL OF PREVIOUS CHANGE ORDERS \$ _____

PREVIOUS REVISED CONTRACT SUM \$ _____

THIS CHANGE ORDER WILL INCREASE DECREASE
THE CONTRACT SUM BY \$ _____

REVISED CONTRACT SUM, INCLUDING THIS CHANGE ORDER \$ _____

EXTENSION OF TIME resulting from this Change Order: None or _____ Calendar days

The amount of this Change Order will be the responsibility of _____

(Owner and/or PSCA)

The Owner does hereby certify that this Change Order was executed per the provisions of Title 39, Code of Alabama, 1975, as amended.

CONTRACTING PARTIES

Architectural/Engineering Firm

Recommended By _____

Name & Title _____

Contractor Company

By _____

Name & Title _____

Local Owner Entity

By _____

Name & Title _____

ALABAMA PUBLIC SCHOOL & COLLEGE AUTHORITY

By _____ Date _____

Governor and President of Authority

APPROVALS

**ALABAMA DEPARTMENT OF FINANCE,
REAL PROPERTY MANAGEMENT
DIVISION OF CONSTRUCTION MANAGEMENT (DCM)**

By _____

Director

Reviewed By _____

Contract Administrator

For DCM office use only:

- PSCA funds are available to fund this change order.
- PSCA funds will not be used to fund this change order.

CONSENT OF SURETY

Surety Company

By _____

(Attach current Power of Attorney)

Name & Title _____

Review/Signature flow: Architect/Engineer (prepare documents) > Contractor (review and sign) (> Surety for additive \$ change orders only [sign]) > Architect/Engineer (review and sign) > Local Owner (review and sign) > DCM (review and sign) > Finance-Legal > Governor (review and sign) > DCM (distribute fully executed Change Order to all parties).

TO: Alabama Department of Finance
Real Property Management
Division of Construction Management
 770 Washington Avenue, Suite 444
 Montgomery, Alabama 36104
 (334) 242-4082 FAX (334) 242-4182

CHANGE ORDER JUSTIFICATION

Change Order No. _____

Date: _____

DCM (BC) No. _____

*Purpose and instructions on next page.
 Do not staple this form and/or attachments; use clips.*

(A)	PROJECT NAME & LOCATION:	OWNER ENTITY NAME & ADDRESS:
	CONTRACTOR COMPANY NAME & ADDRESS:	ARCHITECTURAL / ENGINEERING FIRM NAME & ADDRESS:
(B)	DESCRIPTION OF PROPOSED CHANGE(S): ATTACH CONTRACTOR'S DETAILED COST PROPOSAL(s)	
	AMOUNT: <input type="checkbox"/> ADD <input type="checkbox"/> DEDUCT \$ _____ TIME EXTENSION: _____ CALENDAR DAYS	
(C)	ORIGINAL CONTRACT AMOUNT \$ _____ + \$ _____	PREVIOUS C.O.'s _____ THRU _____ CONTRACT AMOUNT PRIOR TO PROPOSED CHANGE ORDER = \$ _____
(D)	JUSTIFICATION FOR NEED OF CHANGE(S):	
(E)	JUSTIFICATION OF CHANGE ORDER vs. COMPETITIVE BID:	
(F)	ARCHITECT / ENGINEER'S EVALUATION OF PROPOSED COST:	
(G)	CHANGE ORDER RECOMMENDED _____ ARCHITECTURAL / ENGINEERING FIRM NAME By: _____ ARCHITECT / ENGINEER'S SIGNATURE By: _____ OWNER'S PROJECT REPRESENTATIVE'S SIGNATURE	CHANGE ORDER JUSTIFIED AND APPROVED _____ LOCAL OWNER ENTITY NAME By: _____ OWNER'S SIGNATURE By: _____ OWNER'S LEGAL COUNSEL'S SIGNATURE

CHANGE ORDER JUSTIFICATION: PURPOSE and INSTRUCTIONS

PURPOSE

The awarding of work through an existing contract may potentially conflict with, or violate, the "Competitive Bid Laws" of the State of Alabama. **The determination of legality of Change Orders rests with the Awarding Authority and its legal advisor.** In a June 15, 1979, Opinion, the Office of the Attorney General offered guidelines for making such determinations in conjunction with considering the facts and merits of each situation. The purpose of the CHANGE ORDER JUSTIFICATION is to provide a means through which the Awarding Authority considers these guidelines and the intent of the "Competitive Bid Laws" when authorizing Change Orders. Pursuant to these guidelines, the following types of changes meet the criteria for awarding work through Change Orders in lieu of through the Competitive Bid process:

- I. Minor Changes for a monetary value less than required for competitive bidding.
- II. Changes for matters relatively minor and incidental to the original contract necessitated by unforeseeable circumstances arising during the course of the work.
- III. Emergencies arising during the course of the work of the contract.
- IV. Bid alternates provided for in the original bidding where there is no difference in price of the change order from the original best bid on the alternate.
- V. Changes of relatively minor items not contemplated when the plans and specifications were prepared and the project was bid which are in the public interest and which do not exceed 10% of the contract price.

Under these guidelines the cumulative total of Change Orders, including any negotiations to bring the original contract price within the funds available, would become questionable if the total of such changes and negotiations exceed 10% of the original contract price. These guidelines are not intended to interfere with the Awarding Authority's good faith discretion to respond to specific situations in the public's best interest. If the cumulative change order amount exceeds 10% of the original contract amount then the Owner's legal consultant must sign the Change Order Justification prior to submission to the Division of Construction Management (DCM).

INSTRUCTIONS

The CHANGE ORDER JUSTIFICATION is to be prepared by the design professional, who has evaluated the fairness and reasonableness of the proposed cost of the change(s) and recommends that the proposed Change Order be executed. The fully executed Form B-11: CHANGE ORDER JUSTIFICATION must accompany the proposed DCM Form C-12: Change Order. Instructions for completing the B-11 form are:

1. Insert the proposed Change Order Number, date of the Justification, and DCM (BC) Project Number in the spaces provided in the upper right-hand corner.
2. **Section (A):** Insert the complete name and address of the PROJECT, OWNER, CONTRACTOR, AND ARCHITECT/ENGINEER.
3. **Section (B):** Provide a complete description of the proposed changes in work, referring to and attaching revised specifications and/or drawings as appropriate. An attachment may be used if additional space is needed, but insert the proposed amount and time extension of the change(s) in the spaces provided. **Attached a copy of the contractor's detailed cost proposal.**
4. **Section (C):** Insert the Original Contract amount, the net increase or decrease of previous Change Orders, and the Current Contract amount (preceding the currently proposed Change Order).
5. **Section (D):** Explain why it is necessary, or in the public's interest, to make the proposed change(s) to the Work.
6. **Section (E):** Explain why award of the changed work to the existing contractor instead of awarding the work under the competitive bid process is justified.
7. **Section (F):** The design professional must state his evaluation of the reasonableness and fairness of the proposed costs based upon his review of the contractor's proposal.
8. **Section (G):** The design professional must recommend the Change Order to the Owner by signing the document; the Owner may require such recommendation from other individuals. The Owner must sign the document indicating that they believe change order action in lieu of the competitive bid process is justified for the proposed change(s). **Review of the matter and signing of the document by the Owner's legal counsel is highly recommended. If the cumulative change order amount exceeds 10% of the original contract amount then the Owner's legal consultant must sign the Change Order Justification prior to submission to DCM.**

**Alabama Department of Finance
Real Property Management
Division of Construction Management**

770 Washington Avenue, Suite 444
Montgomery, Alabama 36104
(334) 242-4082 FAX (334) 242-4182

DCM Form B-12
August 2021

**CHANGE ORDER
CHECKLIST**

For use with DCM Form C-12 and DCM Form 9-J

WHICH FORM DO YOU USE?

Use **DCM Form C-12** for contracts of state agencies and departments, SDE, and ACCS projects.
Use **DCM Form 9-J** for contracts of projects partially or fully Public School and College Authority (PSCA)-funded.
Include a completed **DCM Form B-11: Change Order Justification** with either DCM Forms C-12 or 9-J.

Verify that the following information is inserted in the spaces provided on the CONTRACT CHANGE ORDER form, or attached to the form where attachments are noted to be acceptable or obviously necessary. Do not staple forms; use clips.	
1.	CHANGE ORDER NUMBER: Insert current change order number.
2.	DATE: Insert date.
3.	DCM (BC) PROJECT NUMBER: Insert DCM Project Number in the block provided at top of document.
4.	CONTRACTOR Insert name and address of the Contractor, exactly as they appear on the Construction Contract.
5.	NAME OF PROJECT: Under "Project", insert the complete name of the project as identified in the bid documents. If using DCM Form 9-J, insert the PSCA Project Number in the space provided.
6.	CONTRACTOR'S PROPOSALS: Under "TERMS", identify the change order proposals submitted by the contractor that are being addressed by the Contract Change Order. Identify these proposals by inserting their dates.
7.	DESCRIPTION OF THE CHANGE(S) IN WORK: Fully describe the change or changes to the original contract work for which the Construction Contract is being modified. This description should be written so that a reader of the document who is not directly involved in the project can understand what is being changed. If the space provided on the form is inadequate for such a description, use attachments and cite them.
8.	CONTRACT AND CHANGE ORDER AMOUNTS: Insert the applicable dollar amounts to record the original contract sum, change orders, and the currently revised contract sum.
9.	EXTENSION OF TIME: If the Contract Time is being extended by the Contract Change Order, insert appropriate number of calendar days in the space provided. If the Contract Time is not being extended, insert "NONE".
10.	RESPONSIBILITY FOR CHANGE ORDER FUNDING - DCM Form 9-J ONLY: The authority responsible for funding the change order is to be identified in the following sentence in the form,: "The amount of this Change Order will be the responsibility of _____." Insert whichever is appropriate: (1) "PSCA", (2) name of LEA, or (3) "PSCA" and name of LEA.
11.	SIGNATURES: The signature spaces for State Agency, PSCA and fully locally-funded Alabama Community College System projects are different from each other. Download the appropriate document per Owner/project type from www.dcm.alabama.gov/forms.aspx . Before submitting a Contract Change Order to DCM, the document must be signed by the contractor, surety (for additive change orders only), design professional and owner (local owner or using agency). Signature by the surety is not necessary on deductive change orders or change orders involving only extensions of time. If the cumulative change order amount exceeds 10% of the original contract amount then the Owner's legal consultant must sign DCM Form B-11: Change Order Justification.
12.	ATTACHMENTS: To each copy of the Contract Change Order form, attach with clips (do not staple): a. Contractor's change order proposals and/or invoices providing a detailed breakdown of change order costs. General Contractors (GC) must include subcontractors' (sub) quotes as backup. All GC and sub quotes must be broken down by labor (hours and rates), materials including quantities and unit prices (with receipts or quotes attached), equipment whether rented or owned (with receipts or quotes attached), and Overhead & Profit (OH&P). 1. Total OH&P can be a maximum of 25% divided between GC and subs; GC can have a maximum of 15% OH&P (in which case a sub could have up to 10% OH&P). See General Conditions- Article #19. 2. Sales tax cannot be included in change orders. 3. Deductive change orders also require backup including breakdown of labor and material, and must also deduct OH&P if included in original bid. Include specification section regarding allowances. b. POWER OF ATTORNEY for the individual signing the Contract Change Order for the surety. c. DCM Form B-11, CHANGE ORDER JUSTIFICATION: completed and signed by the design professional and owner.

TO: **Alabama Department of Finance**
Real Property Management
Division of Construction Management
 770 Washington Avenue, Suite 444
 Montgomery, AL 36130-1150
 (334) 242-4082 FAX (334) 242-4182

CERTIFICATE OF SUBSTANTIAL COMPLETION

*Do not staple this form and/or attachments; use clips.
Print single-sided; do not submit double-side printed documents.*

ROUTING PROCEDURES ON NEXT PAGE

DCM (BC) No. _____

OWNER ENTITY NAME AND ADDRESS: Email to receive executed copy: _____	ARCHITECTURAL / ENGINEERING FIRM NAME AND ADDRESS: Email to receive executed copy: _____
CONTRACTOR COMPANY NAME AND ADDRESS: Email to receive executed copy: _____	BONDING COMPANY NAME AND ADDRESS: Email to receive executed copy: _____
PROJECT: 	

Substantial Completion has been achieved for the entire Work the following portion of the Work:

The **Date of Substantial Completion** of the Work covered by this certificate is established to be _____.

"Substantial Completion" means the designated Work is sufficiently complete, in accordance with the Contract Documents, such that the Owner may occupy or utilize the Work for its intended use without disruption or interference by the Contractor in completing or correcting any remaining unfinished Work. The Date of Substantial Completion is the date upon which all warranties for the designated Work commence, unless otherwise agreed and recorded herein.

Punch List: A _____ page list of items to be completed or corrected prior to the Owner's approval of Final Payment is attached hereto, but does not alter the Contractor's responsibility to complete or correct all Work in full compliance with the Contract Documents. The Contractor shall complete or correct all items on the attached list, ready for re-inspection for Final Acceptance, within 30 days after the above Date of Substantial Completion, unless another date is stated here: _____.

If completed or corrected within this period, warranties of these items commence on the Date of Substantial Completion, otherwise such warranties commence on the date of Final Acceptance of each item.

Only one (1) originally executed substantial completion form shall be routed for signature. DCM office will mail the fully-executed original to the Owner and email copies to all parties.

RECOMMENDED BY <i>(signature and email address required):</i>	
ARCHITECT/ENGINEER: _____	DATE: _____
CONTRACTING PARTIES:	
CONTRACTOR: _____	DATE: _____
OWNER: _____	DATE: _____
_____	DATE: _____
APPROVALS:	
DCM INSPECTOR: _____	DATE: _____
DCM CHIEF INSPECTOR: _____	DATE: _____
DCM DIRECTOR: _____	DATE: _____

CERTIFICATE OF SUBSTANTIAL COMPLETION ROUTING PROCEDURE

Only one (1) originally executed substantial completion form shall be routed for signature. DCM office will mail the fully-executed original to the owner and email copies to all parties.

ARCHITECT/ENGINEER: Sign and date document, then mail it to Contractor. Provide Owner with DCM Inspector's name & field office address; territories and addresses are available at www.dcm.alabama.gov/staff.aspx.

CONTRACTOR: Sign and date document, then mail it to Owner.

OWNER: Sign and date document, then mail it to DCM Inspector's field office address; DCM Inspector territories and addresses are available at www.dcm.alabama.gov/staff.aspx.

DCM INSPECTOR: Sign and date document, then mail it to DCM Montgomery office.

DCM OFFICE: After review and signature/date by DCM Chief Inspector and DCM Director, DCM office will mail the fully-executed original document to Owner and will email copies to all parties.

NOTICE

THE EXECUTED "GENERAL CONTRACTOR'S ROOFING GUARANTEE" (DCM Form C-9) AND ANY OTHER ROOFING WARRANTY REQUIRED BY THE CONTRACT MUST ACCOMPANY THIS CERTIFICATE TO OBTAIN DCM APPROVAL.

DCM (BC) Number: _____

PSCA Projects: PSCA Number: _____

Date of the Construction Contract: _____

Contractor's Affidavit of Release of Liens

To Owner (<i>Entity name and address</i>):	Project (<i>Same as appears in the Construction Contract</i>):
---	---

STATE OF:

COUNTY OF:

The undersigned hereby certifies that, except as listed below, the Releases or Waivers of Lien attached hereto include the Contractor, all Subcontractors, all suppliers of materials and equipment, and all performers of Work, labor or services who have or may have liens or encumbrances or the right to assert liens or encumbrances against any property of the Owner arising in any manner out of the performance of the Construction Contract referenced above.

EXCEPTIONS:

Supporting Documents Attached Hereto:

1. Contractor's Release of Waiver of Liens.
2. Separate Releases or Waivers of Liens from Subcontractors and material and equipment supplies, to the extent required by the Owner, accompanied by the list thereof.

Contractor (*Insert company name and address*):

By: _____
Signature of authorized representative

Name and Title

Sworn to and subscribed before me this _____ day
of _____, _____.

Notary Public's Signature

My commission expires: _____

Seal:

DCM (BC) Number: _____

PSCA Projects: PSCA Number: _____

Date of the Construction Contract: _____

Contractor's Affidavit of Payment of Debts and Claims

To Owner (<i>Entity name and address</i>):	Project (<i>Same as appears in the Construction Contract</i>):
---	---

STATE OF:

COUNTY OF:

The undersigned hereby certifies that, except as listed below, payment has been made in full and all obligations have otherwise been satisfied for all materials and equipment furnished, for all work, labor and services performed, and for all known indebtedness and claims against the Contractor for damages arising in any manner in connection with the performance of the Construction Contract referenced above for which the Owner or Owner's property might in any way be held responsible or encumbered.

EXCEPTIONS:

Supporting Documents Attached Hereto:

1. Consent of Surety to Final Payment. Whenever Surety is involved, Consent of Surety is required. DCM Form C-20, Consent of Surety to Final Payment, may be used for this purpose.

Indicate attachment: Yes No

The following supporting document should be attached hereto if required by the Owner:

1. Contractor's Release of Waiver of Liens.
2. Separate Releases or Waivers of Liens from Subcontractors and material and equipment supplies, to the extent required by the Owner, accompanied by the list thereof.
3. Contractor's Affidavit of Release of Liens, DCM Form C-19.

Contractor (*Insert company name and address*):

By: _____
Signature of authorized representative

Name and Title

Sworn to and subscribed before me this _____ day
of _____, _____.

Notary Public's Signature

My commission expires: _____

Seal:

FINAL PAYMENT CHECKLIST (FPC)

To be completed by the Architect/Engineer and submitted to DCM for review; applicable only to state agencies, partially or fully PSCA-funded and other bond-funded projects. Four copies of the FPC are required. Each copy of the FPC shall include all attachments including the Contractor's Application for Final Payment.

(For further guidance refer to Article 34/Final Payment of DCM Form C-8: General Conditions of the Contract.)

PROJECT:	DCM (BC) No. _____
	PSCA No. _____ <small>(If applicable)</small>

YES	N/A	Select "YES" or "N/A" as applicable.
<input type="checkbox"/>	<input type="checkbox"/>	Application and Certificate for Final Payment, DCM Form C-10: Attach one copy to FPC. The application must include original signatures of all parties and include all application attachments.
<input type="checkbox"/>		Certificate of Substantial Completion, DCM Form C-13: Attach one fully-executed copy to FPC.
<input type="checkbox"/>		Advertisement for Completion, DCM Form C-14: Attach one copy of the affidavit of publication (including the advertisement) to the FPC.
<input type="checkbox"/>	<input type="checkbox"/>	Contractor's Affidavit of Payment of Debts & Claims, DCM Form C-18: Attach one copy to FPC.
<input type="checkbox"/>	<input type="checkbox"/>	Contractor's Affidavit of Release of Liens, if required by Owner, DCM Form C-19: Attach one copy to the FPC.
<input type="checkbox"/>	<input type="checkbox"/>	Consent of Surety to Final Payment, if any, To Contractor, DCM Form C-20: Consent is required for projects with P&P Bonds. Original has been delivered to Owner. Attach one copy to FPC.
<input type="checkbox"/>	<input type="checkbox"/>	General Contractor's Roofing Guarantee, DCM Form C-9, and Other Specified Roofing Guarantees, if any: Attached to Certificate of Substantial Completion.
<input type="checkbox"/>	<input type="checkbox"/>	Contractor's One-Year Warranty: Original has been delivered to the Owner. Attach one copy to the FPC.
<input type="checkbox"/>	<input type="checkbox"/>	Other Warranties: All other specified original warranties has been delivered to the Owner. Attach one copy to the FPC.
<input type="checkbox"/>	<input type="checkbox"/>	Record Documents: Specified "As-built" plans and specifications have been delivered to the Owner.
<input type="checkbox"/>		O & M Manuals: Specified instructions and O&M Manuals have been delivered to the Owner.
<input type="checkbox"/>	<input type="checkbox"/>	Time Extension: Over-run of Contract Time has been reconciled by: <input type="checkbox"/> Change Order <input type="checkbox"/> Liquidated Damages <input type="checkbox"/> Attached explanation
<input type="checkbox"/>	<input type="checkbox"/>	Additional Documents or Explanations which are attached:

Submitted By:	_____
	Architectural / Engineering Firm
_____	_____
<small>Signature</small>	<small>Printed Name and Title</small>

	<small>Date</small>

Final Reconciliation of Fees: Between the final change order execution and the year-end inspection, report the final project cost to <https://appengine.egov.com/apps/al/dcm-fees> (back-up is not needed unless requested by DCM). DCM will then email a Final Reconciliation of Fees Statement to the Owner. If the Final Statement shows a net payment is owed to DCM, that amount must be paid prior to scheduling the year-end inspection. If the Final Statement shows a net refund is owed then a check will be mailed to the Owner.

DCM (BC) Number: _____

PSCA Projects: PSCA Number: _____

Date of the Construction Contract: _____

Surety's Bond Number: _____

CONSENT OF SURETY TO FINAL PAYMENT

To Owner (<i>Entity name and address</i>): 	Project (<i>Same as appears in the Construction Contract</i>):
---	---

In accordance with the provisions of the Contract between the Owner and the Contractor as indicated above, the

Surety (*Insert name and address of Surety*)

on bond of

Contractor (*Insert name and address of Contractor*)

hereby approves of the final payment to the Contractor, and agrees that final payment to the Contractor shall not relieve the Surety of any of its obligations to

Owner (*Insert name and address of Entity*):

as set forth in said Surety's bond.

SIGNED AND SEALED this _____ day of _____, _____.

SURETY:

Seal:

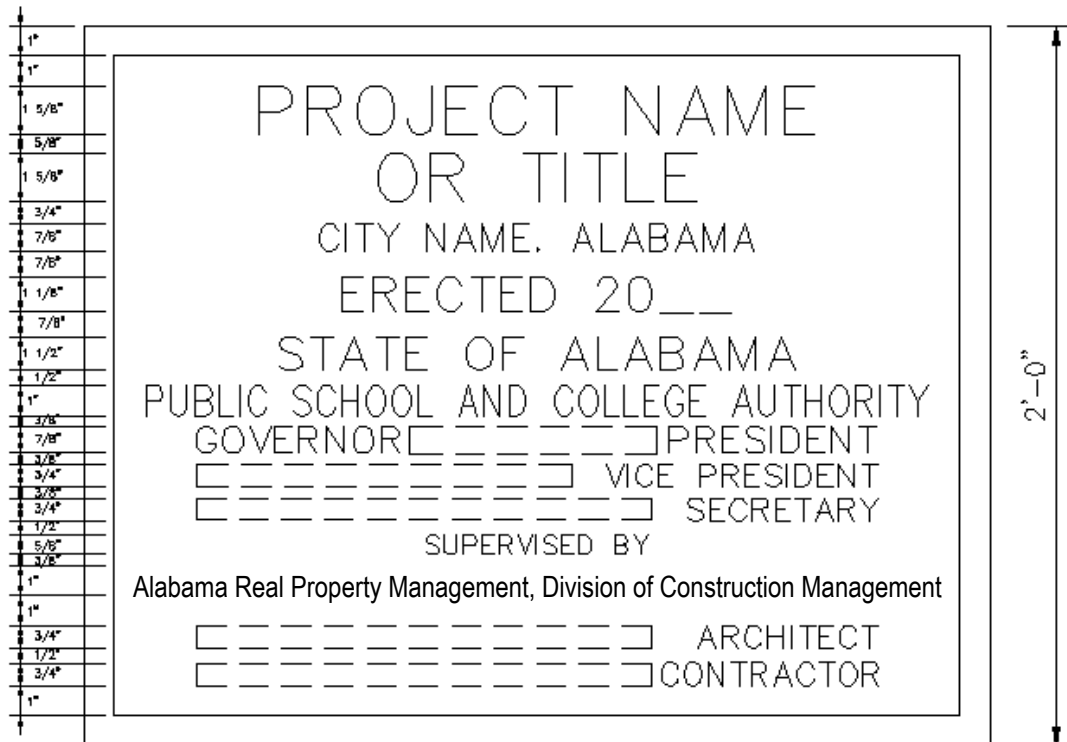
Company Name

By _____
Signature of Authorized Representative

Printed Name and Title

Note: Original Power of Attorney for the Surety's signatory shall be furnished with each of the original forms to be attached to each of the four (4) final payment forms.

Detail of PSCA Plaque

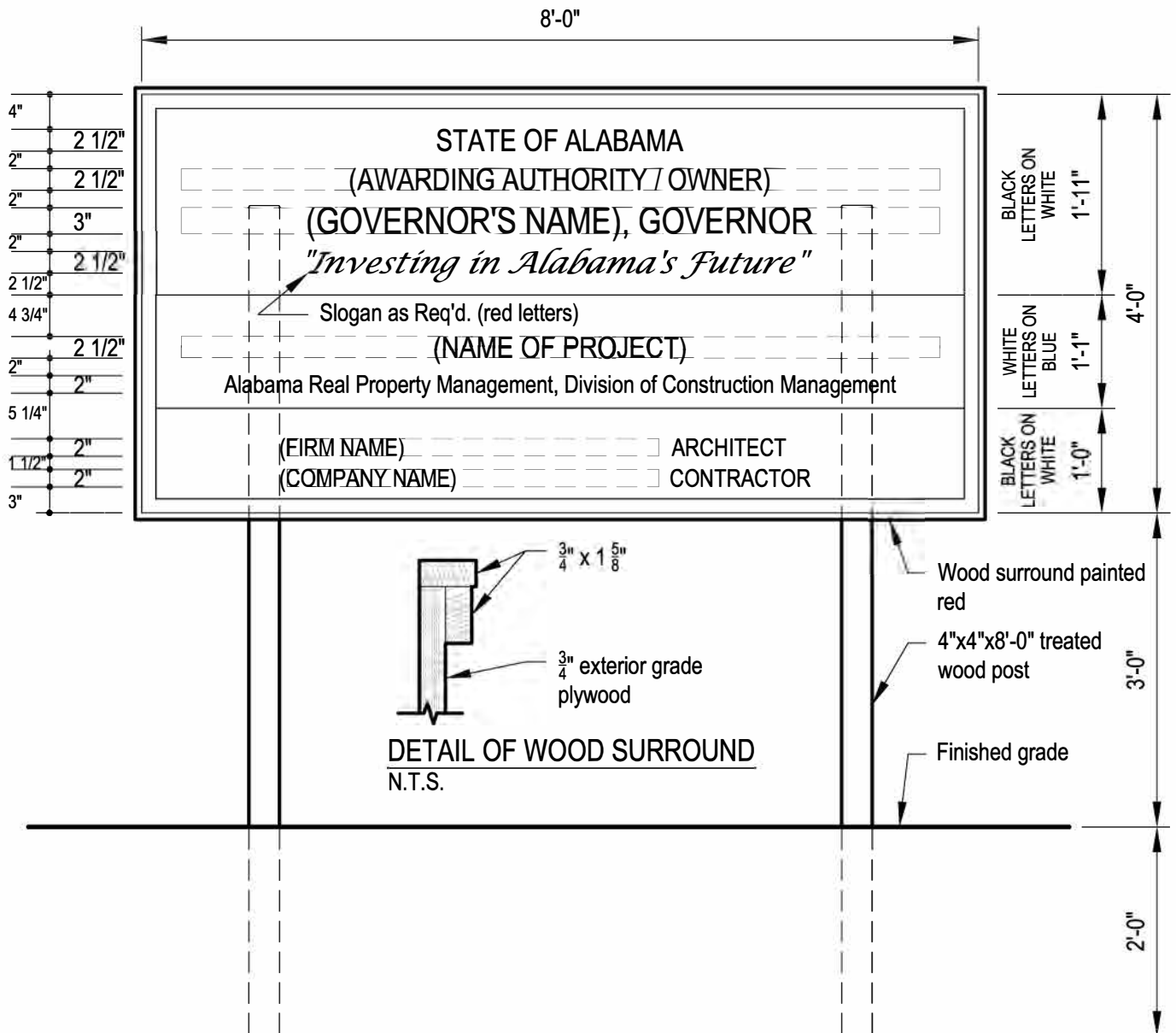


Notes:

1. PSCA plaques are installed as a permanent part of a building and are required on the following partially or fully PSCA-funded projects: Major renovations, renovations of four (4) or more rooms, and all new construction as follows: buildings, additions, and athletic facilities. DCM Form 9-M must be included in the project manual of such projects.
2. PSCA plaques are not required on the following partially or fully PSCA-funded projects: Sitework, paving, parking lots, utility work, re-roofing, and finishes (such as painting). DCM Form 9-M should not be included in the project manual of such projects.
3. Guidance for determining the names of PSCA officials:
 - The PSCA President is the current Governor of Alabama.
 - The PSCA Vice President is the current State Superintendent of Education.
 - The PSCA Secretary is the current Director of the Alabama Department of Finance.

DETAIL OF PROJECT SIGN

N.T.S.



Notes:

1. Fully locally-funded State Agency, Public University and ACCS projects: DCM Form C-15 must be included in the project manual regardless of expected bid amount. If the awarded contract sum is \$100,000.00 or more, Contractor shall furnish and erect a project sign.
Fully locally-funded K-12 school projects: Project sign is not required unless requested by Owner, if project sign is requested by Owner, include DCM Form C-15 in the project manual.
Partially or fully PSCA-funded projects: DCM Form C-15 must be included in the project manual. Contractor shall furnish and erect a project sign for all PSCA-funded projects, regardless of contract sum. "Alabama Public School and College Authority" as well as the local owner entity must be included as awarding authorities on the project sign of all PSCA-funded projects.
2. Sign to be constructed of $\frac{3}{4}$ " exterior grade plywood.
3. Paint with two coats best grade exterior paint before letters are painted. Option: In lieu of painted lettering on plywood, a corrugated plastic sign (displaying the same lettering, layout and colors as above) may be secured directly to the unpainted exterior grade plywood.
4. Sign shall be placed in a prominent location and easily readable from existing street or roadway.
5. Sign shall be maintained in good condition until project completion.
6. Slogan: Act 2020-167's title "*Investing In Alabama's Future*" should be placed on the project signs of all PSCA-funded projects, otherwise the Awarding Authority/Owner's slogan, if any, should be used. If the Awarding Authority/Owner of a fully locally-funded project does not have a slogan, the project sign does not require a slogan.

SAMPLE FORM OF ADVERTISEMENT FOR COMPLETION

LEGAL NOTICE

In accordance with Chapter 1, Title 39, Code of Alabama, 1975, as amended, notice is hereby given

that _____,
(Contractor Company Name)
Contractor, has completed the Contract for (Construction) (Renovation) (Alteration)
(Equipment) (Improvement) of *(Name of Project):*

at _____
(Insert location data in County or City)
for the State of Alabama and the (County) (City) of _____,
Owner(s), and have made request for final settlement of said Contract. All persons having
any claim for labor, materials, or otherwise in connection with this project should immediately
notify

(Architect / Engineer)

(Contractor)

(Business Address)

NOTE: This notice must be run once a week for four successive weeks for projects exceeding \$50,000.00. For projects of \$50,000.00 or less, run one time only. A copy of the publisher's affidavit of publication (including a copy of the advertisement) shall be submitted by the Contractor to the Design Professional for inclusion with DCM Form B-13: Final Payment Checklist for state agencies, PSCA-funded and other bond-funded projects.

SECTION 01 1000**SUMMARY****PART 1 GENERAL****1.01 PROJECT**

- A. Project Name: Tuskegee University – Renovation of Commons Building 'A'
- B. Owner's Name: Board of Trustees for Tuskegee University Tuskegee, Alabama.
- C. Architect's Spec Term: The Architect.
- D. Architect's Name: Williams Blackstock Architects.
- E. The Project consists of: Renovations to Commons Residence Building 'A' on the Campus of Tuskegee University
 - 1. Interior Building Renovations include Interior demolition of existing damaged and ruined construction, fixtures, finishes and equipment. This Project will include repair of electrical and mechanical systems, removal and replacement of lighting, plumbing, HVAC and fire suppression system components and equipment.
 - 2. Exterior Renovations will include Masonry repair and refurbishment, window repairs and door replacements, gutter system removal and replacement, exterior rebuilding of damaged woodwork, and the general restoration of weather tightness for the buildings including painting and sealing of exterior surfaces
 - 3. Site : Limited Earthwork, as indicated on the drawings .

1.02 CONTRACT DESCRIPTION

- A. Contract Type: A single prime contract based on a Stipulated Price as described in Document 00 6000 - Construction Contract.

1.03 DESCRIPTION OF ALTERATIONS WORK

- A. Scope of demolition and removal work is indicated on drawings and specified in Section 02 4250 - Selective Demolition .
- B. Scope of alteration and reconfiguration work is shown on drawings.
- C. Plumbing: Alter existing and add new construction.
- D. HVAC: Alter existing and add new construction.
- E. Electrical Power and Lighting: Alter existing and add new construction and equipment.
- F. Fire Suppression Sprinklers: Alter existing and add new construction.
- G. Fire Alarm: Upgrade and expand existing system.
- H. Voice / Data: New system provided and installed by Owner except rough in by General Contractor as shown on drawings.
- I. Security System: Security system upgrades by Owners security contractor.

1.04 OWNER OCCUPANCY

- A. Owner intends to occupy the Project upon Substantial Completion.
- B. Cooperate with Owner to minimize conflict and to facilitate Owner's operations.
- C. Schedule the Work to accommodate Owner occupancy.

1.05 CONTRACTOR USE OF SITE AND PREMISES

- A. Construction Operations: Limited to areas noted on Drawings.
- B. Arrange use of site and building to:
 - 1. Work by Others.
 - 2. Work by Owner.
 - 3. Prevent unauthorized trespass, or access of site and premises by the public.

- C. Provide access to and from site as required by law and by Owner:
- D. Emergency Building Exits During Construction: Keep all exits required by code open during construction period; provide temporary exit signs while exit routes are altered, or inaccessible.
- E. Utility Outages and Shutdown: To follow Owner's established Protocol precisely
 - 1. Prevent accidental disruption of utility services to other facilities.
- F. Limit disruption of utility services to hours the building is unoccupied.

1.06 WORK SEQUENCE

- A. Construct Work in one single phase during the construction period:
- B. Coordinate construction schedule and operations with Owner.
- C. Coordinate construction schedule and operations with Architect.

PART 2 PRODUCTS - NOT USED

PART 3 EXECUTION - NOT USED

END OF SECTION 01 1000

SECTION 01 2000**PRICE AND PAYMENT PROCEDURES****PART 1 GENERAL****1.01 SECTION INCLUDES**

- A. Procedures for preparation and submittal of applications for progress payments.
- B. Documentation of changes in Contract Sum and Contract Time.
- C. Change procedures.
- D. Correlation of Contractor submittals based on changes.
- E. Procedures for preparation and submittal of application for final payment.

1.02 RELATED REQUIREMENTS

- A. Section 00 5200 - Agreement Form: Contract Sum, retainages, payment period, monetary values of unit prices.
- B. Section 01 2100 - Allowances: Payment procedures relating to allowances.
- C. Section 01 2200 - Unit Prices: Monetary values of unit prices; Payment and modification procedures relating to unit prices.

1.03 SCHEDULE OF VALUES

- A. Electronic media printout including equivalent information will be considered in lieu of standard form specified; submit draft to Architect for approval.
- B. Forms filled out by hand will not be accepted.
- C. Submit Schedule of Values in duplicate within 15 days after date of Owner-Contractor Agreement.
- D. Format: Utilize the Table of Contents of this Project Manual. Identify each line item with number and title of the specification section. Identify site mobilization.
- E. Include in each line item, the amount of Allowances specified in this section. For unit cost Allowances, identify quantities taken from Contract Documents multiplied by the unit cost to achieve the total for the item.
- F. Include separately from each line item, a direct proportional amount of Contractor's overhead and profit.
- G. Revise schedule to list approved Change Orders, with each Application For Payment.

1.04 APPLICATIONS FOR PROGRESS PAYMENTS

- A. Payment Period: Submit at intervals stipulated in the Agreement.
- B. Electronic media printout including equivalent information will be considered in lieu of standard form specified; submit sample to Architect for approval.
- C. Forms filled out by hand will not be accepted.
- D. For each item, provide a column for listing each of the following:
 - 1 Item Number.
 - 2 Description of work.
 - 3 Scheduled Values.
 - 4 Previous Applications.
 - 5 Work in Place and Stored Materials under this Application.
 - 6 Authorized Change Orders.
 - 7 Total Completed and Stored to Date of Application.
 - 8 Percentage of Completion.
 - 9 Balance to Finish.
 - 10 Retainage.
- E. Execute certification by signature of authorized officer.
- F. Use data from approved Schedule of Values. Provide dollar value in each column for each line item for portion of work performed and for stored products.

- G. List each authorized Change Order as a separate line item, listing Change Order number and dollar amount as for an original item of work.
- H. Submit one electronic and three hard-copies of each Application for Payment.
- I. Include the following with the application:
 - 1 Transmittal letter as specified for submittals in Section 01 3000.
 - 2 Construction progress schedule, revised and current as specified in Section 01 3000.
 - 3 Partial release of liens from major subcontractors and vendors.
 - 4 Affidavits attesting to off-site stored products.
- J. When Architect requires substantiating information, submit data justifying dollar amounts in question. Provide one copy of data with cover letter for each copy of submittal. Show application number and date, and line item by number and description.

1.05 MODIFICATION PROCEDURES

- A. Submit name of the individual authorized to receive change documents and who will be responsible for informing others in Contractor's employ or subcontractors of changes to Contract Documents.
- B. For minor changes not involving an adjustment to the Contract Price or Contract Time, Architect will issue instructions directly to Contractor.
- C. For other required changes, Architect will issue a document signed by Owner instructing Contractor to proceed with the change, for subsequent inclusion in a Change Order.
 - 1 The document will describe the required changes and will designate method of determining any change in Contract Sum or Contract Time.
 - 2 Promptly execute the change.
- D. For changes for which advance pricing is desired, Architect will issue a document that includes a detailed description of a proposed change with supplementary or revised drawings and specifications, a change in Contract Time for executing the change with a stipulation of any overtime work required and the period of time during which the requested price will be considered valid. Contractor shall prepare and submit a fixed price quotation within ____ days.
 - 1 If the Contractor fails to submit pricing information within the required timeframe the amount and any associated impact on the contract time shall be determined by the Architect based on the Contractor's substantiation of costs as specified for Time and Material work.
- E. Contractor may propose a change by submitting a request for change to Architect, describing the proposed change and its full effect on the work, with a statement describing the reason for the change, and the effect on the Contract Sum and Contract Time with full documentation. Document any requested substitutions in accordance with Section 01 6000.
- F. Computation of Change in Contract Amount: As specified in the Agreement and Conditions of the Contract.
 - 1 For change requested by Architect for work falling under a fixed price contract, the amount will be based on Contractor's price quotation.
 - 2 For change requested by Contractor, the amount will be based on the Contractor's request for a Change Order as approved by Architect.
 - 3 For pre-determined unit prices and quantities, the amount will be based on the fixed unit prices.
 - 4 For change ordered by Architect without a quotation from Contractor, the amount will be determined by Architect based on the Contractor's substantiation of costs as specified for Time and Material work.
- G. Substantiation of Costs: Provide full information required for evaluation.
 - 1 On request, provide the following data:
 - a. Quantities of products, labor, and equipment.
 - b. Taxes, insurance, and bonds.
 - c. Overhead and profit.
 - d. Justification for any change in Contract Time.
 - e. Credit for deletions from Contract, similarly documented.
 - 2 Support each claim for additional costs with additional information:

- a. Origin and date of claim.
 - b. Dates and times work was performed, and by whom.
 - c. Time records and wage rates paid.
 - d. Invoices and receipts for products, equipment, and subcontracts, similarly documented.
- 3 For Time and Material work, submit itemized account and supporting data after completion of change, within time limits indicated in the Conditions of the Contract.
- H. Execution of Change Orders: Architect will issue Change Orders for signatures of parties as provided in the Conditions of the Contract.
- I. After execution of Change Order, promptly revise Schedule of Values and Application for Payment forms to record each authorized Change Order as a separate line item and adjust the Contract Sum.
- J. Promptly revise progress schedules to reflect any change in Contract Time, revise sub-schedules to adjust times for other items of work affected by the change, and resubmit.
- K. Promptly enter changes in Project Record Documents.

1.06 APPLICATION FOR FINAL PAYMENT

- A. Prepare Application for Final Payment as specified for progress payments, identifying total adjusted Contract Sum, previous payments, and sum remaining due.
- B. Application for Final Payment will not be considered until the following have been accomplished:
- 1 All closeout procedures specified in Section 01 7000.

PART 2 PRODUCTS - NOT USED

PART 3 EXECUTION - NOT USED

END OF SECTION

SECTION 01 2100**ALLOWANCES****PART 1 GENERAL****1.01 SECTION INCLUDES**

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

1.02 RELATED REQUIREMENTS

- A. Section 01 2000 - PRICE AND PAYMENT PROCEDURES: Additional payment and modification procedures.
- B. Section 01 2200 - Unit Prices

1.03 LUMP SUM ALLOWANCES

- A. Allowances shall include the cost to the Contractor of specific products and materials ordered by Owner or selected by Designer under the allowance and shall include insurance, freight, equipment rental and delivery to project site. Allowance shall not include material permanently affixed to structure.
- B. Use the lump sum allowance only as directed by Designer for Owner's purposes and only by Change Orders that indicate amounts to be charged to the allowance.
- C. Contractor's overhead and profit for work or products executed under the allowance are to be included in the base or alternate bid and not in the allowance.
- D. At Project closeout, credit unused amounts remaining in the contingency allowance to Owner by Change Order.
- E. Return unused materials purchased under the allowance to manufacturer or supplier for credit to owner. If requested, prepare unused material for attic stock storage by Owner when it is not economically practical to return the material for credit. Deliver unused material to Owner's storage space. Otherwise, disposal of unused material is Contractor's responsibility.
- F. Schedule: A "Quantity Price Allowances" is included at the end of this Section.

1.04 UNIT PRICE ALLOWANCES

- A. Unit prices include all necessary material, cost of delivery, installation, insurance, overhead, profit and applicable taxes.
- B. Unless otherwise indicated, Contractor's overhead and profit, labor, handling, installation, demolition, preparation, access and other cost associated with the unit price shall be included in unit price allowances.
- C. Measurement and Payment: Where unit prices are for quantities that are more or less than what is provided for in the base contract, Contractor shall keep a record of amounts used as the work progresses. Such work shall be recorded daily on the as-built drawings or Owner approved log for verification. Contractor shall transmit unit quantity tracking information to Owner or Designer on a daily basis for verification. Designer or Owner shall verify the need for unit repairs prior to installation of repairs and track quantities. No contract adjustments will be made on any unit price quantities not verified by the Designer or Owner. In the event that a discrepancy exists between the contractor's counted quantities and the designer's counted quantities, the designer's quantities shall prevail.
- D. Adjustments to final payments will be the quantity difference between the allowance and quantity applied times the unit price quoted in the bid.
- E. Schedule: B "Unit Price Allowances" is included at the end of this Section.
- F. Architect Responsibilities:
 - 1. Consult with Contractor for consideration and selection of products, suppliers, and installers.
 - 2. Select products in consultation with Owner and transmit decision to Contractor.

- G. Contractor Responsibilities:
 1. Assist Architect in selection of products, suppliers, and installers.
 2. Obtain proposals from suppliers and installers and offer recommendations.
 3. On notification of which products have been selected, execute purchase agreement with designated supplier and installer.
 4. Arrange for and process shop drawings, product data, and samples. Arrange for delivery.
 5. Promptly inspect products upon delivery for completeness, damage, and defects. Submit claims for transportation damage.
- H. Differences in costs will be adjusted by Change Order.

1.05 QUANTITY PRICE ALLOWANCES SCHEDULE:

- A. Quantity Price Allowance No.1: Fire Sealing / Fire Caulking. LS \$6,000
 1. Prep and application of fire sealing / fire caulking for LS derived \$____/LF) / \$6,000 = Total LF ____ =
- B. Quantity Price Allowance No. 2: Acoustical & Thermal Wall Insulation Replacement.
- C. Quantity Price Allowance No.3: Ceiling Texture Repair / Replace.
 1. \$____/ SF x estimated quantity 1,200 SF = \$ _____
- D. Quantity Price Allowance No.4: Exterior Sheathing Replacement:
 1. \$____/ SF x estimated quantity 5,000 SF = \$ _____
- E. Quantity Price Allowance No.5: Gypsum Concrete Floor Underlayment Repair:
 1. \$____/ SF x estimated quantity 5,000 SF = \$ _____
- F. Quantity Price Allowance No.6 Rotted Wood Trim Replacement:
 1. \$____/ BF x estimated quantity 250 BF = \$ _____
- G. Quantity Price Allowance No. 7: Damaged Fiber Cement Siding Replacement
 1. \$____/ BF x estimated quantity 250 BF = \$ _____
- H. Quantity Price Allowance No. 8: Salvaged Brick at Knee Wall for Infill:
 1. \$____/ SF x estimated quantity 20 SF = \$ _____20 sf

PART 2 PRODUCTS – NOT USED

PART 3 EXECUTION - NOT USED

END OF SECTION 01 2100

SECTION 01 2600**CONTRACT MODIFICATION PROCEDURES****PART 1 GENERAL****1.01 SECTION INCLUDES**

- A. Administrative and procedural requirements for handling and processing modifications to the Contract.

1.02 RELATED REQUIREMENTS

- A. Document 00 6000 - Contract Agreement for Construction: Contract Sum, retainages, payment period, monetary values of unit prices.
- B. Document 00 7205 - General Conditions 00 7210 Supplementary Conditions: Additional requirements for contract modifications.
- C. Document 00 7210 - Supplementary Conditions: Percentage allowances for Contractor's overhead and profit.
- D. Section 01 2100 - Allowances: Administrative procedures relating to allowances.
- E. Section 01 2200 - Unit Prices: Administrative modification procedures relating to verification and accounting related to unit prices.
- F. Section 012300 - Alternates: Alternates for Construction.

1.03 MODIFICATION PROCEDURES

- A. Submit name of the individual authorized to receive change documents and who will be responsible for informing others in Contractor's employ or subcontractors of changes to the Contract Documents.

1.04 MINOR CHANGES IN THE WORK

- A. Architect will issue through Project Manager supplemental instructions authorizing Minor Changes in the Work, not involving adjustment to the Contract Sum or the Contract Time, on AIA Document G710, "Architect's Supplemental Instructions."

1.05 PROPOSAL REQUESTS

- A. Owner-Initiated Proposal Requests: Architect will issue a detailed description of proposed changes in the Work that may require adjustment to the Contract Sum or the Contract Time. If necessary, the description will include supplemental or revised Drawings and Specifications.
- B. Only a Change Order or a Construction Change Directive authorizes Contractor to proceed with a proposed change.
 - 1. Proposal Requests issued by Architect are for information only. Do not consider them instructions either to stop work in progress or to execute the proposed change.
 - 2. Within time stipulated in Proposal Request after receipt of same, submit a quotation estimating cost adjustments to the Contract Sum and the Contract Time necessary to execute the change.
 - a. Include a list of quantities of products required or eliminated and unit costs, with total amount of purchases and credits to be made. If requested, furnish survey data to substantiate quantities.
 - b. Indicate applicable taxes, delivery charges, equipment rental, and amounts of trade discounts.
 - c. Include costs of labor and supervision directly attributable to the change.
 - d. Include an updated Contractor's Construction Schedule that indicates the effect of the change, including, but not limited to, changes in activity duration, start and finish times, and activity relationship. Use available total float before requesting an extension of the Contract Time.
- C. Contractor-Initiated Proposals: If latent or unforeseen conditions require modifications to the Contract, Contractor may propose changes by submitting a request for a change to the Architect.

1. Include a statement outlining reasons for the change and the effect of the change on the Work. Provide a complete description of the proposed change. Indicate the effect of the proposed change on the Contract Sum and the Contract Time.
 2. Include a list of quantities of products required or eliminated and unit costs, with total amount of purchases and credits to be made. If requested, furnish survey data to substantiate quantities.
 3. Indicate applicable taxes, delivery charges, equipment rental, and amounts of trade discounts.
 4. Include costs of labor and supervision directly attributable to the change.
 5. Include an updated Contractor's Construction Schedule that indicates the effect of the change, including, but not limited to, changes in activity duration, start and finish times, and activity relationship. Use available total float before requesting an extension of the Contract Time.
 6. Comply with requirements in Division 1 Section "Product Requirements" if the proposed change requires substitution of one product or system for product or system specified.
- D. Proposal Request Form: Use form acceptable to Architect and Authority Having Jurisdiction

1.06 ADMINISTRATIVE CHANGE ORDERS

- A. Allowance Adjustment: To adjust allowance amounts, base each Change Order proposal on the difference between purchase amount and the allowance, multiplied by final measurement of work-in-place. If applicable, include reasonable allowances for cutting losses, tolerances, mixing wastes, normal product imperfections, and similar margins.
1. Include installation costs in purchase amount only where indicated as part of the allowance.
 2. If requested, prepare explanation and documentation to substantiate distribution of overhead costs and other margins claimed.
 3. Delete both subparagraphs below if no unit-cost allowances.
 4. Submit substantiation of a change in scope of work, if any, claimed in Change Orders related to unit-cost allowances.
 5. Subparagraph below reflects the major problem of unit-cost allowances. No matter who performs the Work, a final quantity survey is needed.
 6. Owner reserves the right to establish the quantity of work-in-place by independent quantity survey, measure, or count.
 7. Paragraph and subparagraphs below are expanded in AIA Document A201. If the Supplementary Conditions modify the provisions in AIA Document A201, coordinate requirements with the Supplementary Conditions.
- B. Submit claims for increased costs because of a change in scope or nature of the allowance described in the Contract Documents, whether for the Purchase Order amount or Contractor's handling, labor, installation, overhead, and profit. Submit claims within 10 (Ten) working days of receipt of the Change Order or Construction Change Directive authorizing work to proceed. Owner will reject claims submitted later than 21 (Twenty One) days after such authorization.
- C. Do not include Contractor's or subcontractor's indirect expense in the Change Order cost amount unless it is clearly shown that the nature or extent of work has changed from what could have been foreseen from information in the Contract Documents.
- D. No change to Contractor's indirect expense is permitted for selection of higher- or lower-priced materials or systems of the same scope and nature as originally indicated.

1.07 CHANGE ORDER PROCEDURES

- A. On Owner's approval of a Proposal Request, Architect will issue a Change Order for signatures of Contractor, Architect and Owner on Document 00 6230 - Contract Change Order , Rev. 8 / 05.

1.08 CONSTRUCTION CHANGE DIRECTIVE

- A. Construction Change Directive: Architect may issue a Construction Change Directive on AIA Document G714. Construction Change Directive instructs Contractor to proceed with a change in the Work, for subsequent inclusion in a Change Order.

1. Construction Change Directive contains a complete description of change in the Work. It also designates method to be followed to determine change in the Contract Sum or the Contract Time.
- B. Documentation: Maintain detailed records on a time and material basis of work required by the Construction Change Directive.
 1. After completion of change, submit an itemized account and supporting data necessary to substantiate cost and time adjustments to the Contract.
- C. For minor changes not involving an adjustment to the Contract Price or Contract Time, Architect will issue instructions directly to Contractor.
- D. For other required changes, Architect will issue a document signed by Owner instructing Contractor to proceed with the change, for subsequent inclusion in a Change Order.
 1. The document will describe the required changes and will designate method of determining any change in Contract Sum or Contract Time.
 2. Promptly execute the change.
- E. For changes for which advance pricing is desired, Architect will issue a document that includes a detailed description of a proposed change with supplementary or revised drawings and specifications, a change in Contract Time for executing the change with a stipulation of any overtime work required and the period of time during which the requested price will be considered valid. Contractor shall prepare and submit a fixed price quotation within 14 days.
- F. Contractor may propose a change by submitting a request for change to Architect, describing the proposed change and its full effect on the Work, with a statement describing the reason for the change, and the effect on the Contract Sum and Contract Time with full documentation and a statement describing the effect on Work by separate or other contractors. Document any requested substitutions in accordance with Section 01 6000.
- G. Computation of Change in Contract Amount: As specified in the Agreement and Conditions of the Contract.
 1. For change requested by Architect for work falling under a fixed price contract, the amount will be based on Contractor's price quotation.
 2. For change requested by Contractor, the amount will be based on the Contractor's request for a Change Order as approved by Architect.
 3. For pre-determined unit prices and quantities, the amount will be based on the fixed unit prices.
 4. For change ordered by Architect without a quotation from Contractor, the amount will be determined by Architect based on the Contractor's substantiation of costs as specified for Time and Material work.
- H. Substantiation of Costs: Provide full information required for evaluation.
 1. On request, provide following data:
 - a. Quantities of products, labor, and equipment.
 - b. Taxes, insurance, and bonds.
 - c. Overhead and profit.
 - d. Justification for any change in Contract Time.
 - e. Credit for deletions from Contract, similarly documented.
 2. Support each claim for additional costs with additional information:
 - a. Origin and date of claim.
 - b. Dates and times work was performed, and by whom.
 - c. Time records and wage rates paid.
 - d. Invoices and receipts for products, equipment, and subcontracts, similarly documented.
 3. For Time and Material work, submit itemized account and supporting data after completion of change, within time limits indicated in the Conditions of the Contract.
- I. Execution of Change Orders: Architect will issue Change Orders for signatures of parties as provided in the Conditions of the Contract.

- J. After execution of Change Order, promptly revise Schedule of Values and Application for Payment forms to record each authorized Change Order as a separate line item and adjust the Contract Sum.
- K. Promptly revise progress schedules to reflect any change in Contract Time, revise sub-schedules to adjust times for other items of work affected by the change, and resubmit.
- L. Promptly enter changes in Project Record Documents.

PART 2 PRODUCTS - NOT USED

PART 3 EXECUTION - NOT USED

END OF SECTION 01 2600

SECTION 01 3010**ADMINISTRATIVE REQUIREMENTS****PART 1 GENERAL****1.01 SECTION INCLUDES**

- A. Project Coordination
- B. Progress Meetings: Owner Architect Contractor (OAC)
- C. Preconstruction Conference
- D. Preinstallation Conferences
- E. Construction Progress Schedule
- F. Submittals
- G. Coordination drawings and Record Documents
- H. Submittals for review, information, and project closeout
- I. Submittal procedures
- J. RFIs: Requests for Information
- K. Electronic File Transfer.

1.02 RELATED REQUIREMENTS

- A. Document 00 6000 - General Conditions of the Contract: Dates for applications for payment.
- B. Document 00 6100 - Supplemental General Conditions.
- C. Document 00 6150 - Special Conditions
- D. Section 01 5000 - Temporary Facilities and Controls.
- E. Section 01 6000 - Product Requirements : Substitution procedures..
- F. Section 01 7000 - Execution and Closeout Requirements: Additional coordination requirements.
- G. Section 01 7800 - Closeout Submittals: Project record documents.
- H. Section 01 7900 - Demonstration and Training
- I. Section 01 9113 - General Commissioning Requirements.
 - 1. Where submittals are indicated for review by both Architect and the Commissioning Authority, submit 2 extra and route to Architect first, in order to be forwarded to the Commissioning Authority.
 - 2. Where submittals are not indicated to be reviewed by Architect, submit directly to the Commissioning Authority; otherwise, the procedures specified in this section apply to commissioning submittals.

1.03 RELATED REQUIREMENTS

- A. Document 00 7205 - General Conditions: Dates for applications for payment.
- B. Document 00 7210 - Supplemental General Conditions
- C. Section 01 6000 - Product Requirements.
- D. Section 01 7000 - Execution Requirements: Additional coordination requirements.
- E. Section 01790 - Demonstration and Training

1.04 PROJECT COORDINATION

- A. Project Coordinator: the University's Project Construction Manager
- B. Cooperate with the Project Coordinator in allocation of mobilization areas of site; for field offices and sheds, for storage access, traffic, and parking facilities.
- C. During construction, coordinate use of site and facilities through the Project Coordinator.

- D. Comply with Project Coordinator's procedures for intra-project communications; submittals, reports and records, schedules, coordination drawings, and recommendations; and resolution of ambiguities and conflicts.
- E. Project Closeout Meeting: When project construction reaches 95 percent complete, schedule a closeout meeting to discuss in detail all requirements for completing and closing out the project.
 - 1. Refer to Division 1 Section "Closeout Procedures" for project closeout items.
- F. 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 into, the Work. Refer to other Sections for disposition of salvaged materials that are designated as Owner's property.
- G. Comply with instructions of the Project Coordinator for use of temporary utilities and construction facilities.
- H. Coordinate field engineering and layout work under instructions of the Project Coordinator.
- I. Make the following types of submittals to Architect and copy the Project Coordinator:
 - 1. Requests for interpretation.
 - 2. Requests for substitution.
 - 3. Shop drawings, product data, and samples.
 - 4. Test and inspection reports.
 - 5. Design data.
 - 6. Manufacturer's instructions and field reports.
 - 7. Applications for payment and change order requests.
 - 8. Progress schedules.
 - 9. Coordination drawings.
 - 10. Correction Punch List and Final Correction Punch List for Substantial Completion
 - 11. Closeout submittals.

PART 2 PRODUCTS - NOT USED

PART 3 EXECUTION

3.01 PROJECT MEETINGS

- A. General: Schedule and conduct meetings and conferences at Project site, unless otherwise indicated.
 - 1. Schedule (coordinate available times with all parties) and administer OAC (Owner, Architect, Contractor) meetings throughout progress of the Work at maximum bi weekly intervals, but more often as the pace of the Work dictates.
 - 2. Attendees: Inform participants and others involved, and individuals whose presence is required, of date and time of each meeting. Notify Owner and Architect of scheduled meeting dates and times.
 - 3. Agenda: Prepare the meeting agenda and distribute the agenda to all invited attendees one day prior to meeting.
 - 4. Minutes: Record significant discussions and agreements achieved. Distribute the meeting minutes to everyone concerned, including Owner and Architect, within four days of the meeting.
- B. Progress Meetings: Conduct progress meetings at weekly or bi-weekly intervals as agreed by Owner Architect and Owner's Project Manager. Coordinate dates of meetings with preparation of payment requests.
 - 1. Attendees: In addition to representatives of Owner, Owner's Project Manager and Architect, each subcontractor, subcontractor, supplier, and other entity concerned with current progress or involved in planning, coordination, or performance of future activities shall be represented at these meetings. All participants at the conference shall be familiar with Project and authorized to conclude matters relating to the Work.

2. Agenda: Review and correct or approve minutes of previous progress meeting. Review other items of significance that could affect progress. Include topics for discussion as appropriate to status of Project.
 - a. Contractor's Construction Schedule: Review progress since the last meeting. Determine whether each activity is on time, ahead of schedule, or behind schedule, in relation to Contractor's Construction Schedule. Determine how construction behind schedule will be expedited; secure commitments from parties involved to do so. Discuss whether schedule revisions are required to ensure that current and subsequent activities will be completed within the Contract Time.
 - 1) Review schedule of progress planned for next two week period.
 - b. Review present and future needs of each entity present, including the following:
 - 1) Review of submittal schedule and status of submittals.
 - 2) Review of work progress.
 - 3) Sequence of operations.
 - 4) Review of off-site fabrication and deliveries schedule.
 - 5) Hazards and risks.
 - 6) Progress cleaning.
 - 7) Quality and work standards.
 - 8) Status of correction of deficient items.
 - 9) Field observations, problems, and decisions.
 - 10) Identification of problems that impede, or will impede, planned progress.
 - 11) RFIs.
 - 12) Status of proposal requests.
 - 13) Pending changes.
 - 14) Status of Change Orders.
 - 15) Documentation of information for payment requests.
 - 16) Maintenance of progress schedule.
 - 17) Corrective measures to regain projected schedules.
 - 18) Coordination of projected progress.
 - 19) Maintenance of quality and work standards.
 - 20) Effect of proposed changes on progress schedule and coordination.
 - 21) Other business relating to Work.
3. Reporting: Distribute minutes of the meeting to each party present and to parties who should have been present.
 - a. Schedule Updating: Revise Contractor's Construction Schedule after each progress meeting where revisions to the schedule have been made or recognized. Issue revised schedule concurrently with the report of each meeting.

3.02 PRECONSTRUCTION CONFERENCE

- A. Owner's Project Manager will schedule a Preconstruction conference before starting construction, at a time convenient to Owner and Architect, but no later than 14 calendar days after execution of the Agreement. Hold the conference at Project site or another convenient location. Conduct the meeting to review responsibilities and personnel assignments.
 1. Attendees: Authorized representatives of Owner, Owner's Project Manager, Architect, and their consultants; Contractor and its superintendent; major subcontractors; suppliers; and other concerned parties shall attend the conference. All participants at the conference shall be familiar with Project and authorized to conclude matters relating to the Work.
 2. Agenda: Discuss items of significance that could affect progress, including the following:
 - a. Execution of the Owner-Contractor Agreement.
 - b. Submission of executed bonds and insurance certificates.
 - c. Tentative construction schedule.
 - d. Phasing.

- e. Critical work sequencing and long-lead items.
 - f. Submission of list of Subcontractors, list of products, schedule of values, and progress schedule.
 - g. Designation of key personnel and their duties.
 - h. Procedures for processing field decisions, Proposal Requests, and Change Orders.
 - i. Procedures for RFIs.
 - j. Procedures for testing and inspecting.
 - k. Procedures for processing Applications for Payment.
 - l. Distribution of the Contract Documents.
 - m. Submittal procedures.
 - n. Sustainability Issues.
 - o. Preparation of Record Documents.
 - p. Closeout procedures.
 - q. Use of the premises and existing building.
 - r. Work restrictions.
 - s. Working hours.
 - t. Owner's occupancy requirements.
 - u. Responsibility for temporary facilities and controls.
 - v. Construction waste management and recycling.
 - w. Parking availability.
 - x. Office, work, and storage areas.
 - y. Equipment deliveries and priorities.
 - z. First aid.
 - aa. Security.
 - ab. Progress cleaning.
3. Minutes: Record and distribute meeting minutes within four days after the meeting to participants, with copies to the Architect, Owner, participants, and those affected by decisions made.

3.03 PREINSTALLATION CONFERENCES

- A. Contractor shall schedule and conduct a preinstallation conference at Project site before each construction activity that requires coordination with other construction as indicated in requirements of other Sections..
- 1. Contractor to submit schedule of required pre-installation meetings for Architect's review and concurrence.
 - 2. Attendees: Installer and representatives of manufacturers and fabricators involved in or affected by the installation and its coordination or integration with other materials and installations that have preceded or will follow, shall attend the meeting. Advise Architect and Owner's Project Manager of scheduled meeting dates.
 - 3. Agenda: Review progress of other construction activities and preparations for the particular activity under consideration. Discuss items of significance that could affect installation and warranties, including the following:
 - a. Inspection and requirements.
 - b. Environmental conditions required for execution of the work and protection of completed installations.
 - c. Schedule including required inspections.
 - d. Requirements and tolerances of substrates or contiguous work.
 - e. Review requirements to ensure an enforceable warranty with manufacturer confirmation.
 - f. Review the following prior to each construction activity:
 - 1) Respective specification Section.
 - 2) Submittals, product data, and shop drawings.
 - 3) Manufacturer's recommendations, requirements, and instructions.

- 4) Photographs and other documentation that pertains to the warranty of the product.
- 5) Samples of the product or material.
- g. Related RFIs.
- h. Related Change Orders.
- i. Purchases and deliveries.
- j. Submittals under review.
- k. Review of mockups.
- l. Possible conflicts and compatibility problems.
- m. Time schedules.
- n. Weather limitations.
- o. Manufacturer's written recommendations.
- p. Warranty requirements.
- q. Compatibility of materials.
- r. Acceptability of substrates.
- s. Temporary facilities and controls.
- t. Space and access limitations.
- u. Regulations of authorities having jurisdiction.
- v. Testing and inspecting requirements.
- w. Installation procedures.
- x. Coordination with other work.
- y. Required performance results.
- z. Protection of adjacent work.
- aa. Protection of construction and personnel.
- 4. Record significant conference discussions, agreements, and disagreements, including required corrective measures and actions.
- 5. Reporting: Distribute minutes of the meeting to each party present and to parties who should have been present within four days after the meeting.
- 6. Do not proceed with installation if the conference cannot be successfully concluded. Initiate whatever actions are necessary to resolve impediments to performance of the Work and reconvene the conference at earliest feasible date.

3.04 PROGRESS MEETINGS

- A. Agenda:
 - 1. Review minutes of previous meetings.
 - 2. Review of Work progress.
 - 3. Review of RFI's.
 - 4. Field observations, problems, and decisions.
 - 5. Identification of problems that impede, or will impede, planned progress.
 - 6. Review of submittals schedule and status of submittals.
 - 7. Review of off-site fabrication and delivery schedules.
 - 8. Maintenance of progress schedule.
 - 9. Corrective measures to regain projected schedules.
 - 10. Planned progress during succeeding work period.
 - 11. Coordination of projected progress.
 - 12. Maintenance of quality and work standards.
 - 13. Effect of proposed changes on progress schedule and coordination.
 - 14. Other business relating to Work.
- B. Record minutes and distribute copies within two days after meeting to participants, with two copies to Architect, Owner, participants, and those affected by decisions made.

3.05 CONSTRUCTION PROGRESS SCHEDULE

- A. Within 15 days after date of established in Notice to Proceed, submit preliminary schedule and CPM diagram defining planned operations for the first 60 days of Work, with a general outline for remainder of Work.
- B. If preliminary schedule requires revision after review, submit revised schedule within 10 days.
- C. Within 10 days after review of preliminary schedule, submit draft of proposed complete schedule for review.
 - 1. Include written certification that major Subcontractors have reviewed and accepted proposed schedule.
 - 2. Include O.F.C.I. scheduling needs for specific products to begin scheduling coordination with the Owner.
- D. Within 10 days after joint review, submit complete schedule.
- E. The final Project Schedule will be generated and maintained by the Contractor utilizing the Contractor's and Subcontractor's approved progress schedule logic and durations.
- F. Submit an updated schedule with each Application for Payment with updated logic and durations to meet the Owner's Completion Date. Provide any necessary updates for delivery and installation of any O.F.C.I. materials based on actual construction progress.
- G. Submittal/Shop Drawing Schedule: With the proposed and final schedule, submit information showing the time required to prepare, submit and approve shop drawings and submittals, to fabricate and deliver materials and equipment, and to install the Work. This information shall be provided for all major structural, mechanical, plumbing, electrical and fire protection systems, as well as major architectural finishes (exterior and interior).

3.06 SUBMITTALS

- A. **Trade Shop Drawings:**
 - 1. Trade shop drawings (i.e., fire protection sprinkler working drawings, plumbing piping system drawings, HVAC mechanical equipment room drawings, HVAC piping system drawings, HVAC sheet metal system drawings, and electrical main feeder raceway drawings) shall be submitted within 30 days after Notice to Proceed.
- B. **Record Drawings:** Contractor shall provide and maintain a record set of Contract Documents in the Contractor's trailer. The Contractor will update this record set on a weekly basis at a minimum, and review with the Owner's Construction Project Manager prior to issuance of a monthly certificate for payment to the Contractor. This record set shall include, but not be limited to the following:
 - 1. Known and intended conditions of the Work (Contract Documents) inclusive of Addenda
 - 2. Revisions due to:
 - a. Post-bid Negotiations
 - b. Field Orders
 - c. Architect's Supplemental Instructions or Directives
 - d. Items reported and noted by Contractor, Owner, Architect or Project Manager
 - 3. Verified conditions which differ from surveys, documents, records, etc.

3.07 SUBMITTALS FOR REVIEW

- A. When the following are specified in individual sections, submit them for review:
 - 1. Product data.
 - 2. Shop drawings.
 - 3. Samples for selection.
 - 4. Samples for verification.
- B. Refer to Section 01600 for detailed Product Requirements and specific Substitution procedures.

- C. Contractor to review all submittals prior to forwarding to Architect. Submittals which show no evidence by Contractor to verify dimensions, fit and compliance with the Contract Documents in conjunction with field conditions will be rejected.
- D. Submit to Architect for review for the limited purpose of checking for conformance with information given and the design concept expressed in the contract documents.
- E. Samples will be reviewed only for aesthetic, color, or finish selection.
- F. After review, provide copies and distribute in accordance with SUBMITTAL PROCEDURES article below and for record documents purposes described in Section 01780 - CLOSEOUT SUBMITTALS.

3.08 SUBMITTALS FOR INFORMATION

- A. When the following are specified in individual sections, submit them for information:
 - 1. Design data.
 - 2. Certificates.
 - 3. Test reports.
 - 4. Inspection reports.
 - 5. Manufacturer's instructions.
 - 6. Manufacturer's field reports.
 - 7. Other types indicated.
- B. Submit for Architect's knowledge as contract administrator or for Owner. No action will be taken.

3.09 SUBMITTALS FOR PROJECT CLOSEOUT

- A. When the following are specified in individual sections, submit them at project closeout:
 - 1. Project record documents.
 - 2. Operation and maintenance data.
 - 3. Warranties.
 - 4. Bonds.
 - 5. Other types as indicated.
- B. Submit for Owner's benefit during and after project completion.

3.10 SUBMITTAL PROCEDURES

- A. Number submittals based on specification section Sequence - add alphabetical suffix sequentially for each submittal within specification section.
- B. Identify Project, Contractor, Subcontractor or supplier; pertinent drawing and detail number, and specification section number, as appropriate on each copy.
- C. Apply Contractor's stamp, signed or initialed certifying that review, approval, verification of Products required, field dimensions, adjacent construction Work, and coordination of information is in accordance with the requirements of the Work and Contract Documents.
- D. Deliver submittals to the Architect's business address.
- E. Electronic transmission of .pdf files for various submittals may be possible depending on the nature (size, number of pages, etc.) of each submittal, and can be coordinated with the Architect on a case-by-case basis. In the event a transmittal is agreed to be reviewed and processed electronically, the Contractor shall provide the required number of hard copies to the Owner and Architect for record after receiving the approved submittal.
- F. Schedule: Schedule submittals to expedite the Project, and coordinate submission of related items. See additional provisions outlined in Paragraph 3.03 above.
- G. Review: For each submittal for review, allow 21 Calendar days for review by the Architect, exclusive of delivery time to and from Contractor. **Submittals received after 2:00 pm shall be dated as received the following business day. Likewise, submittals received after 2:00 pm on a Friday shall be dated as received the following Monday. In each case the adjusted date of receipt shall represent the commencement of the 21 day review period.** For submittals which include significant number of

sheets, or require review for coordination with submittals of related Work, additional time shall be required for review. Architect will advise Contractor of additional time required.

- H. Exterior Finishes Bundled Submittals: Within 30 days of Notice to Proceed, the Contractor is to group and submit all exterior finish selection submittals together for the Architect to review and verify selections with the Owner, and provide a date the finish selections are needed to maintain the project schedule, providing a minimum of 30 days for review, verification and approval with the Owner. These finishes shall include, but not be limited to: Brick, mortar, curtainwall, glazing, metal panels, sealant, and glass-fiber reinforced plastic.
- I. Interior Finishes Bundled Submittals: Within 30 days of Notice to Proceed, the Contractor is to group and submit all interior finish selection submittals together for the Architect to review and verify selections with the Owner, and provide a date the finish selections are needed to maintain the project schedule, providing a minimum of 30 days for review, verification and approval with the Owner. These finishes shall include, but not be limited to: Paint, wall base, flooring, ceiling tile, millwork/casework, light fixtures, and plumbing fixtures.
- J. Provide space for Contractor and Architect review stamps.
- K. When revised for resubmission, identify all changes made since previous submission.
- L. Distribute reviewed submittals as appropriate. Instruct parties to promptly report any inability to comply with requirements.
- M. Submittals not requested will not be recognized or processed.
- N. Submittals of proposed substitutions not complying with Section 01600 will not be recognized or processed.

3.11 REQUESTS FOR INFORMATION (RFI)

- A. Procedure: Immediately on discovery of the need for interpretation of the Contract Documents, and if not possible to request interpretation at Project meeting, prepare and submit an RFI in the form specified.
 - 1. RFIs shall originate with Contractor. RFIs submitted by entities other than Contractor will be returned with no response.
 - 2. Coordinate and submit RFIs in a prompt manner so as to avoid delays in Contractor's work or work of subcontractors.
- B. Content of the RFI: Include a detailed, legible description of item needing interpretation and the following:
 - 1. Project name.
 - 2. Date.
 - 3. Name of Contractor.
 - 4. Name of Architect and Construction Manager.
 - 5. RFI number, numbered sequentially.
 - 6. Specification Section number and title and related paragraphs, as appropriate.
 - 7. Drawing number and detail references, as appropriate.
 - 8. Field dimensions and conditions, as appropriate.
 - 9. Contractor's suggested solution(s). If Contractor's solution(s) impact the Contract Time or the Contract Sum, Contractor shall state impact in the RFI.
 - 10. Contractor's signature.
 - 11. Attachments: Include drawings, descriptions, measurements, photos, Product Data, Shop Drawings, and other information necessary to fully describe items needing interpretation.
 - a. Supplementary drawings prepared by Contractor shall include dimensions, thicknesses, structural grid references, and details of affected materials, assemblies, and attachments.
- C. Hard-Copy RFIs: Approved Form.
 - 1. Identify each page of attachments with the RFI number and sequential page number.

- D. Software-Generated RFIs: Software-generated form with substantially the same content as indicated above.
1. Attachments shall be electronic files in Adobe Acrobat PDF format.
- E. Architect's Action: Architect will review each RFI, determine action required, and return it. Allow a minimum of seven working days for Architect's response for each RFI. RFIs received after 1:00 p.m. shall be considered as received the following working day. RFIs received after 12:00 Noon on a Friday shall be considered as received the following Monday and shall be recorded in the RFI Log reflecting the same date received.
1. The following RFIs will be returned without action and shall be removed from the RFI Log:
 - a. Requests for approval of submittals.
 - b. Requests for approval of substitutions.
 - c. Requests for coordination information already indicated in the Contract Documents, or which is the responsibility of the respective contractors to develop in the first place.
 - d. Requests for adjustments in the Contract Time or the Contract Sum.
 - e. Requests for interpretation of Architect's actions on submittals.
 - f. Incomplete RFIs or RFIs with numerous errors.
 - g. Stupid Questions.
 2. RFI form, or RFI shall contain no language referencing the contractor's "reserved right" to receive additional time or compensation based upon information provided.
 3. Architect's action may include a request for additional information, in which case Architect's time for response will start again.
 4. Architect's action on RFIs that may result in a change to the Contract Time or the Contract Sum may be eligible for Contractor to submit Change Proposal according to Division 1 Section "Contract Modification Procedures."
 - a. If Contractor believes the RFI response warrants change in the Contract Time or the Contract Sum, notify the Architect in writing within 10 calendar days of receipt of the RFI response.
 5. On receipt of Architect's action, update the RFI log and immediately distribute the RFI response to affected parties. Review response and notify the Architect within three calendar days if Contractor disagrees with response.
- F. RFIs returned to the contractor for revision requiring additional information or clarification shall not appear in the RFI log as "Unanswered", or "Overdue".
- G. RFI Log: Prepare, maintain, and submit a tabular log of RFIs organized by the RFI number. Submit log weekly including not less than the following:
1. Project name.
 2. Name and address of Contractor.
 3. Name and address of Architect and Construction Manager.
 4. RFI number including RFIs that were dropped and not submitted.
 5. RFI description.
 6. Date the RFI was submitted.
 7. Date Architect's and Construction Manager's response was received.
 8. Identification of related Minor Change in the Work, Construction Change Directive, and Proposal Request, as appropriate.

3.12 ELECTRONIC FILE TRANSFER

- A. Electronic drawing files and Revit Coordination Model can be provided on a specific requested basis from the General Contractor or their subcontractor on a case by case basis during construction, but not during bidding.
- B. Requests should be made on an individual basis directly to the architect or engineer for their respective drawing(s) in Electronic format (Revit). Each engineer and the architect have an 'Electronic File Transfer Agreement' form to be filled out and signed by the individual or company making the request. Any requests should be made directly to the respective engineer or architect for their drawing(s), and shall

include the signed Agreement, along with a specific list of requested drawings. The Electronic File Transfer Agreements will be provided to the successful bidder upon execution of the Contract.

- C. The terms and conditions for electronic file transfer are defined in each agreement. Where a fee is required for transfer of the requested Revit Model(s), a cost of \$100 per sheet shall be applied payable directly to the engineer or architect by the party requesting the files. Files will be sent directly to each party requesting the specific files once the signed agreement and Purchase Fee has been received and reviewed.

END OF SECTION 01 3010

SECTION 01 3200**CONSTRUCTION PROGRESS DOCUMENTATION****PART 1 - GENERAL****1.01 SUMMARY**

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

1.02 SECTION INCLUDES

- A. administrative and procedural requirements for documenting the progress of construction during performance of the Work, as follows:
 - 1. Submittals Schedule.
 - 2. Contractor's Construction Schedule.
 - 3. Daily construction reports.
 - 4. Field condition reports.
 - 5. Construction Photographs.

1.03 RELATED REQUIREMENTS

- A. Division 01 Section "Payment Procedures" for submitting the Schedule of Values.
- B. Division 01 Section "Project Management and Coordination" for submitting and distributing meeting and conference minutes.
- C. Division 01 Section "Submittals" for submitting schedules and reports.
- D. Division 01 Section "Quality Assurance, Control, and Documentation" for submitting a schedule of tests and inspections.
- E. Division 01 Section "Project Closeout" for submitting "As-Built Drawings" and "Specification Mark-ups" at Project closeout.
- F. General Conditions, Article 9
- G. Section 01 2100 - Allowances

1.04 SUBMITTALS

- A. Qualification Data: For firms and persons specified in "Quality Assurance" Article to demonstrate their capabilities and experience. Include lists of completed projects with project names and addresses, names and addresses of architects and Owner/Commissioning Authorities, and other information specified.
- B. As Built Survey: Prior to mobilization General Contractor shall execute an engineered "As Built" survey documenting site conditions existing at the time of departure of the Building Package 1 Contractor
- C. Contractor's Construction Schedule: Initial (baseline) schedule, of size required to display entire schedule for entire construction period.
 - 1. Submit to Architect and Awarding Authority 3 printed copies and 1 working electronic copy of schedule, using software indicated, and labeled to comply with requirements for submittals. Include type of schedule (preliminary, initial (baseline) or updated) and date on label.
- D. Submittals Schedule: Submit three copies of schedule. Arrange the following information in a tabular format:
 - 1. Scheduled date for first submittal.
 - 2. Specification Section number and title.
 - 3. Submittal category (action or informational).
 - 4. Name of subcontractor.
 - 5. Description of the Work covered.
 - 6. Scheduled date for Architect's final release or approval.

- E. Daily Construction Reports: To be completed daily by contractor's project staff. Submit to Architect and Awarding Authority.
- F. Field Condition Reports: Submit 2 copies of report to architect and 1 copy of report to UA PM at time of discovery of differing conditions.
- G. Construction Photographs: To be reviewed at each project meeting and to be submitted in electronic format (CD, DVD) with close-out documents.

1.05 DEFINITIONS

- A. Schedule - A list of all distinct construction activities logically linked together to show the contractor's planned sequence of work.
 - 1. Preliminary Schedule - Schedule showing the contractor's planned sequence of work for the first 90 days of the project. This schedule is to include mobilization activities and procurement activities.
 - 2. Initial Schedule - The first schedule showing the contractor's planned sequence of all project activities. This schedule will serve as the baseline to measure progress of the work.
 - 3. Schedule Update - An update of the initial schedule showing current progress of the project.
- B. Activity: A discrete part of a project that can be identified for planning, scheduling, monitoring, and controlling the construction project. Activities included in a construction schedule consume time and resources.
- C. Critical Activity: An activity on the critical path that must start and finish on the planned early start and early finish times.
- D. Predecessor Activity: An activity that is linked to, and precedes, another activity in the network.
- E. Successor Activity: An activity that is linked to, and follows, another activity in the network.
- F. CPM: Critical path method, which is a method of planning and scheduling a construction project where activities are arranged based on activity relationships. These relationships, and the activity durations, are used to calculate when activities can be performed, the duration of the project, and the critical path of the project.
 - 1. Critical Path: The longest connected chain of interdependent activities through the network schedule that establishes the minimum overall Project duration and contains no float.
 - 2. Float: The measure of leeway in starting and completing an activity.

1.06 QUALITY ASSURANCE

- A. Scheduling Consultant Qualifications: An experienced specialist in CPM scheduling and reporting, with capability of producing CPM reports and diagrams within 24 hours of Architect's request. Reference section 01 3200 - 3.1 - A.
- B. Pre-scheduling Conference: Conduct conference at Project site to comply with requirements in Division 01 Section "Project Management and Coordination." Review methods and procedures related to the Contractor's Construction Schedule, including, but not limited to, the following:
 - 1. Review software limitations and content and format for reports.
 - 2. Verify availability of qualified personnel needed to develop and update schedule.
 - 3. Discuss constraints, including phasing, work stages, area separations, interim milestones, and partial Owner occupancy.
 - 4. Review delivery dates for Owner-furnished products.
 - 5. Review Allowances and time required for procurement and installation.
 - 6. Review schedule for work of Owner's separate contracts.
 - 7. Review time required for review of submittals and resubmittals.
 - 8. Review requirements for tests and inspections by independent testing and inspecting agencies.
 - 9. Review time required for completion and startup procedures.
 - 10. Review and finalize list of construction activities to be included in schedule.
 - 11. Review submittal requirements and procedures.

12. Review procedures for updating schedule.

1.07 COORDINATION

- A. Coordinate preparation and processing of schedules and reports with performance of construction activities and with scheduling and reporting of separate contractors.
- B. Coordinate Contractor's Construction Schedule with the Schedule of Values, list of subcontracts, Submittals Schedule, progress reports, payment requests, and other required schedules and reports.
 1. Secure time commitments for performing critical elements of the Work from all parties involved, including but not limited to the owner and subcontractors to the contractor.
 - a. Submission of a construction schedule that includes subcontractor activities will imply to the owner that the contractor has acceptance of the schedule from the subcontractor(s) affected.
 2. Coordinate each construction activity in the network with other activities and schedule them in proper sequence.

PART 2 - PRODUCTS

2.01 CONTRACTOR'S CONSTRUCTION SCHEDULE, GENERAL

- A. Procedures: Use AGC's "Construction Planning & Scheduling," 2nd edition as a reference for additional definitions not included herein.
- B. Time Frame: Extend schedule from date established for the Notice to Proceed to date of Substantial Completion to date of Final Completion.
 1. Contract completion date can be changed, at the Awarding Authority's discretion, by submission of a schedule that shows an early completion date, as allowed by the General Conditions to the Contract.
- C. Activities: Activities should be broken down and organized by floor, by elevation, and by work area. Comply with the following:
 1. Activity Duration: Define activities so no activity is longer than fifteen (15) days, unless specifically allowed by Architect and Owner. An exception will be granted for procurement activities.
 2. Procurement Activities: Include procurement process activities for long lead items and major items, requiring a cycle of more than 60 days, as separate activities in schedule. Procurement cycle activities include, but are not limited to, submittals, approvals, purchasing, fabrication, and delivery.
 - a. Examples include, but are not limited to, structural components, limestone or pre-cast components, architectural trim, plumbing, heating/cooling/ventilation equipment, window systems, conveying equipment, specialty items, etc.
 3. Submittal Review Time: Include review and resubmittal times indicated in Division 01 Section "Submittals" in schedule. Coordinate submittal review times in Contractor's Construction Schedule with Submittals Schedule.
 4. Startup and Testing Time: Include not less than seven days for startup and testing.
 5. Substantial Completion: Indicate completion in advance of date established for Substantial Completion, and allow time for Architect's administrative procedures necessary for certification of Substantial Completion.
- D. Constraints: Include constraints and work restrictions indicated in the Contract Documents and as follows in schedule, and show how the sequence of the Work is affected.
 1. Phasing: Arrange list of activities on schedule by phase.
 2. Work by Owner: Include a separate activity for each portion of the Work performed by Owner.
 3. Products Ordered in Advance: Include a separate activity for each product.
 4. Owner-Furnished Products: Include a separate activity for each product.
 5. Work Restrictions: Show the effect of the following items on the schedule:
 - a. Coordination with existing construction.
 - b. Limitations of continued occupancies.

- c. Uninterruptible services.
 - d. Partial occupancy before Substantial Completion.
 - e. Use of premises restrictions.
 - f. Provisions for future construction.
 - g. Seasonal variations.
 - h. Environmental control.
- E. Milestones: Include milestones and activities indicated in the Contract Documents in the schedule, including, but not limited to, the Notice to Proceed, review inspections by review agencies, Pre-Install Conferences, Building Dry-in, Temp-Perm Power, Conditioned Air, Certificate of Occupancy, Substantial Completion, and Final Completion.
 - F. Resource/Staffing: Should the contractor's progress fall materially behind the accepted initial schedule (30 days or more), the awarding authority can require the contractor to incorporate resource loading into the recovery schedule to indicate required staffing levels for each activity. This resource loading will show aggregate manpower requirements on a daily or weekly basis.
 - G. Cost Correlation: Provide cost correlation values, indicating planned and actual costs. Show dollar volume of the Work performed within the dates used for preparation of payment requests.
 - 1. Refer to Division 01 Section "Payment Procedures" for cost reporting and payment procedures.
 - H. Contract Modifications: For each proposed contract modification and concurrent with its submission, prepare a time-impact analysis to demonstrate the effect of the proposed change on the overall project schedule.
 - I. Computer Software: Prepare schedules using a program that has been developed specifically to manage construction schedules. See Article 9 of the General Conditions of the contract for further information.

2.02 CONTRACTORS CONSTRUCTION SCHEDULE (CPM SCHEDULE)

- A. CPM Schedule: Prepare Contractor's Construction Schedule using a computerized, cost and resource loaded, time-scaled CPM network analysis program.
 - 1. Submit schedule to the Architect and Awarding Authority in the time frame listed below.
 - a. For projects with a contract value of less than \$5,000,000 - Initial schedule within 10 days of Issuance of Letter of intent or Notice to Proceed.
 - b. For projects with a contract value of \$5,000,000 to \$20,000,000 - Preliminary schedule within 10 days of Issuance of Letter of intent or Notice to Proceed, and Initial schedule within 30 days of Issuance of Letter of intent or Notice to Proceed.
 - c. For projects with a contract value greater than \$20,000,000 - Preliminary schedule within 15 days of Issuance of Letter of intent or Notice to Proceed, and Initial schedule within 45 days of Issuance of Letter of intent or Notice to Proceed.
 - 2. Establish procedures for monitoring and updating CPM schedule and for reporting progress. Coordinate procedures with progress meetings and payment request dates.
 - 3. Use "one workday" as the unit of time. Include a list of non-working days and holidays incorporated into the schedule.
 - 4. Failure to include any work item required for the performance of this schedule shall not excuse the Contractor from completing all work within the applicable completion dates, regardless of Architect or Owner approval of the schedule.
- B. CPM Schedule Preparation: Prepare a list of all activities required to complete the work. Determine the relationship of each activity to the other activities, and link the activities together to indicate the logical sequence of work.
 - 1. Activities: Indicate the estimated time duration, sequence requirements, and relationship of each activity in relation to other activities. Include estimated time frames for the following activities.
 - a. Preparation and processing of submittals.
 - b. Mobilization and demobilization.
 - c. Purchase of materials.

- d. Delivery.
 - e. Fabrication.
 - f. Utility Interruptions.
 - g. Power outages or any utility shut downs must be given advance notice of 30 days and must be included in the CPM schedule.
 - h. Installation.
 - i. Architect and Owner Inspections.
 - j. Work by Owner that may affect or be affected by Contractor's activities.
 - k. Testing and commissioning.
2. Critical Path Activities: Clearly identify critical path activities, including those for interim completion dates. Schedule start and completion dates shall be consistent with Contract milestone dates.
 3. Processing: Process data to produce output on a computer-drawn, time-scaled network. Revise data, reorganize activity sequences and reproduce as often as necessary to produce the CPM schedule so that the work is shown to be complete within the limitations of the Contract Time.
- C. Initial Issue of Schedule :
1. Sort the initial submission of the network diagram "early start" date. Identify clearly all critical activities. Show the following information on the schedule:
 - a. Description of the activity.
 - b. Contractor or subcontractor and the Work or activity.
 - c. Predecessors and Successors.
 - d. Early and late start dates.
 - e. Early and late finish dates.
 - f. Activity duration in workdays.
 - g. Total float for each activity.
 - h. Average size of workforce.
- D. Schedule Updating:
1. Concurrent with making revisions to schedule, prepare tabulated reports and narrative(s) showing the following:
 - a. Identification of activities that have changed.
 - b. Changes in early and late start dates.
 - c. Changes in early and late finish dates.
 - d. Changes in activity durations in workdays.
 - e. Changes in the critical path.
 - f. Changes in total float or slack time.
 - g. Changes in cost-loading or resource-loading.
 - h. Changes in the Contract Time.

2.03 REPORTS

- A. Daily Construction Reports:
1. Daily Construction Reports: Prepare a daily construction report recording the following information concerning events at Project site:
 - a. List of subcontractors at Project site.
 - b. List of separate contractors at Project site.
 - c. Approximate count of personnel at Project site.
 - d. Personnel count is to be broken down by subcontractor.
 - e. All equipment at project site.
 - f. High and low temperatures and general weather conditions.
 - g. Accidents involving injury or damage to equipment or work in place.
 - h. Meetings and significant decisions.
 - i. Unusual events.

- j. Inspections of the work.
 - k. Stoppages, delays, shortages, and losses.
 - l. Meter readings and similar recordings.
 - m. Emergency procedures enacted.
 - n. Orders and requests of authorities having jurisdiction.
 - o. Change Orders received and implemented.
 - p. Construction Change Directives received.
 - q. Services connected and disconnected.
 - r. Equipment or system tests and startups.
2. The University of Alabama intends to require the General Contractor's Daily Reporting to be done using a Call-in service administered by a third party provider. The daily reporting will be required by all Superintendents listed in the project's minimum general contractor staffing requirements.
- B. Field Condition Reports: Immediately on discovery of a difference between field conditions and the Contract Documents, prepare a detailed report. Submit with a request for information. Include a detailed description of the differing conditions and photographs illustrating the existing conditions, together with recommendations for changing the Contract Documents.
- C. Construction Photographs: Photographs to document pre-existing conditions and to regularly document construction progress.

PART 3 - EXECUTION

3.01 CONTRACTOR'S CONSTRUCTION SCHEDULE

- A. Scheduling Consultant: Engage a 3rd party scheduling consultant to provide planning, evaluation, and reporting using CPM scheduling.
- 1. In-House Option: Awarding Authority may waive the requirement to retain a consultant if Contractor employs skilled personnel with experience in CPM scheduling and reporting techniques. Submit qualifications.
 - 2. Meetings: Scheduling consultant shall attend all meetings related to Project progress, alleged delays, and time impact.
- B. Float: Float is a shared resource, available to both parties as needed. The Contractor shall not sequester shared float through such strategies as (a) extending activity duration estimates to consume available float, (b) using preferential logic, or (c) using extensive crew / resource sequencing, constraints, unnecessary milestones, leads or lags on logic ties, and hammock type activities. Since Float within the Construction Schedule is jointly owned, no time extensions will be granted nor delay damages paid until a delay occurs which extends the work beyond the contract completion date. Since float within the Construction Schedule is jointly owned, it is acknowledged that Trustees-caused delays on the project may be offset by Trustees-caused time savings (i.e., critical path submittals returned in less time than allowed by the contract, approval of substitution requests and credit changes which result in a savings of time to the Contractor, etc.). In such an event, the Contractor shall not be entitled to receive a time extension or delay damages until all Trustee-caused time savings are exceeded and the contract completion date is also exceeded.
- C. Weather Delays: The schedule must account for average weather delays for the local area. Weather delays will be calculated as days lost for events in excess of the NOAA 30 year average for Tuscaloosa, AL (1971 - 2000). Weather delays will not be granted for rain events less than 0.1 inches. Weather delays will not be granted for activities that are not shown to be on the critical path of the schedule at the time of the event.
- D. Contractor's Construction Schedule Updating: At two-week intervals, update schedule to reflect actual construction progress and activities. Issue printed and electronic versions of schedule one week before each regularly scheduled progress meeting.
- 1. If Last Planner Scheduling method is chosen by the Contractor CPM Schedule updates shall be provided at 6 week intervals in lieu of 2 week required otherwise.

2. Include a report and narrative with each updated schedule that indicates every change, including, but not limited to, changes in logic, durations, actual starts and finishes, and activity durations.
 3. As the Work progresses, indicate Actual Completion percentage for each activity.
 4. At the end of the project, submit the As-Built schedule with actual start and finish dates to the owner as a close-out requirement.
- E. Distribution: Distribute copies of approved schedule to Architect, Awarding Authority, separate contractors, testing and inspecting agencies, and other parties identified by Contractor with a need-to-know schedule responsibility.
1. Post copies in Project meeting rooms and temporary field offices.
 2. When revisions are made, distribute updated schedules to the same parties and post in the same locations. Awarding Authority to receive both paper and working electronic copy of each update.
 3. Delete parties from distribution when they have completed their assigned portion of the Work and are no longer involved in performance of construction activities.
- F. Construction Schedule Software: The following CPM software shall be utilized:
1. For projects with a contract value of less than \$5,000,000 - Microsoft Project, Primavera P6, or other comparable software product.
 2. For projects with a contract value greater than \$5,000,000 - Primavera P6 or other comparable software product.

3.02 CONSTRUCTION PHOTOGRAPHS

- A. Photographic Process: Digital Imaging.
- B. Date Stamp: Unless otherwise indicated, date and time stamp each photograph as it is being taken so stamp is integral to photograph.
- C. Preconstruction Digital Photographs and Digital Video Recording: Before starting construction, take color photographs and digital video recording of Project site and affected City right-of-ways and surrounding properties and interior existing photos of affected areas from different vantage points. Show existing conditions adjacent to property.
- D. Periodic Construction Photographs: Periodic digital color photographs and digital files to be submitted with each pay request with the following views:
1. Exterior views of all distinct elevations on a weekly basis. Photographs of each elevation are to be taken from the same location throughout the project.
 2. Interior views of all levels of major spaces on a monthly basis. Of particular interest is the process of structure, mechanical (ductwork, equipment, plumbing, and sprinkler systems), electrical, partitions and interior finishes.
 3. Roof: Views of all roof areas on a weekly basis during periods when work is occurring on or adjacent to the roof.
 4. Field Office Prints: Retain one set of prints of periodic photographs in field office at Project site, available at all times for reference. Identify photographs the same as for those submitted to Architect.

END OF SECTION 01 3200

DCM (BC) No. _____

CERTIFICATION OF STRUCTURAL OBSERVATIONS

for

Project Name: _____

Owner Entity: _____

Contractor Company: _____

I _____, do hereby verify that I have personally conducted the visual observations of the construction of the structural system for conformance to the approved construction documents for the referenced project. The visual observations of the structural systems were personally conducted by me at all significant construction stages and at the completion of the construction of the structural system. To the best of my knowledge, all structural deficiencies have been resolved except as noted below:

Signed and sealed on this date, _____, 20____.

Design Professional's Seal:

Architectural / Engineering Firm

Signature of Architect or Structural Engineer of Record

Printed Name

Specifications: This form must be included in the project manual submitted to DCM for Final Plan Review for:

- All new public K-12 schools, awarded after July 1, 2010, with tornado storm shelters as required by Act 2010-746.
- All public K-12 additions and renovations which are required to contain tornado storm shelters by the International Building Code, Section 423.
- All private K-12 new schools, additions and renovations as required by the International Building Code, Section 423.
- All new buildings containing classrooms or dorm rooms on the grounds of all public 2-year or 4-year institutions of higher education, statewide, awarded on or after August 1, 2012, as required by Act 2012-554.

Submittal of Form: Provide a copy of the completed form to the DCM Inspector at Final Inspection. The original completed form, signed and sealed by the architect or structural engineer of record, must be included as an attachment to the Certificate of Substantial Completion submitted to DCM for:

- All new buildings constructed on the grounds of new public K-12 schools awarded after July 1, 2010.
- All new buildings containing classrooms or dorm rooms constructed on the grounds of public 2-year or 4-year institutions of higher education awarded on or after August 1, 2012. **EXCEPTION:** For ACCS projects started on or after August 1, 2021 (for which DCM is not inspecting the entire project): Provide the original completed form, signed and sealed by the architect or structural engineer of record, to the DCM Inspector at Final Inspection of Storm Shelter.

SECTION 01 4216**DEFINITIONS****PART 1 GENERAL****1.01 SUMMARY**

- A. This section supplements the definitions contained in the General Conditions.
- B. Other definitions are included in individual specification sections.

1.02 DEFINITIONS

- A. Furnish: To supply, deliver, unload, and inspect for damage.
- B. Install: To unpack, assemble, erect, apply, place, finish, cure, protect, clean, start up, and make ready for use.
- C. Product: Material, machinery, components, equipment, fixtures, and systems forming the work result. Not materials or equipment used for preparation, fabrication, conveying, or erection and not incorporated into the work result. Products may be new, never before used, or re-used materials or equipment.
- D. Project Manual: The book-sized volume that includes the procurement requirements (if any), the contracting requirements, and the specifications.
- E. Provide: To furnish and install.
- F. Supply: Same as Furnish.
- G. Architect: The Architect is the person or entity lawfully licensed to practice architecture in the State of Alabama, who is under contract with the Owner as the primary design professional for the Project and identified as the Architect in the Construction Contract. The term "Architect" means the Architect or the Architect's authorized representative. If the employment of the Architect is terminated, the Owner shall employ a new Architect whose status under the Contract Documents shall be that of the former Architect.
- H. Contract: The Contract is the embodiment of the Contract Documents. The Contract represents the entire and integrated agreement between the Owner and Contractor and supersedes any prior written or oral negotiations, representations or agreements that are not incorporated into the Contract Documents. The Contract may be amended only by a Contract Change Order or a Modification to the Construction Contract. The contractual relationship which the Contract creates between the Owner and the Contractor extends to no other persons or entities. The Contract consists of the following Contract Documents, including all additions, deletions, and modifications incorporated therein before the execution of the Construction Contract:
 - 1. Construction Contract
 - 2. Performance and Payment Bonds
 - 3. Conditions of the Contract (General, Supplemental, and other Conditions)
 - 4. Specifications
 - 5. Drawings
 - 6. Contract Change Orders
 - 7. Modifications to the Construction Contract (applicable to PSCA Projects)
- I. Contract Sum: The Contract Sum is the total amount payable by the Owner to the Contractor for performance of the Work under the Contract Documents. The term "Contract Sum" means the Contract Sum stated in the Construction Contract as may have been increased or decreased by Change Order(s) in accordance with the Contract Documents.
- J. Contract Time: The Contract Time is the period of time in which the Contractor must achieve Substantial Completion of the Work. The date on which the Contract Time begins is specified in the written Notice To Proceed issued to the Contractor by the Owner. The Date of Substantial Completion is the date established in accordance with the General Conditions. The term "Contract Time" means the

Contract Time stated in the Construction Contract as may have been extended by Change Order(s) in accordance with the Contract Documents. The term “day” as used in the Contract Documents shall mean calendar day unless otherwise specifically defined.

- K. Contractor: The Contractor is the person or persons, firm, partnership, joint venture, association, corporation, cooperative, limited liability company, or other legal entity, identified as such in the Construction Contract. The term “Contractor” means the Contractor or the Contractor's authorized representative.
- L. Defective Work: The term “Defective Work” shall apply to: (1) any product, material, system, equipment, or service, or its installation or performance, which does not conform to the requirements of the Contract Documents, (2) in-progress or completed Work the workmanship of which does not conform to the quality specified or, if not specified, to the quality produced by skilled workers performing work of a similar nature on similar projects in the state, (3) substitutions and deviations not properly submitted and approved or otherwise authorized, (4) temporary supports, structures, or construction which will not produce the results required by the Contract Documents, and (5) materials or equipment rendered unsuitable for incorporation into the Work due to improper storage or protection.
- M. Drawings: The Drawings are the portions of the Contract Documents showing graphically the design, location, layout, and dimensions of the Work, in the form of plans, elevations, sections, details, schedules, and diagrams.
- N. Notice to Proceed (NTP): A proceed order issued by the Owner or Director, as applicable, fixing the date on which the Contractor shall begin the prosecution of the Work, which is also the date on which the Contract Time shall begin.
- O. Owner: The Owner is the entity or entities identified as such in the Construction Contract and is referred to throughout the Contract Documents as if singular in number. The term “Owner” means the Owner or the Owner's authorized representative. The term “Owner” as used herein shall be synonymous with the term “Awarding Authority” as defined and used in Title 39 - Public Works, Code of Alabama, 1975, as amended.
- P. The Project: The Project is the total construction of which the Work required by these Contract Documents may be the entirety or only a part with other portions to be constructed by the Owner or separate contractors.
- Q. Project Manual : The Project Manual is the volume usually assembled for the Work which may include the Advertisement for Bids, Instructions to Bidders, sample forms, General Conditions of the Contract, Supplementary Conditions, and Specifications of the Work.
- R. Specifications: The Specifications are that portion of the Contract Documents which set forth in writing the standards of quality and performance of products, equipment, materials, systems, and services and workmanship required for acceptable performance of the Work.
- S. Subcontractor: A Subcontractor is a person or entity who is undertaking the performance of any part of the Work by virtue of a contract with the Contractor. The term “Subcontractor” means a Subcontractor or its authorized representatives.
- T. The Work: The Work is the construction and services required by the Contract Documents and includes all labor, materials, supplies, equipment, and other items and services as are necessary to produce the required construction and to fulfill the Contractor's obligations under the Contract. The Work may constitute the entire Project or only a portion of it.
- U. 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.

- V. 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.

PART 2 PRODUCTS - NOT USED

PART 3 EXECUTION - NOT USED

END OF SECTION 01 4216

SECTION 01 5000**TEMPORARY FACILITIES AND CONTROLS****PART 1 GENERAL****1.01 SECTION INCLUDES**

- A. Temporary utilities.
- B. Temporary telecommunications services.
- C. Temporary sanitary facilities.
- D. Temporary Controls: Barriers, enclosures, and fencing.
- E. Security requirements.
- F. Vehicular access and parking.
- G. Waste removal facilities and services.
- H. Field offices.

1.02 SUBMITTALS

- A. See Section 01 3000 - Administrative Requirements, for submittal procedures.
- B. Site Traffic Control Plan: Submit Site plan layout indicating and locating the following:
 - 1. Access points.
 - 2. Fencing and Gates.
 - 3. On Site parking.
 - 4. Loading / Staging / Storage / Stockpiles.
 - 5. Field Offices.
 - 6. Informational and control signage.
 - 7. Barricades.
 - 8. Tree protection.

1.03 TEMPORARY UTILITIES

- A. Provide and pay for all electrical power, lighting, water, heating and cooling, and ventilation required for construction purposes and field offices.
- B. Use trigger-operated nozzles for water hoses, to avoid waste of water.

1.04 TELECOMMUNICATIONS SERVICES

- A. Provide, maintain, and pay for telecommunications services to field office at time of project mobilization.
- B. Telecommunications services shall include:

1.05 TEMPORARY SANITARY FACILITIES

- A. Provide and maintain required facilities and enclosures. Provide at time of project mobilization.
- B. Maintain daily in clean and sanitary condition.

1.06 BARRIERS AND SIGNAGE

- A. Provide adequate directional and informational signage as well as personnel to maintain safe and orderly conditions for public vehicular and pedestrian traffic.
- B. Provide barriers to prevent unauthorized entry to construction areas, to prevent access to areas that could be hazardous to workers or the public, to allow for owner's use of site and to protect existing facilities and adjacent properties from damage from construction operations and demolition.
- C. Provide barricades and other protection required by governing authorities for public rights-of-way .
- D. Provide protection for plants designated to remain. Replace damaged plants.
- E. Protect non-owned vehicular traffic, stored materials, site, and structures from damage.

1.07 SECURITY

- A. Provide security and facilities to protect Work, Equipment, material and Construction Manager's operations from unauthorized entry, vandalism, or theft.
- B. Coordinate with Owner's security program.

1.08 VEHICULAR ACCESS AND PARKING

- A. Provide adequate means for maintaining safe and orderly regulation of public vehicular traffic around the Site.
- B. Coordinate access and haul routes with governing authorities and Construction Manager.
- C. Provide and maintain access to fire hydrants, free of obstructions.
- D. Provide means of removing mud from vehicle wheels before entering streets.
- E. Designated existing on-site roads may be used for construction traffic.
- F. Provide temporary parking areas to accommodate construction personnel. When site space is not adequate, provide additional off-site parking.
- G. Existing, adjacent, or nearby parking areas may not be used for construction parking.
- H. Designate one parking space for Owner and Architect use.

1.09 WASTE REMOVAL

- A. Provide waste removal facilities and services as required to maintain the site in clean and orderly condition.
- B. Provide containers with lids. Remove trash from site periodically.
- C. If materials to be recycled or re-used on the project must be stored on-site, provide suitable non-combustible containers; locate containers holding flammable material outside the structure unless otherwise approved by the authorities having jurisdiction.
- D. Open free-fall chutes are not permitted. Terminate closed chutes into appropriate containers with lids.

1.10 FIELD OFFICES

- A. Office: Weathertight, with lighting, electrical outlets, heating, cooling equipment, and equipped with sturdy furniture, drawing rack and work / drawing reference tables .
- B. Provide space for Project meetings, with table and chairs to accommodate 10 persons.

1.11 REMOVAL OF UTILITIES, FACILITIES, AND CONTROLS

- A. Remove temporary utilities, equipment, facilities, materials, prior to Date of Substantial Completion inspection.
- B. Remove underground installations to a minimum depth of 6 feet. Grade site as indicated.
- C. Clean and repair damage caused by installation or use of temporary work.

PART 2 PRODUCTS - NOT USED

PART 3 EXECUTION - NOT USED

END OF SECTION 01 5000

SECTION 01 6000**PRODUCT REQUIREMENTS****PART 1 GENERAL****1.01 SECTION INCLUDES**

- A. General product requirements.
- B. Sustainable design-related product requirements.
- C. Transportation, handling, storage and protection.
- D. Product option requirements.
- E. Substitution limitations and procedures.
- F. Procedures for Owner-supplied products.
- G. Maintenance materials, including extra materials, spare parts, tools, and software.

1.02 RELATED REQUIREMENTS

- A. Section 01 1000 - Summary: Lists of products to be removed from existing building.
- B. Section 01 2500 - Substitution Procedures: Substitutions made during procurement and/or construction phases.
- C. Section 01 3010 - Administrative Requirements
- D. Section 01 4000 - Quality Requirements: Product quality monitoring.
- E. Section 01 6116 - Volatile Organic Compound (VOC) Content Restrictions: Requirements for VOC-restricted product categories.
- F. Section 01 7419 - Construction Waste Management and Disposal: Waste disposal requirements potentially affecting product selection, packaging and substitutions.
- G. Section 22 0513 - Common Motor Requirements for Plumbing Equipment: Motors for plumbing equipment.

1.03 REFERENCE STANDARDS

- A. 16 CFR 260.13 - Guides for the Use of Environmental Marketing Claims; Federal Trade Commission; Recycled Content; Current Edition.
- B. ASTM D6866 - Standard Test Methods for Determining the Biobased Content of Solid, Liquid, and Gaseous Samples Using Radiocarbon Analysis; 2020.
- C. NEMA MG 1 - Motors and Generators; 2018.
- D. NFPA 70 - National Electrical Code; Most Recent Edition Adopted by Authority Having Jurisdiction, Including All Applicable Amendments and Supplements.

1.04 SUBMITTALS

- A. When the following are specified in individual sections, submit them for review:
 - 1. Product data.
 - 2. Shop drawings.
 - 3. Samples for selection.
 - 4. Samples for verification.
- B. Proposed Products List: Submit list of major products proposed for use, with name of manufacturer, trade name, and model number of each product.
 - 1. Submit within 15 days after date of Notice to Proceed.
 - 2. For products specified only by reference standards, list applicable reference standards.
- C. Product Data Submittals: Submit manufacturer's standard published data. Mark each copy to identify applicable products, models, options, and other data. Supplement manufacturers' standard data to provide information specific to this Project.

- D. Shop Drawing Submittals: Prepared specifically for this Project; indicate utility and electrical characteristics, utility connection requirements, and location of utility outlets for service for functional equipment and appliances.
- E. Sample Submittals: Illustrate functional and aesthetic characteristics of the product, with integral parts and attachment devices. Coordinate sample submittals for interfacing work.
 - 1. For selection from standard finishes, submit samples of the full range of the manufacturer's standard colors, textures, and patterns.

PART 2 PRODUCTS

2.01 EXISTING PRODUCTS

- A. Do not use materials and equipment removed from existing premises unless specifically required or permitted by Contract Documents.
- B. Unforeseen historic items encountered remain the property of the Owner; notify Owner promptly upon discovery; protect, remove, handle, and store as directed by Owner.
- C. Existing materials and equipment indicated to be removed, but not to be re-used, relocated, reinstalled, delivered to the Owner, or otherwise indicated as to remain the property of the Owner, become the property of the Contractor; remove from site.

2.02 NEW PRODUCTS

- A. Provide new products unless specifically required or permitted by Contract Documents.
- B. Use of products having any of the following characteristics is not permitted:
 - 1. Made using or containing CFC's or HCFC's.
- C. Where other criteria are met, Contractor shall give preference to products that:
 - 1. If used on interior, have lower emissions, as defined in Section 01 6116.
 - 2. If wet-applied, have lower VOC content, as defined in Section 01 6116.
 - 3. Are extracted, harvested, and/or manufactured closer to the location of the project.
 - 4. Have longer documented life span under normal use.
 - 5. Result in less construction waste. See Section 01 7419
- D. Joint Sealants, Including Duct Sealers:
 - 1. Provide only products having lower volatile organic compound (VOC) content than required by Bay Area Air Quality Management District Regulation 8, Rule No.51.
 - a. Require each installer to certify compliance and submit product data showing product content.
 - 2. Specific Product Categories: Comply with limitations specified elsewhere.
- E. Provide interchangeable components by the same manufacture for components being replaced.
- F. Motors: Refer to Section 22 0513 - Common Motor Requirements for Plumbing Equipment, NEMA MG 1 Type. Specific motor type is specified in individual specification sections.
- G. Wiring Terminations: Provide terminal lugs to match branch circuit conductor quantities, sizes, and materials indicated. Size terminal lugs to NFPA 70, include lugs for terminal box.
- H. Cord and Plug: Provide minimum 6 foot cord and plug including grounding connector for connection to electric wiring system. Cord of longer length is specified in individual specification sections.

2.03 PRODUCT OPTIONS

- A. Products Specified by Reference Standards or by Description Only: Use any product meeting those standards or description.
- B. Products Specified by Naming One or More Manufacturers: Use a product of one of the manufacturers named and meeting specifications, no options or substitutions allowed.
- C. Products Specified by Naming One or More Manufacturers with a Provision for Substitutions: Submit a request for substitution for any manufacturer not named.

2.04 MAINTENANCE MATERIALS

- A. Furnish extra materials, spare parts, tools, and software of types and in quantities specified in individual specification sections.
- B. Deliver to Project site; obtain receipt prior to final payment.

PART 3 EXECUTION**3.01 SUBSTITUTION LIMITATIONS**

- A. See Section 01 2500 - Substitution Procedures.
- B. The Instructions to Bidders and Supplemental General Conditions of the Contract specify the time restrictions for submitting requests for substitutions during the bidding period: no later than 10 working days prior to the date of the Bid Opening. Comply with requirements specified in these sections.
- C. All substitution requests shall be submitted through a General Contractor pre-qualified to bid on this project.
- D. Substitutions may be considered when a product becomes unavailable through no fault of Contractor.
- E. Document each request with complete data substantiating compliance of proposed substitution with Contract Documents.
- F. A request for substitution constitutes a representation that the submitter:
 - 1. Has investigated proposed product and determined that it meets or exceeds the quality level of the specified product.
 - 2. Will provide the same warranty for the substitution as for the specified product.
 - 3. Waives claims for additional costs or time extension that may subsequently become apparent.

3.02 OWNER-SUPPLIED PRODUCTS

- A. Owner's Responsibilities:
 - 1. Arrange for and deliver Owner reviewed shop drawings, product data, and samples, to Contractor.
 - 2. Arrange and pay for product delivery to site.
 - 3. On delivery, inspect products jointly with Contractor.
 - 4. Submit claims for transportation damage and replace damaged, defective, or deficient items.
 - 5. Arrange for manufacturers' warranties, inspections, and service.
- B. Contractor's Responsibilities:
 - 1. Review Owner reviewed shop drawings, product data, and samples.
 - 2. Receive and unload products at site; inspect for completeness or damage jointly with Owner.
 - 3. Handle, store, install and finish products.
 - 4. Repair or replace items damaged after receipt.

3.03 TRANSPORTATION AND HANDLING

- A. Package products for shipment in manner to prevent damage; for equipment, package to avoid loss of factory calibration.
- B. If special precautions are required, attach instructions prominently and legibly on outside of packaging.
- C. Coordinate schedule of product delivery to designated prepared areas in order to minimize site storage time and potential damage to stored materials.
- D. Transport and handle products in accordance with manufacturer's instructions.
- E. Transport materials in covered trucks to prevent contamination of product and littering of surrounding areas.
- F. Promptly inspect shipments to ensure that products comply with requirements, quantities are correct, and products are undamaged.
- G. Provide equipment and personnel to handle products by methods to prevent soiling, disfigurement, or damage, and to minimize handling.

- H. Arrange for the return of packing materials, such as wood pallets, where economically feasible.

3.04 STORAGE AND PROTECTION

- A. Designate receiving/storage areas for incoming products so that they are delivered according to installation schedule and placed convenient to work area in order to minimize waste due to excessive materials handling and misapplication. See Section 01 7419.
- B. Store and protect products in accordance with manufacturers' instructions.
- C. Store with seals and labels intact and legible.
- D. Store sensitive products in weathertight, climate-controlled enclosures in an environment favorable to product.
- E. For exterior storage of fabricated products, place on sloped supports above ground.
- F. Provide off-site storage and protection when site does not permit on-site storage or protection.
- G. Protect products from damage or deterioration due to construction operations, weather, precipitation, humidity, temperature, sunlight and ultraviolet light, dirt, dust, and other contaminants.
- H. Comply with manufacturer's warranty conditions, if any.
- I. Cover products subject to deterioration with impervious sheet covering. Provide ventilation to prevent condensation and degradation of products.
- J. Store loose granular materials on solid flat surfaces in a well-drained area. Prevent mixing with foreign matter.
- K. Prevent contact with material that may cause corrosion, discoloration, or staining.
- L. Provide equipment and personnel to store products by methods to prevent soiling, disfigurement, or damage.
- M. Arrange storage of products to permit access for inspection. Periodically inspect to verify products are undamaged and are maintained in acceptable condition.

END OF SECTION 01 6000

SECTION 01 6010**MATERIALS****PART 1 - GENERAL****1.01 REQUIREMENTS**

- A. Material shall be new and without any indication of damage or overage. If usually packaged bring to job in original unbroken labeled containers. Materials not specified but required, shall be of a grade equal or superior to related parts of work.
- B. Brand Names: Mentioned herein to establish a standard of design and quality. Except when indicated in subsequent sections in regard to each particular item. Qualified pre-bid approval may be given to various vendors at their request on products for various vendors at their request on products for which pre-bid approval is not required; such approvals will be communicated only to the vendor.
 - 1 Where three or more manufacturers are listed, the product must be furnished by one of the manufacturers so listed unless specific approval of other brand is obtained in writing. Comparison of substitute brands will be with the first name of those listed.
 - 2 By requesting approval of a proposed substitution, the Contractor shall certify that the product substituted is in all respects equal to, and will function equally well in the project, as the product specified. The Architect / Engineer, at its discretion shall require such certification in writing.
- C. Installation: Install, apply, connect, clean and operate all materials and equipment per manufacturer's directions and recommendations. In event of conflict between specifications and manufacturer's directions, obtain instructions from Engineer.
- D. Color Selections: The Architect's/Engineer's color schedule will be prepared for color only; it will not justify deviations from Contract requirements (such as changing of finish material, type of paint, etc.) which must be made by Change Order. Where color numbers and names conflict, secure instructions before proceeding.
- E. Foreign Materials: In accordance with State Law, provide only materials manufactured, mined or processed in the United States or its territories, provided same are available at reasonable prices.

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

SECTION 01 7000**EXECUTION REQUIREMENTS****PART 1 GENERAL****1.01 SECTION INCLUDES**

- A. Examination, preparation, and general installation procedures.
- B. Requirements for alterations work, including selective demolition, except removal, disposal, and/or remediation of hazardous materials and toxic substances.
- C. Mockups.
- D. Cutting and patching.
- E. Surveying for laying out the work.
- F. Temporary Environmental Conditions During Construction.
- G. Minimum "Dry-In" Conditions.
- H. In-Wall and Above-Ceiling Reviews.
- I. Punchlist Review Scheduling.
- J. Equipment Installation (by others).
- K. Owner-Furnished/Contractor-Installed Products.
- L. Cleaning and protection.
- M. Starting of systems and equipment.
- N. Demonstration and instruction for Owner personnel.
- O. General requirements for maintenance service.

1.02 RELATED REQUIREMENTS

- A. Section 01 3100 - Submittals: Submittals procedures and formats.
- B. Section 01 4000 - Quality Requirements: Testing and inspection procedures.
- C. Section 01 5000 - Temporary Facilities: Temporary enclosures and utilities.
- D. Section 01 5000 - Temporary Facilities and Controls: Interior climate control prior to Systems Start Up. .
- E. Section 01 7010 - Project Closeout: Project record documents, operation and maintenance data, warranties and bonds.
- F. Section 01 7419 - Construction Waste Management and Disposal: Additional procedures for trash/waste removal, recycling, salvage, and reuse.
- G. Section 01 7610 - Temporary Protective Coverings: Materials for protection of installed work.
- H. Section 01 7010 - Project Closeout: Project record documents, operation and maintenance data, warranties and bonds.
- I. Section 01 7900 - Demonstration and Training: Demonstration of products and systems to be commissioned and where indicated in specific specification sections
- J. Section 01 9113 - General Commissioning Requirements: Contractor's responsibilities in regard to commissioning.
- K. Section 02 4200 - Demolition and Hazardous Material Removal: Demolition of whole structures and parts thereof; site utility demolition.
- L. Section 07 8400 - Firestopping.
- M. Individual Product Specification Sections:
 - 1. Advance notification to other sections of openings required in work of those sections.
 - 2. Limitations on cutting structural members.

1.03 REFERENCE STANDARDS

- A. NFPA 241 - Standard for Safeguarding Construction, Alteration, and Demolition Operations; 2019.

1.04 SUBMITTALS

- A. See Section 01 3000 - Administrative Requirements, for submittal procedures.
- B. Survey work: Submit name, address, and telephone number of Surveyor before starting survey work.
 - 1. On request, submit documentation verifying accuracy of survey work.
 - 2. Submit a copy of site drawing signed by the Land Surveyor, that the elevations and locations of the work are in compliance with Contract Documents.
 - 3. Submit surveys and survey logs for the project record.
- C. Cutting and Patching: Submit written request in advance of cutting or alteration that affects:
 - 1. Structural integrity of any element of Project.
 - 2. Integrity of weather exposed or moisture resistant element.
 - 3. Efficiency, maintenance, or safety of any operational element.
 - 4. Visual qualities of sight exposed elements.
 - 5. Work of Owner or separate Contractor.
 - 6. Include in request:
 - a. Identification of Project.
 - b. Location and description of affected work.
 - c. Necessity for cutting or alteration.
 - d. Description of proposed work and products to be used.
 - e. Alternatives to cutting and patching.
 - f. Effect on work of Owner or separate Contractor.
 - g. Written permission of affected separate Contractor.
 - h. Date and time work will be executed.
- D. Project Record Documents: Accurately record actual locations of capped and active utilities.

1.05 QUALIFICATIONS

- A. For surveying work, employ a land surveyor registered in Alabama and acceptable to Architect. Submit evidence of surveyor's Errors and Omissions insurance coverage in the form of an Insurance Certificate. Employ only individual(s) trained and experienced in collecting and recording accurate data relevant to ongoing construction activities,
- B. For field engineering, employ a professional engineer of the discipline required for specific service on Project, licensed in Alabama. Employ only individual(s) trained and experienced in establishing and maintaining horizontal and vertical control points necessary for laying out construction work on project of similar size, scope and/or complexity.
- C. For design of temporary shoring and bracing, employ a Professional Engineer (Structural) experienced in design of this type of work and licensed in Alabama.

1.06 PROJECT CONDITIONS

- A. Use of explosives is not permitted.
- B. Grade site areas to drain. Maintain excavations free of water. Provide, operate, and maintain dewatering equipment.
- C. Protect site from pooling or running water. Provide water barriers as required to protect site from soil erosion.
- D. Ventilate enclosed areas to assist cure of materials, to dissipate humidity, and to prevent accumulation of dust, fumes, vapors, or gases.
- E. Dust Control: Execute work by methods to minimize raising dust from construction operations. Provide positive means to prevent air-borne dust from dispersing into atmosphere and over adjacent properties.

1. Provide dust-proof enclosures to prevent entry of dust generated outdoors.
- F. Erosion and Sediment Control: Plan and execute work by methods to control surface drainage from cuts and fills, from borrow and waste disposal areas. Prevent erosion and sedimentation.
 1. Minimize amount of bare soil exposed at one time.
 2. Provide temporary measures such as berms, dikes, and drains, to prevent water flow.
 3. Construct fill and waste areas by selective placement to avoid erosive surface silts or clays.
 4. Periodically inspect earthwork to detect evidence of erosion and sedimentation; promptly apply corrective measures.
- G. Noise Control: Provide methods, means, and facilities to minimize noise produced by construction operations.
 1. Outdoors: Limit conduct of especially noisy exterior work to the hours of 8 am to 5 pm.
 2. Indoors: Limit conduct of especially noisy interior work to the hours of 6 pm to 7 am.
- H. Pest and Insect Control: Provide methods, means, and facilities to prevent pests and insects from damaging the work.
 1. Pest Control Service: Weekly treatments.
- I. Rodent and vermin Control: Provide methods, means, and facilities to prevent rodents and vermin from accessing or invading premises.
- J. Pollution Control: Provide methods, means, and facilities to prevent contamination of soil, water, and atmosphere from discharge of noxious, toxic substances, and pollutants produced by construction operations. Comply with federal, state, and local regulations.

1.07 COORDINATION

- A. See Section 01 1000 for occupancy-related requirements.
- B. Coordinate scheduling, submittals, and work of the various sections of the Project Manual to ensure efficient and orderly sequence of installation of interdependent construction elements, with provisions for accommodating items installed later.
- C. Notify affected utility companies and comply with their requirements.
- D. Prior to excavation, or any site preparation activities approval by the University is required through the Pre-Excavation Notification and sign off as well as the Site Prep Sign Off Approval Process
- E. Utility Shutdown Requests: All necessary service interruptions of utilities of any type or magnitude shall be scheduled in advance with TU Project Manager. Major utility shutdowns shall be scheduled during non-business hours. Scheduling of shutdown shall be through prior submittal of written request in compliance with TU Utility Shutdown Protocol prior to any proposed shutdown, and awaiting approval. Minor utility service interruptions shall be scheduled with a minimum of five days prior notice.
- F. Verify that utility requirements and characteristics of new operating equipment are compatible with building utilities. Coordinate work of various sections having interdependent responsibilities for installing, connecting to, and placing in service, such equipment.
- G. Coordinate space requirements, supports, and installation of mechanical and electrical work that are indicated diagrammatically on drawings. Follow routing indicated for pipes, ducts, and conduit, as closely as practicable; place runs parallel with lines of building. Utilize spaces efficiently to maximize accessibility for other installations, for maintenance, and for repairs.
- H. In finished areas except as otherwise indicated, conceal pipes, ducts, and wiring within the construction. Coordinate locations of fixtures and outlets with finish elements.
- I. Coordinate completion and clean-up of work of separate sections.
- J. After Owner occupancy of project, coordinate access to site for correction of defective work and work not in accordance with Contract Documents, to minimize disruption of Owner's activities. Access to student living units will not be available once students have moved in except to address warranty calls that require attention.

PART 2 PRODUCTS**2.01 PATCHING MATERIALS**

- A. New Materials: As specified in product sections; match existing products and work for patching and extending work.
- B. Type and Quality of Existing Products: Determine by inspecting and testing products where necessary, referring to existing work as a standard.
- C. Product Substitution: For any proposed change in materials, submit request for substitution described in Section 01 6000 - Product Requirements.

PART 3 EXECUTION**3.01 EXAMINATION**

- A. Existing Conditions: The existence and location of site improvements, utilities, and other construction indicated as existing are not guaranteed. Before beginning work, investigate and verify that existing site conditions and substrate surfaces are acceptable for subsequent work. Start of work means acceptance of existing conditions.
- B. Verify that existing substrate is capable of structural support or attachment of new work being applied or attached.
- C. Examine and verify specific conditions described in individual specification sections.
- D. Take field measurements before confirming product orders or beginning fabrication, to minimize waste due to over-ordering or misfabrication.
- E. Verify that utility services are available, of the correct characteristics, and in the correct locations.
- F. Prior to Cutting: Examine existing conditions prior to commencing work, including elements subject to damage or movement during cutting and patching. After uncovering existing work, assess conditions affecting performance of work. Beginning of cutting or patching means acceptance of existing conditions.
- G. Existing Utilities: The existing and location of underground and other utilities and construction indicated as existing are not guaranteed. Before beginning sitework, investigate and verify the existing and location of underground utilities and other construction affecting the Work. Start of work means acceptance of existing conditions.

3.02 PREPARATION

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

3.03 PREINSTALLATION MEETINGS

- A. Conduct a preinstallation meeting at the site prior to commencing work for each construction activity that requires coordination with other construction.
- B. Require attendance of parties directly affecting, or affected by, work of the specific section, including manufacturer's representative.
- C. Schedule: Contractor to submit schedule of required and intended pre-installation meetings for Architect and Owner's review and concurrence.
- D. Notify Architect and Owner one week minimum in advance of meeting date.
- E. Contractor to prepare agenda and preside at meeting and discuss the following at a minimum:
 - 1. Review conditions of examination, preparation and installation procedures.
 - 2. Coordination with related work.
 - 3. Testing and Inspection requirements.

4. Environmental conditions required for executing work.
 5. Protection of completed work.
 6. Schedule for installation, including required inspections.
 7. Substrate and/or adjacent work acceptability and requirements/tolerances necessary for successful product installation.
 8. Product Warranty.
 9. Specification Section, submittals, product data, shop drawings.
 10. Manufacturer's recommendations and requirements.
 11. RFI's, ASI's and Change Orders related to work (if any).
 12. Mockup review, comments and approval.
 13. Environmental (temperature and humidity) requirements for storage and installation.
 14. Weather requirements for installation.
 15. Protection of adjacent work.
 16. Installation procedures.
 17. Sequence and coordination with adjacent work.
- F. Record minutes and distribute copies within two days after meeting to participants, with two copies to Architect, Owner, participants, and those affected by decisions made. Record significant discussions, agreements, disagreements, including required corrective measures and actions.
- G. Do not proceed with installation if the conference cannot be successfully concluded.
- H. Required Preinstallation Meetings (this is not a comprehensive list and is a minimum requirement):
1. Cast-in-Place Concrete (including elevator pit waterproofing, underslab vapor barrier and termite control)
 2. Structural Steel
 3. Metal Decking (floor and roof)
 4. Floor Underlayment (03 5400)
 5. Exterior Envelope (including Masonry, Masonry Cleaning, Precast Concrete, Cast Stone, Windows, Doors, Louvers, Sheathing, Moisture Barrier, Flashings, Sealants)
 6. Roofing (including Decking, Steep and Low Slope Roofing, Gutters, Downspouts)
 7. Firestopping
 8. Door Frames
 9. Doors
 10. Door Hardware
 11. Elevator
 12. Flooring (Tile, Carpet Tile, Terrazzo, Fluid Applied Flooring, Chemical Staining and Sealing of concrete)
 13. Gypsum Board Finishing and Painting
 14. Millwork/Finish Carpentry
 15. Finishes (wallcovering, tackable panels, etc)
 16. Signage

3.04 LAYING OUT THE WORK

- A. Verify locations of survey control points prior to starting work.
- B. Promptly notify Architect of any discrepancies discovered.
- C. Contractor shall locate and protect survey control and reference points.
- D. Control datum for survey is that indicated on drawings.
- E. Protect survey control points prior to starting site work; preserve permanent reference points during construction.
- F. Promptly report to Architect the loss or destruction of any reference point or relocation required because of changes in grades or other reasons.

- G. Replace dislocated survey control points based on original survey control. Make no changes without prior written notice to Architect.
- H. Utilize recognized engineering survey practices.
- I. Establish a minimum of two permanent bench marks on site, referenced to established control points. Record locations, with horizontal and vertical data, on project record documents.
- J. Establish elevations, lines and levels. Locate and lay out by instrumentation and similar appropriate means:
 - 1. Site improvements including pavements; stakes for grading, fill and topsoil placement; utility locations, slopes, and invert elevations.
 - 2. Grid or axis for structures.
 - 3. Building foundation, column locations, ground floor elevations.
- K. Periodically verify layouts by same means.
- L. Maintain a complete and accurate log of control and survey work as it progresses.
- M. On completion of foundation walls and major site improvements, prepare a certified survey illustrating dimensions, locations, angles, and elevations of construction and site work.

3.05 GENERAL INSTALLATION REQUIREMENTS

- A. In addition to compliance with regulatory requirements, conduct construction operations in compliance with NFPA 241, including applicable recommendations in Appendix A.
- B. Install products as specified in individual sections, in accordance with manufacturer's instructions and recommendations, and so as to avoid waste due to necessity for replacement.
- C. Make vertical elements plumb and horizontal elements level, unless otherwise indicated.
- D. Install equipment and fittings plumb and level, neatly aligned with adjacent vertical and horizontal lines, unless otherwise indicated.
- E. Make consistent texture on surfaces, with seamless transitions, unless otherwise indicated.
- F. Make neat transitions between different surfaces, maintaining texture and appearance.
- G. Coordination with other Contractors: Coordinate with other Contractors and allow site access to perform work on this site during the construction period on behalf of the Owner, specifically but not limited to work for Site Electrical, Data, and HW lines shown on the Civil Site Utility Plan, and irrigation installation.

3.06 "DRY-IN" REQUIREMENTS

- A. The following minimum "dry-in" building conditions prior to installation of gypsum board wall and ceiling panels or any other interior material subject to degradation and environmental growth include:
 - 1. Exterior sheathing and moisture barrier completely installed.
 - 2. Windows installed, or temporary (fixed in place) coverage over windows. If removed for construction purposes the temporary coverage shall be reinstalled by the end of each day.
 - 3. Roof decking with Ice and Water Shield fully installed (including over roof expansion joint locations).
 - 4. Temporary doors with spring hinges installed at all access points.
- B. Incorporate planned "dry-in" date into overall project schedule.

3.07 TEMPORARY ENVIRONMENTAL CONDITIONS DURING CONSTRUCTION

- A. Operation of MEP Systems: There are numerous interior finishes and products that require a stable interior environment (ie - temperature and humidity control, enclosed building, proper lighting levels, etc) to meet Specification requirements, Manufacturer's installation requirements, testing and industry standards. The Contractor shall schedule and properly sequence Work accordingly to accommodate all requirements for product installation.

- B. Temperature, Humidity and ventilation Control: Provide adequate temporary heating and cooling equipment and distributed to regulate interior environment in order to meet construction sequencing and schedule needs during construction for all interior finishes (walls, floors, ceilings, fabrics and coatings), assemblies (doors, frames and hardware, equipment) furniture, casework, etc. DURING and ONGOING AFTER installation of materials.
- C. Weathertight, self closing and latching / locking temporary doors with shall be installed at all access points.
- D. HVAC Use During Construction: Use of the new HVAC systems during construction will require the Owner's approval and specified filters, requiring frequent replacement as well as duct protection to keep units and ductwork clean and free of construction dust and debris prior to Owner turnover.
- E. Incorporate date for temporary mechanical systems into overall project schedule. Warranty shall be adjusted to reflect use during construction and shall not commence systems commissioning is successfully concluded and accepted by the Owner.

3.08 ALTERATIONS

- A. Drawings showing existing construction and utilities are based on casual field observation and existing record documents only.
 - 1. Verify that construction and utility arrangements are as indicated.
 - 2. Report discrepancies to Architect before disturbing existing installation.
 - 3. Beginning of alterations work constitutes acceptance of existing conditions.
- B. Maintain weatherproof exterior building enclosure. Do not create, or maintain openings in the exterior enclosure when inclement weather is imminent, or expected during working hours and do not leave openings without weather protection, when work hours have concluded..
 - 1. Where openings in exterior enclosure exist, provide construction to maintain weatherproof continuity.
- C. Remove existing work as indicated and as required to accomplish new work.
 - 1. Remove items indicated on drawings.
 - 2. Relocate items indicated on drawings.
 - 3. Where new surface finishes are to be applied to existing work, perform removals, patch, and prepare existing surfaces as required to receive new finish; remove existing finish if necessary for successful application of new finish.
 - 4. Where new surface finishes are not specified or indicated, patch holes and damaged surfaces to match adjacent finished surfaces as closely as possible.
- D. Protect new installed work.
 - 1. Prevent movement of structure; provide shoring and bracing if necessary.
 - 2. Perform cutting to accomplish removals neatly and as specified for cutting new work.
 - 3. Repair adjacent construction and finishes damaged during removal work.
 - 4. Patch as specified for patching new work.
- E. Comply with all other applicable requirements of this section.

3.09 CUTTING AND PATCHING

- A. Whenever possible, execute the work by methods that avoid cutting or patching.
- B. Perform whatever cutting and patching is necessary to:
 - 1. Complete the work.
 - 2. Fit products together to integrate with other work.
 - 3. Provide openings for penetration of mechanical, electrical, and other services.
 - 4. Match work that has been cut to adjacent work.
 - 5. Repair areas adjacent to cuts to required condition.
 - 6. Repair new work damaged by subsequent work.
 - 7. Remove samples of installed work for testing when requested.

8. Remove and replace defective and non-complying work.
- C. Execute cutting and patching including excavation and fill to complete the work, to uncover work in order to install improperly sequenced work, to remove and replace defective or non-conforming work, to remove samples of installed work for testing when requested, to provide openings in the work for penetration of mechanical and electrical work, to execute patching to complement adjacent work, and to fit products together to integrate with other work.
- D. Execute work by methods that avoid damage to other work and that will provide appropriate surfaces to receive patching and finishing. In existing work, minimize damage and restore to original condition.
- E. Employ original installer to perform cutting for weather exposed and moisture resistant elements, and surfaces exposed to view.
- F. Cut rigid materials using masonry saw or core drill. Pneumatic tools not allowed without prior approval.
- G. Restore work with new products in accordance with requirements of Contract Documents.
- H. Fit work air tight to pipes, sleeves, ducts, conduit, and other penetrations through surfaces.
- I. At penetrations of fire rated walls, partitions, ceiling, or floor construction, completely seal voids with fire rated material in accordance with Section 07 8400, to full thickness of the penetrated element.
- J. Patching:
 1. Finish patched surfaces to match finish that existed prior to patching. On continuous surfaces, refinish to nearest intersection or natural break. For an assembly, refinish entire unit.
 2. Match color, texture, and appearance.
 3. Repair patched surfaces that are damaged, lifted, discolored, or showing other imperfections due to patching work. If defects are due to condition of substrate, repair substrate prior to repairing finish.
- K. Refinish surfaces to match adjacent finish. For continuous surfaces, refinish to nearest intersection or natural break. For an assembly, refinish entire unit.
- L. Make neat transitions. Patch work to match adjacent work in texture and appearance. Where new work abuts or aligns with existing, perform a smooth and even transition.
- M. Patch or replace surfaces that are damaged, lifted, discolored, or showing other imperfections due to patching work. Repair substrate prior to patching finish. Finish patches to produce uniform finish and texture over entire area. When finish cannot be matched, refinish entire surface to nearest intersections.

3.10 ONWER-FURNISHED/CONTRACTOR-INSTALLED PRODUCTS (O.F.C.I)

- A. Construction Schedule: Inform Owner of Contractor's preferred construction schedule for coordination of Owner's shipping and delivery of product(s) to site. Adjust the construction schedule as necessary based on mutually coordinated and agreeable timeline. Notify Owner if changes to schedule are required due to differences in actual construction progress.
- B. Products On Site: Receive, take possession and unload products at site, and inspect for completeness or damage jointly with Owner. Provide enough space on-site for storing product as required by Manufacturer's requirements, including possible indoor or conditioned storage.
- C. Preinstallation Conferences: Conduct preinstallation conferences to review required installation and subsurface preparation requirements for O.F.C.I. products.
- D. Subsurface Preparation: Contractor is responsible for any and all required subsurface preparation (floor underlayment, membranes, blocking, painting, etc.) to comply with O.F.C.I. Manufacturer's installation requirements.
- E. Installation Conditions: Provide all necessary installation conditions (building heating/air conditioning, air movement, humidity control, etc.) as necessary to comply with O.F.C.I. Manufacturer's installation and specification requirements.

- F. Installation: Handle, store, install and finish O.F.C.I. products according to requirements from the Manufacturer and Specification sections included herein.
- G. Protection: Store and protect O.F.C.I. products in accordance with manufacturer's instructions.
- H. Repair: Repair or replace items damaged after receipt, and due to installation or construction sequencing and activities.
- I. OFCI Items: The following items are intended by the Owner to be Owner-Furnished, Contractor-Installed or as described herein. These items include, but are not limited to:
 - 1. VFD's owner furnished, installed and wired by the contractor. Startup by the Contractor.
 - 2. Access Control Systems furnished and installed by the owner. GC to provide all conduit rough-in and pull tape needed for installation of access control wiring and devices.
 - 3. Primary Site Electrical Package: All work is by the Contractor as referenced on Electrical drawings.
 - 4. Landscaping, , topsoil and sod and including hardscape and irrigation, is by the General Contractor and its respective subcontractors.
 - 5. Interior furniture and installation is provided by the owner, shown for reference only in the Drawings. Site furniture and accessories is provided and installed by the General Contractor.
 - 6. Data cable is being provided and installed by the Owner, Contractor is responsible for installing conduit, cable tray, wall hooks shown to install cabling.

3.11 IN-WALL AND ABOVE-CEILING REVIEWS

- A. Do not conceal anything prior to reviews.
- B. Prior to review the following shall be complete: Pressure testing complete, pipes insulated, ducts insulated, firestopping completely installed at floors or ceilings, sprinkler piping fully installed, electrical fully installed. Batt insulation should NOT be installed because it will conceal review of the MEP installation.
- C. Grouping: In-Wall and Above-Ceiling reviews prior to concealment shall be grouped into a minimum of all items on two floors at a time. Partial floors will not be reviewed, but multiple floors can be reviewed at the same time if the Work is ready for review.
- D. Living Unit reviews can be performed separately from public areas (corridors, stairs and lobby/lounge areas).
- E. Scheduling: Incorporate planned reviews into the overall project schedule, and update targeted dates every two weeks for proper coordination. Notify Owner and Architect a minimum of one week prior to actual review.
- F. Contractor's Punchlist Review: Contractor to send their own punchlist review document for "in-wall" and "above-ceiling" review prior to the A/E review a minimum of 24 hours prior to the scheduled review.

3.12 PROGRESS CLEANING

- A. Maintain areas free of waste materials, debris, and rubbish. Maintain site in a clean and orderly condition.
- B. Remove debris and rubbish from pipe chases, plenums, attics, crawl spaces, and other closed or remote spaces, prior to enclosing the space.
- C. Broom and vacuum clean interior areas prior to start of surface finishing, and continue cleaning to eliminate dust.
- D. Collect and remove waste materials, debris, and trash/rubbish from site periodically and dispose off-site; do not burn or bury.

3.13 PUNCHLIST REVIEW SCHEDULING

- A. The following are minimum scheduling requirements for punchlist reviews:

1. Scheduling: Incorporate planned punchlist reviews into the overall project schedule, and update targeted dates at OAC meetings for proper coordination. Notify Owner and Architect in writing for each specific area a minimum of one week prior to actual review.
2. Grouping: Puchlist reviews shall be grouped into a minimum of all items on two floors at a time. Partial floors will not be reviewed. Living Unit reviews can be performed separately from public areas (corridors, stairs and lobby/lounge areas).
3. Contractor's Punchlist Review: Contractor to send their own complete punchlist review document for area a minimum of 48 hours prior to the A/E review.

3.14 EQUIPMENT INSTALLATION (BY OTHERS)

- A. Complete work in this room so that access back into room is not needed by workers, including completion of flooring, painted walls, ceiling, power, HVAC, door with lock for security, backboard, etc.
- B. Access to this room after turned over to the Owner will not be allowed without permission.

3.15 PROTECTION OF INSTALLED WORK

- A. Protect installed work from damage by construction operations.
- B. Provide special protection where specified in individual specification sections.
- C. Provide temporary and removable protection for installed products. Control activity in immediate work area to prevent damage.
- D. Provide protective coverings at walls, projections, jambs, sills, and soffits of openings.
- E. Protect finished floors, stairs, and other surfaces from traffic, dirt, wear, damage, or movement of heavy objects, by protecting with durable sheet materials.
- F. Prohibit traffic or storage upon waterproofed or roofed surfaces. If traffic or activity is necessary, obtain recommendations for protection from waterproofing or roofing material manufacturer.
- G. Prohibit traffic from landscaped areas.
- H. Remove protective coverings when no longer needed; reuse or recycle coverings if possible.

3.16 SYSTEM STARTUP

- A. Coordinate schedule for start-up of various equipment and systems with requirements of Divisions 22, 23 and 26
- B. Notify Architect, Project Manager and owner seven days prior to start-up of each item.
- C. Verify that each piece of equipment or system has been checked for proper lubrication, drive rotation, belt tension, control sequence, and for conditions that may cause damage.
- D. Verify tests, meter readings, and specified electrical characteristics agree with those required by the equipment or system manufacturer.
- E. Verify that wiring and support components for equipment are complete and tested.
- F. Execute start-up under supervision of applicable Contractor personnel and manufacturer's representative in accordance with manufacturers' instructions.
- G. When specified in individual specification Sections, require manufacturer to provide authorized representative to be present at site to inspect, check, and approve equipment or system installation prior to start-up, and to supervise placing equipment or system in operation.
- H. Submit a written report that equipment or system has been properly installed and is functioning correctly.

3.17 DEMONSTRATION AND INSTRUCTION

- A. See Section 01 7900 - Demonstration and Training.

3.18 ADJUSTING

- A. Adjust operating products and equipment to ensure smooth and unhindered operation.

- B. Testing, adjusting, and balancing HVAC systems: See mechanical specification sections.

3.19 FINAL CLEANING

- A. Execute final cleaning prior to final project assessment. Clean areas to be occupied by Owner prior to final completion before Owner occupancy.
- B. Use cleaning materials that are nonhazardous.
- C. Clean interior and exterior glass, surfaces exposed to view; remove temporary labels, stains and foreign substances, polish transparent and glossy surfaces, vacuum carpeted and soft surfaces.
- D. Remove all labels that are not permanent. Do not paint or otherwise cover fire test labels or nameplates on mechanical and electrical equipment.
- E. Clean equipment and fixtures to a sanitary condition with cleaning materials appropriate to the surface and material being cleaned.
- F. Replace filters of operating equipment.
- G. Clean debris from roofs, gutters, downspouts, scuppers, overflow drains, area drains, and drainage systems.
- H. Clean site; sweep paved areas, rake clean landscaped surfaces.
- I. Remove waste, surplus materials, trash/rubbish, and construction facilities from the site; dispose of in legal manner. Do not burn or bury.

3.20 MAINTENANCE

- A. Provide warranty service and maintenance of components for the periods indicated in specification sections.
- B. Maintenance Period: As indicated in specification sections or, if not indicated, not less than one year from the Date of Substantial Completion or the length of the specified warranty, whichever is longer.
- C. Examine system components at a frequency consistent with manufacturer's recommendations to ensure reliable operation. Clean, adjust, and lubricate as required.
- D. Include systematic examination, adjustment, and lubrication of components. Repair or replace parts whenever required. Use parts produced by the manufacturer of the original component.
- E. Maintenance service shall not be assigned or transferred to any agent or subcontractor without prior written consent of the Owner.

END OF SECTION 01 7000

SECTION 01 7012**PROJECT CLOSEOUT****PART 1 - GENERAL****1.01 GENERAL REQUIREMENTS:**

- A. When project construction reaches 75% complete, a 75% Closeout Meeting with the Tuskegee Project Manager and the Contractor is required to review in detail all requirements for completing and closing out the project. When project construction reaches 95% complete, a Closeout Meeting with Tuskegee Contract Administration, the Contractor, Project Architect, and others as appropriate is required to further review requirements for project close out.
- B. Except as noted, delivery of items listed hereunder are prerequisites for release of final retainage as indicated on the contractor's application for payment.
- C. All required warranties and guarantees will commence upon date of Certificate of Substantial Completion.
- D. Closeout Submittal Requirements:
 - 1. (1) copy of Operation and Maintenance manuals (properly tabbed and indexed). See General Conditions of the Contract and specification sections regarding Shop Drawings & Submittals. Operation and Maintenance manuals are to be submitted during construction but no later than 30 days prior to contract completion date.
 - 2. (1) Closeout Binder labeled "Closeouts" including Tuskegee project name and job number with all applicable items in order as listed under "Project Closeout Items"
 - 3. Electronic closeout submittals using the PDF master templates on Sharepoint Online project site:
 - a. (1) copy of the Operation and Maintenance manuals
 - b. (1) copy of all applicable "Project Closeout Items"
- E. Projects must be closed within sixty (60) days of Certificate of Substantial Completion. (This means all closeout documents have been reviewed and accepted by The Awarding Authority.)

1.02 PROJECT CLOSEOUT ITEMS:

- A. Furnish the following items in order to successfully close out a project:
 - 1. As-Built Drawings and specification mark-ups must be reviewed by project team for completeness
 - 2. Operation and Maintenance Manuals
 - a. GC to upload into active projects Closeout Documents folder on Sharepoint Online (PDF Format)
 - b. GC to submit one (1) hard copy with closeout binder
 - c. A/E to provide confirmation on letterhead that all O&M's have been uploaded to Sharepoint Online
 - 3. Training sessions for Owner's personnel, as required per project specifications (Attendee sign-in sheets required)
 - 4. Certificate of Occupancy from City (original required)
 - 5. Approved HVAC Test and Balance Report and Documented Functional Performance Testing (by the Commissioning Agent, if applicable)
 - 6. Control Drawings are to be complete and available for review
 - 7. Fire Alarm Certification (copy is acceptable)
 - 8. State Elevator Inspection Report
 - 9. Boiler Inspection Report
 - 10. Tuskegee Project Manager to complete the following:
 - a. Fill out and submit State Insurance Fund Form to Risk Management five (5) business days prior to substantial completion
 - b. Confirm Design Team submitted AutoCAD 3D (.dwg) files of the site plan, site utility plans and site power plans to Tuskegee Surveying. Plans to be referenced to the Alabama West Zone Grid NAD 1983.

- c. If required, complete and submit the Capital Project Report (Attachment I to Board Rule 415) to the Tuskegee System Office.
 - 11. Construction Record Documents:
 - a. “As-Built Drawings” - on Mylar reproducibles and labeled disk (CAD format)
 - 1) All field red-lines incorporated, external references bound and “As-Built” indicated in title block.
 - 2) Submit electronic copy to both A/E & Tuskegee plan room for approval prior to printing mylars.
 - b. Control Drawings (Bond Copy) - on Mylar reproducibles and labeled disk (PDF format)
 - c. Final Conformance Specifications - on labeled disk (PDF Format)
 - d. PM to provide transmittal from Tuskegee plan room confirming all of the above as received prior to closeout with Contract Administration
 - 12. Advertisement of Completion - Certified by Tuscaloosa News (4 consecutive weeks and must provide original signature and notary seal)
 - 13. Tuskegee Affidavit of Release of Liens - from GC only, on Tuskegee form (and in project specifications). Release of Liens - from GC and all subs
 - 14. GC and Subcontractor Warranties - Standard (1) year & any extended that may be required, or has been requested.
 - 15. Extended Manufacturer’s Warranties
 - 16. Delivery of Maintenance Stock Items as required per project specifications - Furnish signed receipts
 - 17. Receipt for return of all keys - Transmit to Tuskegee Project Manager or Field Coordinator
 - 18. Termite Contract (copy is acceptable)
 - 19. Fully Executed CERTIFICATE OF SUBSTANTIAL COMPLETION
 - 20. GC to provide copy of executed Final Change Order Form as part of close-out binder
 - a. Cover sheet only with all signatures, must include all reconciliations (previous errors, allowances and /or unit prices)
 - 21. CONSENT OF SURETY FOR FINAL PAYMENT (date of Power of Attorney must be same or later than date indicated on Consent of Surety)
 - 22. Certification that final punch lists items have been completed
 - 23. Utilities - Confirmation that all have been transferred into “Tuskegee” name
 - 24. Construction Debris Report - Submit estimated tons of construction debris hauled off from project site on GC letterhead
 - 25. Equipment List for Maintenance and Replacement Parts - Provide a list of all equipment (i.e. water heaters, air handlers, etc.) with model numbers, serial numbers and warranty periods. Include filter and belt list for each air handler unit.
 - 26. Minority and Woman-Owned Business (MWB) Subcontracts Form
- B. Items A.1 through A.10 above must be complete and reviewed by A/E prior to scheduling a final inspection with Tuskegee and are a condition precedent to issuing Certificate of Substantial Completion.
 - C. When applicable all DBE (Disadvantaged Business Enterprise) requirements must be reported and final submission on file with the Tuskegee Facilities Office before closeouts are considered complete.
 - D. Submission of other documentation may be required in the Specifications and Construction Drawings.
 - E. All closeout Documents are to be submitted within 45 days of substantial completion. If not submitted within 45 days the Awarding Authority, with no further notice required, may elect, at its sole discretion, acquire all outstanding required documents, and the actual cost thereof will be deducted from the contract by Change Order.

1.03 INSPECTIONS

- A. Final Inspection: For a Certificate of Substantial Completion (COSC) to be issued the Final Inspection must be conducted by the Architect, Engineers, Tuskegee and appropriate Public Officials upon

notification by Contractor and concurrence by Architect, Engineer & Tuskegee that project is complete. Punch lists prepared at inspections shall be corrected within 14 days of the date of the COSC.

- B. Year-End Inspection: To be conducted jointly by Architect, Engineer, Tuskegee and appropriate Public Officials approximately 1 year after completion and upon notice by Architect, Engineer, Tuskegee, and Public Officials. Any and all defects will be expected to be remedied as soon as possible.

END OF SECTION 01 7012

SECTION 01 7419**CONSTRUCTION WASTE MANAGEMENT AND DISPOSAL****PART 1 GENERAL****1.01 WASTE MANAGEMENT REQUIREMENTS**

- A. Owner requires that this project generate the least amount of trash and waste possible.
- B. Employ processes that ensure the generation of as little waste as possible due to error, poor planning, breakage, mishandling, contamination, or other factors.
- C. Minimize trash/waste disposal in landfills; reuse, salvage, or recycle as much waste as is feasible.
- D. Recycling, Salvage, and Reuse: The following should not be disposed of in landfills or by incineration:
 - 1. Aluminum and plastic beverage containers.
 - 2. Corrugated cardboard.
 - 3. Wood pallets.
 - 4. Clean dimensional wood.
 - 5. Land clearing debris, including brush, branches, logs, and stumps; see Section 31 1000 - Site Clearing for use options.
 - 6. Concrete.
 - 7. Bricks.
 - 8. Concrete masonry units.
 - 9. Metals, including packaging banding, metal studs, sheet metal, structural steel, piping, reinforcing bars, door frames, and other items made of steel, iron, galvanized steel, stainless steel, aluminum, copper, zinc, lead, brass, and bronze.
 - 10. Glass.
 - 11. Gypsum drywall and plaster.
 - 12. Plastic buckets.
 - 13. Carpet, carpet cushion, carpet tile, and carpet remnants, both new and removed: DuPont (<http://flooring.dupont.com>) and Interface (www.interfaceinc.com) conduct reclamation programs.
 - 14. Asphalt roofing shingles.
 - 15. Paint.
 - 16. Rigid foam insulation.
- E. Methods of trash/waste disposal that are not acceptable are:
 - 1. Burning on the project site.
 - 2. Burying on the project site.
 - 3. Dumping or burying on other property, public or private.
 - 4. Illegal dumping or burying.
 - 5. Unregulated incineration, either on- or off-site.
- F. Regulatory Requirements: Contractor is responsible for knowing and complying with regulatory requirements, including but not limited to Federal, state and local requirements, pertaining to legal disposal of all construction and demolition waste materials.

1.02 RELATED REQUIREMENTS

- A. Section 01 1000 - Summary: List of items to be salvaged from the existing building for relocation in project or for salvage to the Owner.
- B. Section 01 3000 - Administrative Requirements: Additional requirements for project meetings, reports, submittal procedures, and project documentation.
- C. Section 01 5000 - Temporary Facilities and Controls: Additional requirements related to trash/waste collection and removal facilities and services.
- D. Section 01 6000 - Product Requirements: Waste prevention requirements related to delivery, storage, and handling.

- E. Section 01 7000 - Execution Requirements: Trash/waste prevention procedures related to demolition, cutting and patching, installation, protection, and cleaning.
- F. Section 31 1000 - Site Clearing: Handling and disposal of land clearing debris.

1.03 DEFINITIONS

- A. Clean: Untreated and unpainted; not contaminated with oils, solvents, caulk, or the like.
- B. Construction and Demolition Waste: Solid wastes typically including building materials, packaging, trash, debris, and rubble resulting from construction, remodeling, repair and demolition operations.
- C. Hazardous: Exhibiting the characteristics of hazardous substances, i.e., ignitibility, corrosivity, toxicity or reactivity.
- D. Nonhazardous: Exhibiting none of the characteristics of hazardous substances, i.e., ignitibility, corrosivity, toxicity, or reactivity.
- E. Nontoxic: Neither immediately poisonous to humans nor poisonous after a long period of exposure.
- F. Recyclable: The ability of a product or material to be recovered at the end of its life cycle and remanufactured into a new product for reuse by others.
- G. Recycle: To remove a waste material from the project site to another site for remanufacture into a new product for reuse by others.
- H. Recycling: The process of sorting, cleansing, treating and reconstituting solid waste and other discarded materials for the purpose of using the altered form. Recycling does not include burning, incinerating, or thermally destroying waste.
- I. Return: To give back reusable items or unused products to vendors for credit.
- J. Reuse: To reuse a construction waste material in some manner on the project site.
- K. Salvage: To remove a waste material from the project site to another site for resale or reuse by others.
- L. Sediment: Soil and other debris that has been eroded and transported by storm or well production run-off water.
- M. Source Separation: The act of keeping different types of waste materials separate beginning from the first time they become waste.
- N. Toxic: Poisonous to humans either immediately or after a long period of exposure.
- O. Trash: Any product or material unable to be reused, returned, recycled, or salvaged.
- P. Waste: Extra material or material that has reached the end of its useful life in its intended use. Waste includes salvageable, returnable, recyclable, and reusable material.

1.04 SUBMITTALS

- A. See Section 01 3000 - Administrative Requirements for submittal procedures.

PART 2 PRODUCTS (NOT USED)

PART 3 EXECUTION

3.01 WASTE MANAGEMENT PROCEDURES

- A. See Section 01 1000 for list of items to be salvaged from the existing building for relocation in project or for Owner.
- B. See Section 01 3000 for additional requirements for project meetings, reports, submittal procedures, and project documentation.
- C. See Sections 01 5010 and 01 5000 for additional requirements related to trash/waste collection and removal facilities and services.
- D. See Section 01 6000 for waste prevention requirements related to delivery, storage, and handling.

- E. See Section 01 7000 for trash/waste prevention procedures related to demolition, cutting and patching, installation, protection, and cleaning.

END OF SECTION 01 7419

SECTION 01 7900**DEMONSTRATION AND TRAINING****PART 1 GENERAL****1.01 SUMMARY**

- A. Demonstration of products and systems where indicated in specific specification sections.
- B. Training of Owner personnel in operation and maintenance is required for:
 - 1. All software-operated systems.
 - 2. HVAC systems and equipment.
 - 3. Plumbing equipment.
 - 4. Electrical systems and equipment.
 - 5. Landscape irrigation.
 - 6. Items specified in individual product Sections.
- C. Training of Owner personnel in care, cleaning, maintenance, and repair is required for:
 - 1. Roofing, waterproofing, and other weather-exposed or moisture protection products.
 - 2. Finishes, including flooring, wall finishes, ceiling finishes.
 - 3. Fixtures and fittings.
 - 4. Items specified in individual product Sections.

1.02 RELATED REQUIREMENTS

- A. Section 01 7800 - Project Closeout: Operation and maintenance manuals.
- B. Other Specification Sections: Additional requirements for demonstration and training.

1.03 SUBMITTALS

- A. See Section 01 3000 - Administrative Requirements, for submittal procedures.
- B. Training Plan: Owner will designate personnel to be trained; tailor training to needs and skill-level of attendees.
 - 1. Submit to Architect for transmittal to Owner.
 - 2. Submit not less than two weeks prior to start of training.
 - 3. Revise and resubmit until acceptable.
 - 4. Provide an overall schedule showing all training sessions.
 - 5. Include at least the following for each training session:
 - a. Identification, date, time, and duration.
 - b. Description of products and/or systems to be covered.
 - c. Name of firm and person conducting training; include qualifications.
 - d. Intended audience, such as job description.
 - e. Objectives of training and suggested methods of ensuring adequate training.
 - f. Methods to be used, such as classroom lecture, live demonstrations, hands-on, etc.
 - g. Media to be used, such as slides, hand-outs, etc.
 - h. Training equipment required, such as projector, projection screen, etc., to be provided by Contractor.
- C. Training Manuals: Provide training manual for each attendee; allow for minimum of two attendees per training session.
 - 1. Include applicable portion of O&M manuals.
 - 2. Include copies of all hand-outs, slides, overheads, video presentations, etc., that are not included in O&M manuals.
 - 3. Provide one extra copy of each training manual to be included with operation and maintenance data.
- D. Training Reports:
 - 1. Identification of each training session, date, time, and duration.

2. Sign-in sheet showing names and job titles of attendees.
 3. List of attendee questions and written answers given, including copies of and references to supporting documentation required for clarification; include answers to questions that could not be answered in original training session.
- E. Video Recordings: Submit digital video recording of each demonstration and training session for Owner's subsequent use.
1. Format: DVD Disc.
 2. Label each disc and container with session identification and date.

1.04 QUALITY ASSURANCE

- A. Instructor Qualifications: Familiar with design, operation, maintenance and troubleshooting of the relevant products and systems.
1. Provide as instructors the most qualified trainer of those contractors and/or installers who actually supplied and installed the systems and equipment.
 2. Where a single person is not familiar with all aspects, provide specialists with necessary qualifications.

PART 2 PRODUCTS - NOT USED

PART 3 EXECUTION

3.01 DEMONSTRATION - GENERAL

- A. Demonstrations conducted during system start-up do not qualify as demonstrations for the purposes of this section, unless approved in advance by Owner.
- B. Demonstration may be combined with Owner personnel training if applicable.
- C. Operating Equipment and Systems: Demonstrate operation in all modes, including start-up, shut-down, seasonal changeover, emergency conditions, and troubleshooting, and maintenance procedures, including scheduled and preventive maintenance.
1. Perform demonstrations not less than two weeks prior to Substantial Completion.
 2. For equipment or systems requiring seasonal operation, perform demonstration for other season within six months.
- D. Non-Operating Products: Demonstrate cleaning, scheduled and preventive maintenance, and repair procedures.
1. Perform demonstrations not less than two weeks prior to Substantial Completion.

3.02 TRAINING - GENERAL

- A. Conduct training on-site unless otherwise indicated.
- B. Owner will provide classroom and seating at no cost to Contractor.
- C. Provide training in minimum two hour segments.
- D. Training schedule will be subject to availability of Owner's personnel to be trained; re-schedule training sessions as required by Owner; once schedule has been approved by Owner failure to conduct sessions according to schedule will be cause for Owner to charge Contractor for personnel "show-up" time.
- E. Review of Facility Policy on Operation and Maintenance Data: During training discuss:
1. The location of the O&M manuals and procedures for use and preservation; backup copies.
 2. Typical contents and organization of all manuals, including explanatory information, system narratives, and product specific information.
 3. Typical uses of the O&M manuals.
- F. Product- and System-Specific Training:
1. Review the applicable O&M manuals.
 2. For systems, provide an overview of system operation, design parameters and constraints, and operational strategies.

3. Review instructions for proper operation in all modes, including start-up, shut-down, seasonal changeover and emergency procedures, and for maintenance, including preventative maintenance.
 4. Provide hands-on training on all operational modes possible and preventive maintenance.
 5. Emphasize safe and proper operating requirements; discuss relevant health and safety issues and emergency procedures.
 6. Discuss common troubleshooting problems and solutions.
 7. Discuss any peculiarities of equipment installation or operation.
 8. Discuss warranties and guarantees, including procedures necessary to avoid voiding coverage.
 9. Review recommended tools and spare parts inventory suggestions of manufacturers.
 10. Review spare parts and tools required to be furnished by Contractor.
 11. Review spare parts suppliers and sources and procurement procedures.
- G. Be prepared to answer questions raised by training attendees; if unable to answer during training session, provide written response within three days.

END OF SECTION 01 7900

SECTION 02 4250**SELECTIVE DEMOLITION****PART 1 GENERAL****1.01 SECTION INCLUDES**

- A. Selective demolition of building elements for alteration and renovation purposes.
- B. Removal and replacement of existing utilities .

1.02 RELATED REQUIREMENTS

- A. Section 01 1000 - Summary: Specific requirements for Contractor's use of site and premises.
- B. Section 01 1000 - Summary: Sequencing and staging requirements.
- C. Section 01 6000 - Product Requirements: Handling and storage of items removed for salvage and reinstallaation.
- D. Section 01 7000 - Execution and Closeout Requirements: Project conditions; protection of bench marks, survey control points, and existing construction to remain; reinstallation of removed products; temporary bracing and shoring.
- E. Section 01 7419 - Construction Waste Management and Disposal: Limitations on disposal of removed materials; requirements for recycling.

1.03 REFERENCE STANDARDS

- A. 29 CFR 1926 - U.S. Occupational Safety and Health Standards; current edition.
- B. NFPA 241 - Standard for Safeguarding Construction, Alteration, and Demolition Operations; 2013.

1.04 SUBMITTALS

- A. See Section 01 3000 - Administrative Requirements, for submittal procedures.
- B. Demolition Plan: Submit demolition plan as specified by OSHA and local authorities.
 - 1. Indicate extent of demolition, removal sequence, bracing and shoring, and location and construction of barricades.
 - 2. Include a summary of safety procedures.
- C. Project Record Documents: Accurately record actual locations of capped and active utilities and subsurface construction.

PART 2 PRODUCTS (NOT USED)**PART 3 EXECUTION****3.01 SCOPE**

- A. Remove existing construction of the buildings as shown on the Drawings in an ordered sequence so as not to compromise the integrity of the structural system, or otherwise create an unsafe condition:
- B. Remove other items indicated, for salvage, relocation, and / or recycling as indicated.
- C. Fill excavations, open pits, and holes in ground areas generated as result of removals, using specified fill; compact fill as required so that required rough grade elevations do not subside within one year after completion.

3.02 GENERAL PROCEDURES AND PROJECT CONDITIONS

- A. Comply with other requirements specified in Section 01 7000.
- B. Comply with applicable codes and regulations for demolition operations and safety of adjacent structures and the public.
 - 1. Obtain required permits.
 - 2. Comply with applicable requirements of NFPA 241 .
 - 3. Use of explosives is not permitted.

4. Take precautions to prevent catastrophic or uncontrolled collapse of structures to be removed; do not allow worker or public access within range of potential collapse of unstable structures.
 5. Provide, erect, and maintain temporary barriers and security devices.
 6. Conduct operations to minimize effects on and interference with adjacent areas and occupants.
 7. Do not close or obstruct roadways or sidewalks.
 8. Conduct operations to avoid obstruction of public and private entrances and exits; do not obstruct required exits at any time; protect persons using entrances and exits from removal operations.
- C. Do not begin removal until receipt of notification to proceed from Owner.
 - D. Do not begin removal until built elements to be salvaged or relocated have been removed.
 - E. Protect existing structural components and other elements that are not to be removed.
 1. Provide bracing and shoring.
 2. Prevent movement or settlement.
 - F. If suspected hazardous materials are discovered during removal operations, stop work and notify Architect and Owner; hazardous materials include regulated asbestos containing materials, lead, PCB's, and mercury.
 - G. Perform demolition in a manner that maximizes salvage and recycling of materials.
 1. Comply with requirements of Section 01 7419 - Waste Management.
 2. Dismantle existing construction and separate materials.
 3. Set aside reusable, recyclable, and salvageable materials; store and deliver to collection point or point of reuse.

3.03 EXISTING UTILITIES

- A. Coordinate work with utility companies; notify before starting work and comply with their requirements; obtain required permits.
- B. Protect existing utilities to remain from damage.
- C. Do not disrupt public utilities without permit from authority having jurisdiction.
- D. Do not close, shut off, or disrupt existing life safety systems that are in use without at least 7 days prior written notification to Owner and establish a "Fire Watch" if life safety system(s) must be inactive for any period.
- E. Do not close, shut off, or disrupt existing utility branches or take-offs that are in use without at least 3 days prior written notification to Owner.
- F. Locate and mark utilities to remain; or be reworked. Mark using highly visible tags or flags, with identification of utility type; protect from damage due to subsequent construction, using substantial barricades if necessary.
- G. Remove exposed piping, valves, meters, equipment, supports, and foundations of disconnected and abandoned utilities completely.
- H. Prepare building demolition areas by disconnecting and capping utilities outside the demolition zone and below the floor substrate; identify and mark utilities to be subsequently reconnected, in same manner as other utilities to remain.

3.04 SELECTIVE DEMOLITION FOR ALTERATIONS

- A. Drawings showing existing construction and utilities are based on casual field observation and existing record documents only.
 1. Verify construction and utility arrangements shown, noted or otherwise indicated.
 2. Report discrepancies to Architect before disturbing existing installation.
 3. Beginning of demolition work constitutes acceptance of existing conditions that would be apparent upon examination prior to starting demolition.
- B. Remove existing work as indicated and as required to accomplish new work.

1. Remove rotted wood, corroded metals, and deteriorated masonry and concrete; replace with new construction specified.
2. Remove items indicated on drawings.
- C. Services (Including but not limited to HVAC, Plumbing, Fire Protection, Electrical, and Telecommunications): Remove existing systems and equipment as indicated.
 1. Maintain existing active systems that are to remain in operation; maintain access to equipment and operational components.
 2. Where existing active systems serve occupied facilities but are to be affected by installation of new equipment, maintain existing systems in service until new systems are complete and ready for service.
 3. See Section 01 1000 for other limitations on outages and required notifications.
 4. Verify that abandoned services serve only abandoned facilities before removal.
 5. Remove abandoned pipe, ducts, conduits, and equipment , including those above accessible ceilings; remove back to source of supply where possible, otherwise cap stub and tag with identification.

3.05 DEBRIS AND WASTE REMOVAL

- A. Remove debris, junk, and trash from site regularly, but no less than weekly intervals.
- B. Remove from site all materials not to be reused on site; comply with requirements of Section 01 7419 - Waste Management.
- C. Leave site in clean condition, ready for subsequent work.
- D. Clean up spillage and wind-blown debris from public and private lands.

END OF SECTION 02 4250

SECTION 03 3010**MISCELLANEOUS CAST-IN-PLACE CONCRETE****PART 1 GENERAL****1.01 SECTION INCLUDES**

- A. Concrete reinforcement.
- B. Joint devices associated with concrete work.
- C. Miscellaneous concrete elements, including repairing damage to and infill of penetrations in existing concrete surfaces and flatwork incurred during demolition activities.
- D. Concrete curing.

1.02 RELATED REQUIREMENTS**1.03 PRICE AND PAYMENT PROCEDURES**

- A. See Section 01 2100 - Allowances, for additional cost pricing requirements.
- B. Concrete - Grouting: Includes preparation of substrate, grout, placement, consolidating, troweling, and curing. Measurement by the cubic yard.

1.04 REFERENCE STANDARDS

- A. ACI 117 - Standard Specifications for Tolerances for Concrete Construction and Materials; American Concrete Institute International; 2006.
- B. ACI 211.1 - Standard Practice for Selecting Proportions for Normal, Heavyweight, and Mass Concrete; American Concrete Institute International; 1991 (Reapproved 2002).
- C. ACI 301 - Specifications for Structural Concrete for Buildings; American Concrete Institute International; 2005.
- D. ACI 302.1R - Guide for Concrete Floor and Slab Construction; American Concrete Institute International; 2004 (errata 2007).
- E. ACI 304R - Guide for Measuring, Mixing, Transporting, and Placing Concrete; American Concrete Institute International; 2000.
- F. ACI 305R - Hot Weather Concreting; American Concrete Institute International; 1999.
- G. ACI 306R - Cold Weather Concreting; American Concrete Institute International; 1988 (Reapproved 2002).
- H. ACI 308R - Guide to Curing Concrete; American Concrete Institute International; 2001 (Reapproved 2008).
- I. ACI 318 - Building Code Requirements for Structural Concrete and Commentary; American Concrete Institute International; 2008.
- J. ACI 347 - Guide to Formwork for Concrete; American Concrete Institute International; 2004.
- K. ASTM A 185/A 185M - Standard Specification for Steel Welded Wire Reinforcement, Plain, for Concrete; 2007.
- L. ASTM A 497/A 497M - Standard Specification for Steel Welded Wire Reinforcement, Deformed, for Concrete; 2007.
- M. ASTM A 615/A 615M - Standard Specification for Deformed and Plain Billet-Steel Bars for Concrete Reinforcement; 2007.
- N. ASTM A 767/A 767M - Standard Specification for Zinc-Coated (Galvanized) Steel Bars for Concrete Reinforcement; 2005.
- O. ASTM A 775/A 775M - Standard Specification for Epoxy-Coated Steel Reinforcing Bars; 2007b.
- P. ASTM A 884/A 884M - Standard Specification for Epoxy-Coated Steel Wire and Welded Wire Reinforcement; 2006.
- Q. ASTM C 33 - Standard Specification for Concrete Aggregates; 2007.
- R. ASTM C 39/C 39M - Standard Test Method for Compressive Strength of Cylindrical Concrete Specimens; 2005.
- S. ASTM C 94/C 94M - Standard Specification for Ready-Mixed Concrete; 2007.
- T. ASTM C 143/C 143M - Standard Test Method for Slump of Hydraulic-Cement Concrete; 2008.
- U. ASTM C 150 - Standard Specification for Portland Cement; 2007.

- V. ASTM C 171 - Standard Specification for Sheet Materials for Curing Concrete; 2007.
- W. ASTM C 173/C 173M - Standard Test Method for Air Content of Freshly Mixed Concrete by the Volumetric Method; 2008a.
- X. ASTM C 260 - Standard Specification for Air-Entraining Admixtures for Concrete; 2006.
- Y. ASTM C 309 - Standard Specification for Liquid Membrane-Forming Compounds for Curing Concrete; 2007.
- Z. ASTM C 330 - Standard Specification for Lightweight Aggregates for Structural Concrete; 2005.
- AA. ASTM C 494/C 494M - Standard Specification for Chemical Admixtures for Concrete; 2008a.
- AB. ASTM C 618 - Standard Specification for Coal Fly Ash and Raw or Calcined Natural Pozzolan for Use in Concrete; 2008a.
- AC. ASTM C 685/C 685M - Standard Specification for Concrete Made by Volumetric Batching and Continuous Mixing; 2007.
- AD. ASTM C 881/C 881M - Standard Specification for Epoxy-Resin-Base Bonding Systems for Concrete; 2002.
- AE. ASTM C 1059 - Standard Specification for Latex Agents for Bonding Fresh to Hardened Concrete; 1999 (Reapproved 2008).
- AF. ASTM C 1107/C 1107M - Standard Specification for Packaged Dry, Hydraulic-Cement Grout (Nonshrink); 2008.
- AG. ASTM C 1240 - Standard Specification for Silica Fume Used in Cementitious Mixtures; 2005.
- AH. ASTM D 994 - Standard Specification for Preformed Expansion Joint Filler for Concrete (Bituminous Type); 1998 (Reapproved 2003).
- AI. ASTM D 1751 - Standard Specification for Preformed Expansion Joint Filler for Concrete Paving and Structural Construction (Nonextruding and Resilient Bituminous Types); 2004 (Reapproved 2008).
- AJ. ASTM E 1155 - Standard Test Method for Determining F(F) Floor Flatness and F(L) Floor Levelness Numbers; 1996 (Reapproved 2008).
- AK. ASTM E 1745 - Standard Specification for Plastic Water Vapor Retarders Used in Contact with Soil or Granular Fill under Concrete Slabs; 2009.
- AL. COE CRD-C 48 - Method of Test for Water Permeability of Concrete; 1992.
- AM. COE CRD-C 513 - COE Specifications for Rubber Waterstops; Corps of Engineers; 1974.
- AN. COE CRD-C 572 - Corps of Engineers Specifications for Polyvinylchloride Waterstop; Corps of Engineers; 1974.
- AO. NSF 61 - Drinking Water System Components - Health Effects; 2009.

1.05 SUBMITTALS

- A. See Section 01 3000 - Administrative Requirements, for submittal procedures.
- B. Product Data: Submit manufacturers' data on manufactured products showing compliance with specified requirements.
- C. Samples: Submit two, 6 inch long samples of waterstops and construction joint devices.
- D. Manufacturer's Installation Instructions: Indicate installation procedures and interface required with adjacent construction for concrete accessories.
- E. Project Record Documents: Accurately record actual locations of embedded utilities and components that will be concealed from view upon completion of concrete work.

1.06 QUALITY ASSURANCE

- A. Perform work of this section in accordance with ACI 301 and ACI 318.
 - 1. Maintain one copy of each document on site.
- B. Follow recommendations of ACI 305R when concreting during hot weather.
- C. Follow recommendations of ACI 306R when concreting during cold weather.

PART 2 PRODUCTS**2.01 FORMWORK**

- A. Formwork Design and Construction: Comply with guidelines of ACI 347 to provide formwork that will produce concrete complying with tolerances of ACI 117.
- B. Form Materials: Contractor's choice of standard products with sufficient strength to withstand hydrostatic head without distortion in excess of permitted tolerances.
 - 1 Form Facing for Exposed Finish Concrete: Contractor's choice of materials that will provide smooth, stain-free final appearance.
 - 2 Form Coating: Release agent that will not adversely affect concrete or interfere with application of coatings.
 - 3 Form Ties: External to forms without any penetration of the form or the finished concrete. Patched penetrations are not permitted.

2.02 REINFORCEMENT

- A. Reinforcing Steel: ASTM A 615/A 615M Grade 40 (280).
 - 1 Type: Deformed billet-steel bars.
 - 2 Finish: Unfinished, unless otherwise indicated.
- B. Steel Welded Wire Reinforcement: ASTM A 185/A 185M, plain type.
 - 1 Form: Flat Sheets.
 - 2 Mesh Size and Wire Gage: As indicated on drawings.
- C. Reinforcement Accessories:
 - 1 Tie Wire: Annealed, minimum 16 gage.
 - 2 Provide stainless steel, galvanized, or plastic coated steel components for placement within 1-1/2 inches of weathering surfaces.

2.03 CONCRETE MATERIALS

- A. Cement: ASTM C 150, Type IIIA - Air Entraining White Portland Cement.
 - 1 Acquire all cement for entire project from same source.
- B. Fine and Coarse Aggregates: ASTM C 33.
 - 1 Acquire all aggregates for entire project from same source.
- C. Lightweight Aggregate: ASTM C 330.
- D. Fly Ash: ASTM C 618, Class C or F.
- E. Calcined Pozzolan: ASTM C 618, Class N.
- F. Silica Fume: ASTM C 1240, proportioned in accordance with ACI 211.1.
- G. Water: Clean and not detrimental to concrete.

2.04 CHEMICAL ADMIXTURES

- A. Chemical Admixtures are to be submitted for approval by the Architect or Structural Engineer prior to use and are to be submitted as part of the required design mix.
- B. Chemical Admixture Manufacturers:
 - 1 Euclid Chemical (216) 531-9222 / www.euclidchemical.com.
 - 2 Grace Construction Products (617) 876-1400 ; www.grace.com .
 - 3 Substitutions: See Section 01 6000 - Product Requirements.
- C. Do not use chemicals that will result in soluble chloride ions in excess of 0.1 percent by weight of cement.
- D. Air Entrainment Admixture: ASTM C 260.
 - 1 Acceptable Products:
 - a. Euclid Chemical Product AIR MIX 200; www.euclidchemical.com.
 - b. Grace Construction Products Product Darex® II AEA; www.grace.com .
 - c. Substitutions: See Section 01 6000 - Product Requirements.

- E. High Range Water Reducing Admixture: ASTM C 494/C 494M Type F.
 - 1 Acceptable Products:
 - a. Euclid Chemical Product EUCON 1037; www.euclidchemical.com.
 - b. Grace Construction Products Product ADVA® 360 ; www.grace.com.

2.05 BONDING AND JOINTING PRODUCTS

- A. Latex Bonding Agent: Non-dispersible acrylic latex, complying with ASTM C 1059 Type II.
- B. Epoxy Bonding System: Complying with ASTM C 881/C 881M and of Type required for specific application.
- C. Reglets: Formed steel sheet, galvanized, with temporary filler to prevent concrete intrusion during placement.
 - 1 Size: 1/2 inch throat, 1/2 inch deep.
- D. Joint Filler: Nonextruding, resilient asphalt impregnated fiberboard, felt, or cork, complying with ASTM D 1751, 1/4 inch thick and 4 inches deep; tongue and groove profile.
- E. Slab Construction Joint Devices: Combination keyed joint form and screed, galvanized steel, with minimum 1 inch diameter holes for conduit or rebars to pass through at 6 inches on center; ribbed steel stakes for setting.
 - 1 Provide removable plastic cap strip that forms wedge-shaped joint for sealant installation.
 - 2 Height: To suit slab thickness.
- F. Sealant and Primer: As specified in Section 07 9005.

2.06 CONCRETE MIX DESIGN

- A. Proportioning Normal Weight Concrete: Comply with ACI 211.1 recommendations.
- B. Concrete Strength: Establish required average strength for each type of concrete on the basis of field experience or trial mixtures, as specified in ACI 301.
 - 1 For trial mixtures method, employ independent testing agency acceptable to Architect for preparing and reporting proposed mix designs.
- C. Admixtures: Add acceptable admixtures as recommended in ACI 211.1 and at rates recommended by manufacturer.
- D. Normal Weight Concrete:
 - 1 Compressive Strength, when tested in accordance with ASTM C 39/C 39M at 28 days: 3,000 psi.
 - 2 Fly Ash Content: Maximum 15 percent of cementitious materials by weight.
 - 3 Calcined Pozzolan Content: Maximum 10 percent of cementitious materials by weight.
 - 4 Silica Fume Content: Maximum 5 percent of cementitious materials by weight.
 - 5 Water-Cement Ratio: Maximum 40 percent by weight.
 - 6 Total Air Content: 4 percent, determined in accordance with ASTM C 173/C 173M.
 - 7 Maximum Slump: 4 inches.
 - 8 Maximum Aggregate Size: 3/4 inch.

2.07 MIXING

- A. Transit Mixers: Comply with ASTM C 94/C 94M.

PART 3 EXECUTION

3.01 EXAMINATION

- A. Verify lines, levels, and dimensions before proceeding with work of this section.

3.02 PREPARATION

- A. Formwork: Comply with requirements of ACI 301. Design and fabricate forms to support all applied loads until concrete is cured, and for easy removal without damage to concrete.
- B. Verify that forms are clean and free of rust before applying release agent.
- C. Coordinate placement of embedded items with erection of concrete formwork and placement of form accessories.
- D. Where new concrete is to be bonded to previously placed concrete, prepare existing surface by cleaning with steel brush and applying bonding agent in accordance with manufacturer's instructions.

- 1 Use epoxy bonding system for bonding to damp surfaces, for structural load-bearing applications, and where curing under humid conditions is required.
 - 2 Use latex bonding agent only for non-load-bearing applications.
- E. In locations where new concrete is doweled to existing work, drill holes in existing concrete, insert steel dowels and pack solid with non-shrink grout.
- F. Interior Slabs on Grade: Install vapor retarder under interior slabs on grade. Lap joints minimum 6 inches. Seal joints, seams and penetrations watertight with manufacturer's recommended products and follow manufacturer's written instructions. Repair damaged vapor retarder before covering.

3.03 INSTALLING REINFORCEMENT

- A. Comply with requirements of ACI 301. Clean reinforcement of loose rust and mill scale, and accurately position, support, and secure in place to achieve not less than minimum concrete coverage required for protection.
- B. Install welded wire reinforcement in maximum possible lengths, and offset end laps in both directions. Splice laps with tie wire.
- C. Verify that anchors, seats, plates, reinforcement and other items to be cast into concrete are accurately placed, positioned securely, and will not interfere with concrete placement.

3.04 PLACING CONCRETE

- A. Place concrete in accordance with ACI 304R.
- B. Place concrete for floor slabs in accordance with ACI 302.1R.
- C. Notify Architect not less than 24 hours prior to commencement of placement operations.
- D. Ensure reinforcement, inserts, waterstops, embedded parts, and formed construction joint devices will not be disturbed during concrete placement.
- E. Repair underslab vapor retarder damaged during placement of concrete reinforcing. Repair with vapor retarder material; lap over damaged areas minimum 6 inches and seal watertight.
- F. Separate slabs on grade from vertical surfaces with joint filler.
- G. Place joint filler in floor slab pattern placement sequence. Set top to required elevations. Secure to resist movement by wet concrete.
- H. Extend joint filler from bottom of slab to within 1/2 inch of finished slab surface. Conform to Section 07 9005 for finish joint sealer requirements.
- I. Install joint devices in accordance with manufacturer's instructions.
- J. Install construction joint devices in coordination with floor slab pattern placement sequence. Set top to required elevations. Secure to resist movement by wet concrete.
- K. Install joint device anchors for expansion joint assemblies specified in Section 07 9513. Maintain correct position to allow joint cover to be flush with floor and wall finish.
- L. Apply sealants in joint devices in accordance with Section 07 9005.
- M. Maintain records of concrete placement. Record date, location, quantity, air temperature, and test samples taken.
- N. Place concrete continuously between predetermined expansion, control, and construction joints.
- O. Do not interrupt successive placement; do not permit cold joints to occur.
- P. Place floor slabs in saw cut pattern indicated.
- Q. Saw cut joints within 24 hours after placing. Use 3/16 inch thick blade, cut into 1/4 depth of slab thickness.
- R. Screed floors level, maintaining surface flatness of maximum 3/16 inch in 10 ft.

3.05 CONCRETE FINISHING

- A. Repair surface defects, immediately after removing formwork.
- B. Concrete Slabs: Finish to requirements of ACI 302.1R, and as follows:

- 1 Surfaces to Receive Thick Floor Coverings: "Wood float" as described in ACI 302.1R; thick floor coverings include quarry tile, ceramic tile, and terrazzo with full bed setting system.
 - 2 Surfaces to Receive Thin Floor Coverings: "Steel trowel" as described in ACI 301.1R; thin floor coverings include carpeting, resilient flooring, seamless flooring, thin set quarry tile, and thin set ceramic tile.
 - 3 Steel trowel surfaces that will be left exposed, or Polished.
 - a. Chemical Hardener: After slab has cured, apply water-diluted hardener in three coats per manufacturer's instructions, allowing 24 hours between coats.
- C. In areas with floor drains, maintain floor elevation at walls; pitch surfaces uniformly to drains at 1:100 nominal.

3.06 CURING AND PROTECTION

- A. Comply with requirements of ACI 308. Immediately after placement, protect concrete from premature drying, excessively hot or cold temperatures, and mechanical injury.
- B. Maintain concrete with minimal moisture loss at relatively constant temperature for period necessary for hydration of cement and hardening of concrete.
 - 1 Normal concrete: Not less than 7 days.
 - 2 High early strength concrete: Not less than 4 days.
- C. Formed Surfaces: Cure by moist curing with forms in place for full curing period.
- D. Surfaces Not in Contact with Forms:
 - 1 Slabs and Floors To Receive Adhesive-Applied Flooring: Curing compounds and other surface coatings are usually considered unacceptable by flooring and adhesive manufacturers. If such materials must be used, either obtain the approval of the flooring and adhesive manufacturers prior to use or remove the surface coating after curing to flooring manufacturer's satisfaction.
 - 2 Initial Curing: Start as soon as free water has disappeared and before surface is dry. Keep continuously moist for not less than three days by water-fog spray or saturated burlap.
 - 3 Final Curing: Begin after initial curing but before surface is dry.
 - a. Moisture-retaining cover: Seal in place with waterproof tape or adhesive. Do not weigh down.
 - b. Curing Compound: Apply in two coats at right angles, using application rate recommended by manufacturer.

3.07 FIELD QUALITY CONTROL

- A. An independent testing agency will perform field quality control tests, as specified in Section 01 4000.
- B. Provide free access to concrete operations at project site and cooperate with appointed firm.
- C. Submit proposed mix design of each class of concrete to inspection and testing firm for review prior to commencement of concrete operations.
- D. Tests of concrete and concrete materials may be performed at any time to ensure conformance with specified requirements.
- E. Compressive Strength Tests: ASTM C 39/C 39M. For each test, mold and cure three concrete test cylinders. Obtain test samples for every 100 cu yd or less of each class of concrete placed.
- F. Take one additional test cylinder during cold weather concreting, cured on job site under same conditions as concrete it represents.
- G. Perform one slump test for each set of test cylinders taken, following procedures of ASTM C 143/C 143M.

3.08 DEFECTIVE CONCRETE

- A. Test Results: The testing agency shall report test results in writing to Architect and Contractor within 24 hours of test.
- B. Defective Concrete: Concrete not conforming to required lines, details, dimensions, tolerances or specified requirements.
- C. Repair or replacement of defective concrete will be determined by the Architect. The cost of additional testing shall be borne by Contractor when defective concrete is identified.

- D. Do not patch, fill, touch-up, repair, or replace exposed concrete except upon express direction of Architect for each individual area.

3.09 SCHEDULE - AS SHOWN ON DRAWINGS.

END OF SECTION

SECTION 03 5400**SELF LEVELING UNDERLAYMENT****PART 1 GENERAL****1.01 SECTION INCLUDES**

- A. Fluid-applied, self-leveling, portland cement based floor underlayment.
 - 1 Cementitious type to be installed at an average of 1 inch in thickness at all existing interior concrete substrates which are scheduled to receive a finish floor material, or coating.

1.02 RELATED REQUIREMENTS

- A. Section 01 7000 - Execution and Closeout Requirements.
- B. Section 01 2100 - Allowances
- C. Section 03 3000 - Cast-in-Place Concrete.
- D. Division 9 - Finishes.

1.03 REFERENCE STANDARDS

- A. ASTM C109/C109M - Standard Test Method for Compressive Strength of Hydraulic Cement Mortars (Using 2-in. or (50-mm) Cube Specimens); 2020a.
- B. ASTM C1602/C1602M - Standard Specification for Mixing Water Used in the Production of Hydraulic Cement Concrete; 2012.
- C. ASTM C348 - Standard Test Method for Flexural Strength of Hydraulic-Cement Mortars; 2020.
- D. ASTM E84 - Standard Test Method for Surface Burning Characteristics of Building Materials; 2020.

1.04 SUBMITTALS

- A. See Section 01 3000 - Administrative Requirements, for submittal procedures.
- B. Product Data: Provide manufacturer's data sheets documenting physical characteristics and product limitations of underlayment materials. Include information on mixing instructions.
- C. Show method for protecting gypsum board and other materials subject to damage/degradation from contact with underlayment installation.
- D. Certificate: Certify that products meet or exceed specified requirements.
- E. Manufacturer's Instructions.

1.05 QUALITY ASSURANCE

- A. Applicator Qualifications: Company specializing in performing the work of this section, and approved by manufacturer.

1.06 DELIVERY, STORAGE, AND HANDLING

- A. Store products in manufacturer's unopened packaging until ready for installation.
- B. Keep dry and protect from direct sun exposure, freezing, and ambient temperature greater than 105 degrees F.

1.07 MOCK-UP

- A. Provide a mock-up for evaluation of surface preparation techniques and application workmanship.
 - 1 Prepare mock-up in location designated by Architect.
 - 2 Area: min. 10 ft x 10 ft.
 - 3 Do not proceed with underlayment work until workmanship of mock-up has been approved by Architect.
- B. Mock-up may not remain as part of the Work.

1.08 PRE-INSTALLATION MEETING

- A. Convene a minimum of one week before starting work of this section, but not before construction and approval of mock-up and all related submittals.

1.09 FIELD CONDITIONS

- A. Do not install underlayment until floor penetrations and peripheral work are complete.

- B. Maintain minimum ambient temperatures of 50 degrees F 24 hours before, during and 72 hours after installation of underlayment.
- C. During the curing process, ventilate spaces to remove excess moisture.

PART 2 PRODUCTS

2.01 MANUFACTURERS

- A. Cementitious Underlayment:
 - 1 ARDEX Engineered Cements; ARDEX K 15® Premium Self Leveling Underlayment: www.ardexamericas.com.
 - 2 Custom® Building Products; LevelLite® Self-Leveling Underlayment: www.custombuildingproducts.com.
 - 3 ProSpec, an Oldcastle brand; Level Set 200: www.prospec.com.
 - 4 USG; USG Durock® Brand UltraCap® Self-Leveling Underlayment is ideal : www.usg.com.
 - 5 Substitutions: See Section 01 6000 - Product Requirements.

2.02 MATERIALS

- A. Cast Underlayments, General:
 - 1 Comply with applicable code for combustibility or flame spread requirements.
- B. Cementitious Underlayment: Blended cement mix, that when mixed with water in accordance with manufacturer's directions will produce self-leveling underlayment with the following properties:
 - 1 Compressive Strength: Minimum _____ pounds per square inch after 28 days, tested per ASTM C109/C109M.
 - 2 Flexural Strength: Minimum 1000 psi after 28 days, tested per ASTM C348.
 - 3 Density: 125 pounds per cubic foot, nominal.
 - 4 Final Set Time: 1-1/2 to 2 hours, maximum.
 - 5 Thickness: Capable of thicknesses from feather edge to maximum 3-1/2 inch.
 - 6 Surface Burning Characteristics: Flame spread/Smoke developed index of 0/0 in accordance with ASTM E84.
- C. Aggregate: Dry, well graded, washed silica aggregate, approximately 1/8 inch in size and acceptable to underlayment manufacturer.
- D. Water: ASTM C1602/C1602M; clean, potable, and not detrimental to underlayment mix materials.
- E. Primer: Manufacturer's recommended type.
- F. Joint and Crack Filler: Latex based filler, as recommended by manufacturer.

2.03 MIXING

- A. Site mix materials in accordance with manufacturer's instructions.
- B. **See Note in part 3 regarding the disposal of excess material and cleaning of equipment.**
- C. Add aggregate for areas where thickness will exceed 1/2 inch. Mix underlayment and water for at least two minutes before adding aggregate, and continue mixing to assure that aggregate has been thoroughly coated.
- D. Mix to self-leveling consistency without over-watering.

PART 3 EXECUTION

3.01 EXAMINATION

- A. Verify that substrate surfaces are clean, dry, unfrozen, do not contain petroleum byproducts, or other compounds detrimental to underlayment material bond to substrate.

3.02 PREPARATION

- A. Concrete: Mechanically prepare steel troweled concrete to create a textured surface necessary to achieve the best bond; acceptable methods include bead blasting and scarifying. Do not use acid etching.
- B. Remove substrate surface irregularities. Fill voids and deck joints with filler. Finish smooth.
- C. Vacuum clean surfaces.
- D. Prime substrate in accordance with manufacturer's instructions. Allow to dry. Protect adjacent gypsum board and other materials subject to damage/degradation from contact with primer installation.

- E. Close floor openings.
- F. Protect gypsum board and other materials subject to damage/degradation from contact with underlayment installation.

3.03 APPLICATION

- A. Install underlayment in accordance with manufacturer's instructions.
- B. Pump or pour material onto substrate. Do not retemper or add water.
 - 1 Pump, move, and screed while the material is still highly flowable.
 - 2 Do not create cold joints.
 - 3 Wear spiked shoes while working in the wet material to avoid leaving marks.
- C. Place to indicated thickness, with top surface level to 1/8 inch in 10 ft.
- D. Place to thickness as indicated, including sloping as noted on Drawings.
- E. For final thickness over 1-1/2 inches, place underlayment in layers. Allow initial layer to harden to the point where the material has lost its evaporative moisture. Immediately prime and begin application of the subsequent layer within 24 hours, or the minimum allowed by manufacturer.
 - 1 Provide Manufacturer's recommended reinforcement material, or additional aggregate
- F. Place after partition installation, protect gypsum board during installation.
- G. Where additional aggregate has been used in the mix, add a top layer of neat mix (without aggregate), if needed to level and smooth the surface.
- H. If a fine, feathered edge is desired, steel trowel the edge after initial set, but before it is completely hard.

3.04 CURING

- A. Once underlayment starts to set, prohibit foot traffic until final set has been reached.
- B. Air cure in accordance with manufacturer's instructions.

3.05 APPLICATION TOLERANCE

- A. Top Surface: Level to 1/8 inch in 10 ft.

3.06 FIELD QUALITY CONTROL

- A. An independent testing agency will perform field inspection and testing, as specified in Section 01 4000 - Quality Requirements.
- B. Placed Material: Agency will inspect and test for compliance with specification requirements.
- C. **NOTE : Excess material shall not be disposed of into sinks, tubs, or in any manner which could cause it to enter a sanitary drain system. Likewise, cleaning of tools, buckets, equipment or any implements used for installation of the material shall not occur using any water source adjacent to, or which empties into any part of a sanitary drainage system.**

3.07 PROTECTION

- A. Protect against direct sunlight, heat, and wind; prevent rapid drying to avoid shrinkage and cracking.
- B. Do not permit traffic over unprotected floor underlayment surfaces.
- C. **SCHEDULE (See Drawings)**

END OF SECTION

SECTION 04 0100**MASONRY CLEANING AND RESTORATION****PART 1 GENERAL**

1.01 NOTE: CONTRACTOR OWNER SHALL PERFORM INITIAL, PRIMARY CLEANING OF THE EXISTING MASONRY SURFACES, BUT SHALL PERFORM NO REPAIRS OR RESTORATION. CONTRACTOR'S MASONRY SUBCONTRACTOR, OR RESTORATION CLEANING SUBCONTRACTOR, SHALL PERFORM ANY FINAL, OR SPECIALTY CLEANING, SUCH AS DEEP MINERAL STAINING, PAINT REMOVAL, ETC. WHICH MAY EXIST AFTER THE INITIAL CLEANING AND FINAL RE-CLEANING OF RESTORED AND REPAIRED AREAS, PRIOR TO THE APPLICATION OF A WEATHER SEAL COATING.

1.02 SECTION INCLUDES

- A. Low pressure Water, Chemical, and , or Detergent cleaning of existing and newly installed Brick and Concrete Masonry surfaces as directed by the Architect and as indicated on the Drawings. including, but not limited to the following conditions:
- B. Repair and Restoration of exterior brick masonry shall include, but not be limited to the following conditions:
 - 1. Cracked Units
 - 2. Loose Units
 - 3. Spalled Units
 - 4. Open Mortar head and bed joints
 - 5. Deteriorated Mortar Joints
 - 6. Missing or Clogged Weeps
 - 7. Plant and Algae Growth
 - 8. Efflorescence
 - 9. Stains
 - 10. Water Penetration
 - 11. Control Jointing (Lack of Control Joints)
- C. Repair, cleaning and refinishing of damaged and deteriorated Cast Stone Masonry and any Cast in Place Architectural Concrete.
- D. **NOTE: Blast cleaning, of brick unit masonry, glass block, or Architectural concrete masonry surfaces is not permitted in any form (high pressure water, steam, or dry blast media) for any reason.**
- E. Replacement of broken, damaged, deteriorated and missing brick Masonry units.
- F. Repointing mortar joints.

1.03 RELATED REQUIREMENTS

- A. Section 047 200 - Cast Stone.
- B. Section 04 2000 - Unit Masonry Assemblies: New Brick, Mortar and Grout.

1.04 PRICE AND PAYMENT PROCEDURES

- A. See Section 01 2200 - Unit Prices and Quantity Allowances for additional unit price requirements for Masonry Restoration, if any.

1.05 REFERENCE STANDARDS

- A. TMS 402/602 - Building Code Requirements and Specification for Masonry Structures; 2016.
- B. ACI 530.1/ASCE 6/TMS 602 - Specification for Masonry Structures; American Concrete Institute International; 2008.
- C. IMIAWC (CW) - Recommended Practices & Guide Specifications for Cold Weather Masonry Construction; International Masonry Industry All-Weather Council; 1993.
- D. IMIAWC (HW) - Recommended Practices & Guide Specifications for Hot Weather Masonry Construction; International Masonry Industry All-Weather Council; current edition.

- E. The Brick Industry Association: TECHNICAL NOTES on Brick Construction:
 - 1. Tech Note # 7 Water Penetration Resistance - Design and Detailing - Barrier Walls.
 - 2. Tech Note # 8 Mortars for Brick work.
 - 3. Tech Note # 20 Cleaning Brickwork
 - 4. Tech Note # 46: Maintenance of Brick Masonry.

1.06 ADMINISTRATIVE REQUIREMENTS

- A. Preinstallation Meeting: Convene a minimum of 7 calendar days prior to commencing the work of this section, but not before all required selections have been made, submittals approved and sample panel(s) and Mockup have been constructed and approved.
 - 1. Require attendance of parties directly affecting work of this section, or affected by the work of this section.
 - 2. Review conditions of application, procedures, and coordination with related work.
- B. Scheduling:
 - 1. Perform cleaning of masonry as permitted by the Owner 7 am - 6 pm only.

1.07 SUBMITTALS

- A. See Section 01 3000 - Administrative Requirements, for submittal procedures.
- B. Product Data: Provide data on cleaning compounds.
- C. Samples: Submit four samples of precast concrete, cast stone, and face brick units to illustrate matching color, texture and extremes of color range.
- D. Manufacturer's Instructions: For cleaning materials and procedures, as well as any conditions requiring special attention.

1.08 QUALITY ASSURANCE - MASONRY WORK

- A. Comply with provisions of TMS 402/602, except where exceeded by requirements of Contract Documents.
 - 1. Maintain one copy of each document at project site.
- B. Masonry Restorer: Company specializing in masonry restoration of both brick and Architectural concrete employing skilled masons and supervisors having a minimum of 15 years of documented experience not necessarily with the same masonry contracting company.

1.09 MOCK-UPS

- A. Clean, restore and repoint an existing masonry wall area with a minimum size of 8 feet long by 12 feet high; include complete repointing of mortar in mocked-up area and include window opening instances of mortar.
- B. Provide cleaning demonstration initially on sample panels as directed.
- C. Perform final cleaning demonstration on completed mock-up of exterior wall construction as shown on the Drawings and referenced in Section 01 4310 - Quality Assurance Mockup Requirements.
 - 1. Clean an area 8 ft long by 12 ft high of existing masonry to determine extent and effects of masonry cleaner on the masonry assemblies.
 - 2. Repeat, using different cleaning methods and products until acceptable.
 - a. Repeat, using same, or alternate cleaning methods for up to three different panels.
- D. Acceptable panel and procedures employed will become the standard for work of this section.

1.10 PRE-INSTALLATION MEETING

- A. Convene a minimum of 48 hours prior to commencing work of this section.
- B. Require attendance of parties directly affecting work of this section, or impacted by the Work of this section including but not limited to:
 - 1. General Contractor Project Manager and Superintendent
 - 2. Masonry Restoration Subcontractor

3. Material manufacturer's technical field representatives.
4. Owner Representatives
5. Architect.

1.11 DELIVERY, STORAGE, AND HANDLING

- A. Deliver masonry cleaning materials neatly stacked and tied on pallets. Store clear of ground with adequate waterproof covering.

1.12 FIELD CONDITIONS - MASONRY WORK

- A. Cold and Hot Weather Requirements: Comply with requirements of TMS 402/602 or applicable building code, whichever is more stringent.

1.13 PROJECT CONDITIONS

- A. Perform any repointing before cleaning masonry surfaces.
- B. Perform cleaning to exterior masonry between the hours of at times designated by the Owner's Project Manager..
- C. Do not allow cleaning runoff to drain into sanitary or storm sewers.

PART 2 PRODUCTS

2.01 MANUFACTURERS

- A. Restoration and Cleaning Chemical Schedule: Basis of Design per Category as follows:
 1. **Exterior Cleaning** : To be used on Brick Masonry, Decorative Precast Concrete and Cast Stone;
 - a. **General Cleaner: EaCo Chem Inc Product: OneRestore® www.eacochem.com**
 - b. **Light-to-moderate Iron and Copper Stain Removal:** Sure Klean® Light Duty Concrete Cleaner
 - c. **Heavy- to-severe Iron Stain Removal:** PROSOCO® Sure Klean® Heavy Duty Concrete Cleaner or Sure Klean® Custom Masonry Cleaner.
 - d. **Heavy Copper Stain Removal:** Sure Klean® ReNew OR Sure Klean® 515 Copper Stain Remover (Part A and B)
 - e. **Biological Growth Removal:** Enviro Klean® ReKlaim
 2. **Exterior Cleaning/Paint Stripping:**
 - a. **Paint removal: 3 Coats, or less:** Enviro Klean® SafStrip
 - b. **Paint removal: Multiple coats:** Sure Klean® Heavy Duty Paint Stripper
 3. **Surface prep and Cleaning of Architectural Concrete and Cast Stone to receive new waterproof finish coat:**
 - a. EaCo Chem Inc Product: OneRestore® www.eacochem.com
- B. Other Acceptable Manufacturers
 1. Diedrich Technologies, Inc: www.diedrichtechnologies.com.
 2. PROSOCO®; Product Enviro Klean® 2010 All Surface Cleaner : www.prosoco.com.
 3. Substitutions: See Section 01 6000 - Product Requirements.

2.02 CLEANING MATERIALS

- A. Cleaning Agent: Detergent type.

2.03 MORTAR MATERIALS

- A. Conform to requirements of Section 04 2000.

2.04 MASONRY MATERIALS

- A. Brick: Section 04 2000 - Unit Masonry Assemblies.
- B. Cast Stone : Section 04 7200 - Cast Stone..

PART 3 EXECUTION

3.01 EXAMINATION

- A. Verify that surfaces to be cleaned are ready for work of this section.

3.02 PREPARATION

- A. Protect surrounding elements from damage due to cleaning activities.
- B. Carefully remove and store removable items located in areas to be restored, including fixtures, fittings, finish hardware, and accessories; reinstall upon completion.
- C. Separate areas to be protected from restoration areas using means adequate to prevent damage.
- D. Cover any existing landscaping to be protected with tarpaulins or similar covers.
- E. Mask immediately adjacent surfaces with material that will withstand cleaning and restoration procedures.
- F. Close off adjacent openings with weatherproof closures.
- G. When using cleaning methods that involve water or other liquids, install drainage devices to prevent runoff over adjacent surfaces unless those surfaces are impervious to damage from runoff.
- H. Do not allow cleaning runoff to drain into sanitary or storm sewers.

3.03 REBUILDING

- A. Cut out damaged and deteriorated masonry with care in a manner to prevent damage to any adjacent remaining materials.
 - 1. Remove brick masonry by "toothing" back to sound material, and not cutting material to remain in the wall.
 - 2. Remove additional loose or unsound adjoining masonry and mortar as directed which occurs from preceding demolition activities.
- B. Support structure as necessary in advance of cutting out units.
- C. Cut away remaining loose or unsound adjoining masonry to provide firm and solid bearing for new work.
- D. Build in new units following procedures for new work specified in other section(s).
- E. Mortar : Colored and proportioned to match existing work.
- F. Install built in masonry work to match and align with existing, with joints and coursing true and level, faces plumb and in line. Build in all openings, accessories and fittings.
- G. All new brick and mortar shall match existing when viewed from 20 feet for 5 seconds. Non-matching construction shall be rebuilt or stained to match.

3.04 REPOINTING

- A. Perform any required repointing and allow mortar to cure prior to cleaning masonry surfaces.
- B. Cut out loose or disintegrated mortar in joints to minimum 5/8 - 3/4 inch depth or until sound mortar is reached.
- C. Use power tools only after test cuts determine no damage to masonry units will result.
- D. Do not damage masonry units.
- E. When cutting is complete, remove dust and loose material by brushing.
- F. Premoisten joint and apply mortar. Pack tightly in maximum 1/4 inch layers. Form a smooth, compact tooled joint to match existing.
- G. Moist cure for 72 hours.
- H. All pointing mortar shall match existing when viewed from 20 feet for 5 seconds. Non-matching construction shall be rebuilt or stained to match.

3.05 CLEANING EXISTING MASONRY

- A. Owner will clean building prior to bid. Most staining will be removed by owner. The cleaning scope of work for this project will be limited to isolated, deep organic and metallic staining. Contractor is responsible for inspecting the building prior to bid and adjusting bid accordingly.

- B. Low Pressure hot water cleaning: Apply 500 psi maximum pressure to a test area of each type masonry surfaces at designated locations, maintaining uniform depth and surface texture throughout.
- C. Cleaning Detergent, or mild chemical: Spray clean masonry surfaces at designated locations with cleaning agent in accordance with the manufacturer's instructions. Saturate entire masonry surface with clean water and flush loose mortar and dirt.

3.06 CLEANING NEW MASONRY

- A. Verify mortar is fully set and cured.
- B. Prior to prewetting, clean surfaces and remove large particles with wood scrapers, brass or stiff nylon wire brushes.
- C. Pre-wet finished masonry surfaces prior to application of cleaning agent solution. Scrub surfaces thoroughly using stiff brush. Thoroughly rinse and wash off cleaning solution, dirt and mortar crumbs using clean, low pressure (≤ 600 psi) cold water.
- D. Protect area below cleaning operation and keep masonry soaked with water and flushed free of acid and dissolved mortar continuously for duration of cleaning.
- E. Before solution dries, rinse and remove remaining solution and dissolved mortar, using clean, low pressure water spray .

3.07 RESTORATION CLEANING

- A. Clean surfaces and remove large particles with wood scrapers or non-ferrous wire brush.
- B. Spray coat each different type masonry with specified restoration cleaner, mixed into solution in accordance with manufacturer's instructions.
- C. Provide a second application if required to match mock-up area.
- D. Allow sufficient time for solution to remain on masonry and agitate with soft fiber brush or sponge.
- E. Rinse from the bottom up with potable water applied at 400 psi and at a rate of 4 gal/min.

3.08 AGING

- A. Rub in new masonry work to match, as close as possible, adjacent original work.
 - 1. Use carbon black in small amounts, rubbing in well with burlap rags.
- B. After each application, dust off surplus and wash down with low pressure hose. Allow surface to dry before proceeding with succeeding applications.
- C. Continue process until acceptance.

3.09 CLEANING

- A. Immediately remove stains, efflorescence, or other excess pointing or cleaning material resulting from the work of this section.
- B. Remove excess mortar, smears, and droppings as work proceeds and upon completion.
- C. Clean surrounding surfaces with approved cleaning materials.

3.10 SCHEDULES SEE DRAWINGS

END OF SECTION 04 0100

SECTION 04 0100**MASONRY CLEANING AND RESTORATION****PART 1 GENERAL**

1.01 NOTE: CONTRACTOR OWNER SHALL PERFORM INITIAL, PRIMARY CLEANING OF THE EXISTING MASONRY SURFACES, BUT SHALL PERFORM NO REPAIRS OR RESTORATION. CONTRACTOR'S MASONRY SUBCONTRACTOR, OR RESTORATION CLEANING SUBCONTRACTOR, SHALL PERFORM ANY FINAL, OR SPECIALTY CLEANING, SUCH AS DEEP MINERAL STAINING, PAINT REMOVAL, ETC. WHICH MAY EXIST AFTER THE INITIAL CLEANING AND FINAL RE-CLEANING OF RESTORED AND REPAIRED AREAS, PRIOR TO THE APPLICATION OF A WEATHER SEAL COATING.

1.02 SECTION INCLUDES

- A. Low pressure Water, Chemical, and , or Detergent cleaning of existing and newly installed Brick and Concrete Masonry surfaces as directed by the Architect and as indicated on the Drawings. including, but not limited to the following conditions:
- B. Repair and Restoration of exterior brick masonry shall include, but not be limited to the following conditions:
 - 1. Cracked Units
 - 2. Loose Units
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 - 4. Open Mortar head and bed joints
 - 5. Deteriorated Mortar Joints
 - 6. Missing or Clogged Weeps
 - 7. Plant and Algae Growth
 - 8. Efflorescence
 - 9. Stains
 - 10. Water Penetration
 - 11. Control Jointing (Lack of Control Joints)
- C. Repair, cleaning and refinishing of damaged and deteriorated Cast Stone Masonry and any Cast in Place Architectural Concrete.
- D. **NOTE: Blast cleaning, of brick unit masonry, glass block, or Architectural concrete masonry surfaces is not permitted in any form (high pressure water, steam, or dry blast media) for any reason.**
- E. Replacement of broken, damaged, deteriorated and missing brick Masonry units.
- F. Repointing mortar joints.

1.03 RELATED REQUIREMENTS

- A. Section 047 200 - Cast Stone.
- B. Section 04 2000 - Unit Masonry Assemblies: New Brick, Mortar and Grout.

1.04 PRICE AND PAYMENT PROCEDURES

- A. See Section 01 2200 - Unit Prices and Quantity Allowances for additional unit price requirements for Masonry Restoration, if any.

1.05 REFERENCE STANDARDS

- A. TMS 402/602 - Building Code Requirements and Specification for Masonry Structures; 2016.
- B. ACI 530.1/ASCE 6/TMS 602 - Specification for Masonry Structures; American Concrete Institute International; 2008.
- C. IMIAWC (CW) - Recommended Practices & Guide Specifications for Cold Weather Masonry Construction; International Masonry Industry All-Weather Council; 1993.
- D. IMIAWC (HW) - Recommended Practices & Guide Specifications for Hot Weather Masonry Construction; International Masonry Industry All-Weather Council; current edition.

- E. The Brick Industry Association: TECHNICAL NOTES on Brick Construction:
 - 1. Tech Note # 7 Water Penetration Resistance - Design and Detailing - Barrier Walls.
 - 2. Tech Note # 8 Mortars for Brick work.
 - 3. Tech Note # 20 Cleaning Brickwork
 - 4. Tech Note # 46: Maintenance of Brick Masonry.

1.06 ADMINISTRATIVE REQUIREMENTS

- A. Preinstallation Meeting: Convene a minimum of 7 calendar days prior to commencing the work of this section, but not before all required selections have been made, submittals approved and sample panel(s) and Mockup have been constructed and approved.
 - 1. Require attendance of parties directly affecting work of this section, or affected by the work of this section.
 - 2. Review conditions of application, procedures, and coordination with related work.
- B. Scheduling:
 - 1. Perform cleaning of masonry as permitted by the Owner 7 am - 6 pm only.

1.07 SUBMITTALS

- A. See Section 01 3000 - Administrative Requirements, for submittal procedures.
- B. Product Data: Provide data on cleaning compounds.
- C. Samples: Submit four samples of precast concrete, cast stone, and face brick units to illustrate matching color, texture and extremes of color range.
- D. Manufacturer's Instructions: For cleaning materials and procedures, as well as any conditions requiring special attention.

1.08 QUALITY ASSURANCE - MASONRY WORK

- A. Comply with provisions of TMS 402/602, except where exceeded by requirements of Contract Documents.
 - 1. Maintain one copy of each document at project site.
- B. Masonry Restorer: Company specializing in masonry restoration of both brick and Architectural concrete employing skilled masons and supervisors having a minimum of 15 years of documented experience not necessarily with the same masonry contracting company.

1.09 MOCK-UPS

- A. Clean, restore and repoint an existing masonry wall area with a minimum size of 8 feet long by 12 feet high; include complete repointing of mortar in mocked-up area and include window opening instances of mortar.
- B. Provide cleaning demonstration initially on sample panels as directed.
- C. Perform final cleaning demonstration on completed mock-up of exterior wall construction as shown on the Drawings and referenced in Section 01 4310 - Quality Assurance Mockup Requirements.
 - 1. Clean an area 8 ft long by 12 ft high of existing masonry to determine extent and effects of masonry cleaner on the masonry assemblies.
 - 2. Repeat, using different cleaning methods and products until acceptable.
 - a. Repeat, using same, or alternate cleaning methods for up to three different panels.
- D. Acceptable panel and procedures employed will become the standard for work of this section.

1.10 PRE-INSTALLATION MEETING

- A. Convene a minimum of 48 hours prior to commencing work of this section.
- B. Require attendance of parties directly affecting work of this section, or impacted by the Work of this section including but not limited to:
 - 1. General Contractor Project Manager and Superintendent
 - 2. Masonry Restoration Subcontractor

3. Material manufacturer's technical field representatives.
4. Owner Representatives
5. Architect.

1.11 DELIVERY, STORAGE, AND HANDLING

- A. Deliver masonry cleaning materials neatly stacked and tied on pallets. Store clear of ground with adequate waterproof covering.

1.12 FIELD CONDITIONS - MASONRY WORK

- A. Cold and Hot Weather Requirements: Comply with requirements of TMS 402/602 or applicable building code, whichever is more stringent.

1.13 PROJECT CONDITIONS

- A. Perform any repointing before cleaning masonry surfaces.
- B. Perform cleaning to exterior masonry between the hours of at times designated by the Owner's Project Manager..
- C. Do not allow cleaning runoff to drain into sanitary or storm sewers.

PART 2 PRODUCTS

2.01 MANUFACTURERS

- A. Restoration and Cleaning Chemical Schedule: Basis of Design per Category as follows:
 1. **Exterior Cleaning** : To be used on Brick Masonry, Decorative Precast Concrete and Cast Stone;
 - a. **General Cleaner: EaCo Chem Inc Product: OneRestore® www.eacochem.com**
 - b. **Light-to-moderate Iron and Copper Stain Removal:** Sure Klean® Light Duty Concrete Cleaner
 - c. **Heavy- to-severe Iron Stain Removal:** PROSOCO® Sure Klean® Heavy Duty Concrete Cleaner or Sure Klean® Custom Masonry Cleaner.
 - d. **Heavy Copper Stain Removal:** Sure Klean® ReNew OR Sure Klean® 515 Copper Stain Remover (Part A and B)
 - e. **Biological Growth Removal:** Enviro Klean® ReKlaim
 2. **Exterior Cleaning/Paint Stripping:**
 - a. **Paint removal: 3 Coats, or less:** Enviro Klean® SafStrip
 - b. **Paint removal: Multiple coats:** Sure Klean® Heavy Duty Paint Stripper
 3. **Surface prep and Cleaning of Architectural Concrete and Cast Stone to receive new waterproof finish coat:**
 - a. EaCo Chem Inc Product: OneRestore® www.eacochem.com
- B. Other Acceptable Manufacturers
 1. Diedrich Technologies, Inc: www.diedrichtechnologies.com.
 2. PROSOCO®; Product Enviro Klean® 2010 All Surface Cleaner : www.prosoco.com.
 3. Substitutions: See Section 01 6000 - Product Requirements.

2.02 CLEANING MATERIALS

- A. Cleaning Agent: Detergent type.

2.03 MORTAR MATERIALS

- A. Conform to requirements of Section 04 2000.

2.04 MASONRY MATERIALS

- A. Brick: Section 04 2000 - Unit Masonry Assemblies.
- B. Cast Stone : Section 04 7200 - Cast Stone..

PART 3 EXECUTION

3.01 EXAMINATION

- A. Verify that surfaces to be cleaned are ready for work of this section.

3.02 PREPARATION

- A. Protect surrounding elements from damage due to cleaning activities.
- B. Carefully remove and store removable items located in areas to be restored, including fixtures, fittings, finish hardware, and accessories; reinstall upon completion.
- C. Separate areas to be protected from restoration areas using means adequate to prevent damage.
- D. Cover any existing landscaping to be protected with tarpaulins or similar covers.
- E. Mask immediately adjacent surfaces with material that will withstand cleaning and restoration procedures.
- F. Close off adjacent openings with weatherproof closures.
- G. When using cleaning methods that involve water or other liquids, install drainage devices to prevent runoff over adjacent surfaces unless those surfaces are impervious to damage from runoff.
- H. Do not allow cleaning runoff to drain into sanitary or storm sewers.

3.03 REBUILDING

- A. Cut out damaged and deteriorated masonry with care in a manner to prevent damage to any adjacent remaining materials.
 - 1. Remove brick masonry by "toothing" back to sound material, and not cutting material to remain in the wall.
 - 2. Remove additional loose or unsound adjoining masonry and mortar as directed which occurs from preceding demolition activities.
- B. Support structure as necessary in advance of cutting out units.
- C. Cut away remaining loose or unsound adjoining masonry to provide firm and solid bearing for new work.
- D. Build in new units following procedures for new work specified in other section(s).
- E. Mortar : Colored and proportioned to match existing work.
- F. Install built in masonry work to match and align with existing, with joints and coursing true and level, faces plumb and in line. Build in all openings, accessories and fittings.
- G. All new brick and mortar shall match existing when viewed from 20 feet for 5 seconds. Non-matching construction shall be rebuilt or stained to match.

3.04 REPOINTING

- A. Perform any required repointing and allow mortar to cure prior to cleaning masonry surfaces.
- B. Cut out loose or disintegrated mortar in joints to minimum 5/8 - 3/4 inch depth or until sound mortar is reached.
- C. Use power tools only after test cuts determine no damage to masonry units will result.
- D. Do not damage masonry units.
- E. When cutting is complete, remove dust and loose material by brushing.
- F. Premoisten joint and apply mortar. Pack tightly in maximum 1/4 inch layers. Form a smooth, compact tooled joint to match existing.
- G. Moist cure for 72 hours.
- H. All pointing mortar shall match existing when viewed from 20 feet for 5 seconds. Non-matching construction shall be rebuilt or stained to match.

3.05 CLEANING EXISTING MASONRY

- A. Owner will clean building prior to bid. Most staining will be removed by owner. The cleaning scope of work for this project will be limited to isolated, deep organic and metallic staining. Contractor is responsible for inspecting the building prior to bid and adjusting bid accordingly.

- B. Low Pressure hot water cleaning: Apply 500 psi maximum pressure to a test area of each type masonry surfaces at designated locations, maintaining uniform depth and surface texture throughout.
- C. Cleaning Detergent, or mild chemical: Spray clean masonry surfaces at designated locations with cleaning agent in accordance with the manufacturer's instructions. Saturate entire masonry surface with clean water and flush loose mortar and dirt.

3.06 CLEANING NEW MASONRY

- A. Verify mortar is fully set and cured.
- B. Prior to prewetting, clean surfaces and remove large particles with wood scrapers, brass or stiff nylon wire brushes.
- C. Pre-wet finished masonry surfaces prior to application of cleaning agent solution. Scrub surfaces thoroughly using stiff brush. Thoroughly rinse and wash off cleaning solution, dirt and mortar crumbs using clean, low pressure (≤ 600 psi) cold water.
- D. Protect area below cleaning operation and keep masonry soaked with water and flushed free of acid and dissolved mortar continuously for duration of cleaning.
- E. Before solution dries, rinse and remove remaining solution and dissolved mortar, using clean, low pressure water spray .

3.07 RESTORATION CLEANING

- A. Clean surfaces and remove large particles with wood scrapers or non-ferrous wire brush.
- B. Spray coat each different type masonry with specified restoration cleaner, mixed into solution in accordance with manufacturer's instructions.
- C. Provide a second application if required to match mock-up area.
- D. Allow sufficient time for solution to remain on masonry and agitate with soft fiber brush or sponge.
- E. Rinse from the bottom up with potable water applied at 400 psi and at a rate of 4 gal/min.

3.08 AGING

- A. Rub in new masonry work to match, as close as possible, adjacent original work.
 - 1. Use carbon black in small amounts, rubbing in well with burlap rags.
- B. After each application, dust off surplus and wash down with low pressure hose. Allow surface to dry before proceeding with succeeding applications.
- C. Continue process until acceptance.

3.09 CLEANING

- A. Immediately remove stains, efflorescence, or other excess pointing or cleaning material resulting from the work of this section.
- B. Remove excess mortar, smears, and droppings as work proceeds and upon completion.
- C. Clean surrounding surfaces with approved cleaning materials.

3.10 SCHEDULES SEE DRAWINGS

END OF SECTION 04 0100

SECTION 05 5000**METAL FABRICATIONS****PART 1 GENERAL****1.01 SECTION INCLUDES**

- A. Shop fabricated steel and aluminum items.

1.02 RELATED REQUIREMENTS

- A. Section 03 3000 - Cast-in-Place Concrete: Placement of metal fabrications in concrete.
- B. Section 04 2613 - Masonry Veneer: Placement of metal fabrications in masonry.
- C. Section 05 3100 - Steel Decking: Bearing plates for metal deck bearing, including anchorage.
- D. Section 05 5213 - Pipe and Tube Railings.
- E. Section 09 9000 - Paints & Coatings: Paint finish.

1.03 REFERENCE STANDARDS

- A. AA DAF-45 - Designation System for Aluminum Finishes; The Aluminum Association, Inc.; 2003.
- B. ASTM A36/A36M - Standard Specification for Carbon Structural Steel; 2014.
- C. ASTM A53/A53M - Standard Specification for Pipe, Steel, Black and Hot-Dipped, Zinc-Coated, Welded and Seamless; 2018.
- D. ASTM A123/A123M - Standard Specification for Zinc (Hot-Dip Galvanized) Coatings on Iron and Steel Products; 2017.
- E. ASTM A653/A653M - Standard Specification for Steel Sheet, Zinc-Coated (Galvanized) or Zinc-Iron Alloy-Coated (Galvannealed) by the Hot-Dip Process; 2020.
- F. ASTM B211/B211M - Standard Specification for Aluminum and Aluminum-Alloy Rolled or Cold Finished Bar, Rod, and Wire; 2019.
- G. ASTM B26/B26M - Standard Specification for Aluminum-Alloy Sand Castings; 2018, with Editorial Revision.
- H. ASTM B209/B209M - Standard Specification for Aluminum and Aluminum-Alloy Sheet and Plate; 2021.
- I. ASTM B209 - Standard Specification for Aluminum and Aluminum-Alloy Sheet and Plate; 2014.
- J. ASTM B209M - Standard Specification for Aluminum and Aluminum-Alloy Sheet and Plate (Metric); 2014.
- K. ASTM B221 - Standard Specification for Aluminum and Aluminum-Alloy Extruded Bars, Rods, Wire, Profiles, and Tubes; 2014.
- L. ASTM B221M - Standard Specification for Aluminum and Aluminum-Alloy Extruded Bars, Rods, Wire, Profiles, and Tubes (Metric); 2013.
- M. ASTM F3125/F3125M - Standard Specification for High Strength Structural Bolts and Assemblies, Steel and Alloy Steel, Heat Treated, Inch Dimensions 120 ksi and 150 ksi Minimum Tensile Strength, and Metric Dimensions 830 MPa and 1040 MPa Minimum Tensile Strength; 2019.
- N. AWS A2.4 - Standard Symbols for Welding, Brazing, and Nondestructive Examination; 2012.
- O. AWS D1.1/D1.1M - Structural Welding Code - Steel; 2015, with Errata (2016).
- P. AWS D1.2/D1.2M - Structural Welding Code - Aluminum; 2014, with Errata.
- Q. SSPC-Paint 20 - Zinc-Rich Primers (Type I, "Inorganic," and Type II, "Organic"); 2002 (Ed. 2004).
- R. SSPC-SP 2 - Hand Tool Cleaning; 2018.

1.04 SUBMITTALS

- A. See Section 01 3000 - Administrative Requirements, for submittal procedures.

- B. Shop Drawings: Indicate profiles, sizes, connection attachments, reinforcing, anchorage, size and type of fasteners, and accessories. Include erection drawings, elevations, and details where applicable.
 - 1. Indicate welded connections using standard AWS A2.4 welding symbols. Indicate net weld lengths.

1.05 QUALITY ASSURANCE

- A. Design Steel structural items under direct supervision of a Professional Structural Engineer experienced in design of this Work and licensed in Alabama.
- B. Welder Qualifications: Welding processes and welding operators qualified in accordance with AWS D1.1/D1.1M and AWS D1.2/D1.2M and dated no more than 12 months before start of scheduled welding work.
- C. Fabricator Qualifications: A qualified steel fabricator that is accredited by IAS AC172.

PART 2 PRODUCTS

2.01 MATERIALS - STEEL

- A. Steel Sections: ASTM A36/A36M.
- B. Steel Tubing: ASTM A501/A501M hot-formed structural tubing.
- C. Plates: ASTM A283/A283M.
- D. Pipe: ASTM A53/A53M, Grade B Schedule 40, black finish.
- E. Bolts, Nuts, and Washers: ASTM F3125/F3125M, Type 1, plain.
- F. Welding Materials: AWS D1.1/D1.1M; type required for materials being welded.
- G. Shop and Touch-Up Primer: SSPC-Paint 15, complying with VOC limitations of authorities having jurisdiction.
- H. Touch-Up Primer for Galvanized Surfaces: SSPC-Paint 20, Type I - Inorganic, complying with VOC limitations of authorities having jurisdiction.

2.02 MATERIALS - ALUMINUM

- A. Extruded Aluminum: ASTM B221 (ASTM B221M), 6063 alloy, T6 temper.
- B. Sheet Aluminum: ASTM B209/B209M, 5052 alloy, H32 or H22 temper.
- C. Aluminum-Alloy Drawn Seamless Tubes: ASTM B210/B210M, 6063 alloy, T6 temper.
- D. Aluminum-Alloy Bars: ASTM B211/B211M, 6061 alloy, T6 temper.
- E. Aluminum-Alloy Sand Castings: ASTM B26/B26M.
- F. Aluminum-Alloy Die Castings: ASTM B85/B85M.
- G. Bolts, Nuts, and Washers: Stainless steel.
- H. Welding Materials: AWS D1.2/D1.2M; type required for materials being welded.

2.03 FABRICATION

- A. Fit and shop assemble items in largest practical sections, for delivery to site.
- B. Fabricate items with joints tightly fitted and secured.
- C. Continuously seal joined members by continuous welds.
- D. Grind exposed joints flush and smooth with adjacent finish surface. Make exposed joints butt tight, flush, and hairline. Ease exposed edges to small uniform radius.
- E. Exposed Mechanical Fastenings: Flush countersunk screws or bolts; unobtrusively located; consistent with design of component, except where specifically noted otherwise.
- F. Furnish components required for anchorage of fabrications. Fabricate anchors and related components of same material and finish as fabrication, except where specifically noted otherwise.

2.04 FABRICATED ITEMS

- A. Bumper Posts and Guard Rails: As detailed; galvanized finish at exterior installations.
- B. Bollards: Steel pipe, concrete filled, crowned cap, as detailed; prime paint finish.
- C. Ledge Angles, Shelf Angles, Channels, and Plates Not Attached to Structural Framing: For support of masonry and metal framing members; galvanized finish at exterior applications.
- D. Lintels: As detailed; galvanized finish at exterior installations.

2.05 FINISHES - STEEL

- A. Prime paint steel items.
 - 1. Exceptions: Galvanize items to be embedded in concrete or masonry, or exposed to exterior weather conditions.
 - 2. Exceptions: Do not prime surfaces in direct contact with concrete, where field welding is required, and items to be covered with sprayed fireproofing.
- B. Prepare surfaces to be primed in accordance with SSPC-SP2.
- C. Clean surfaces of rust, scale, grease, and foreign matter prior to finishing.
- D. Prime Painting: One coat.
- E. Galvanizing of Non-structural Items: Galvanize after fabrication to ASTM A123/A123M requirements.

2.06 FINISHES - ALUMINUM

- A. Exterior Aluminum Surfaces: Class I Color Anodized, or pigmented organic coating as selected by Architect from Manufacturer's full range of available finishes .
- B. Interior Aluminum Surfaces: high performance organic coating.
 - 1. Comply with AA DAF-45 for aluminum finishes required.
- C. Exterior Aluminum Surfaces: Class I Color Anodized, or pigmented organic coating as selected by Architect from Manufacturer's full range of available finishes including metallics.
- D. Class I Color Anodized Finish: AAMA 611 AA-M12C22A42 Integrally colored anodic coating not less than 0.7 mils thick; dark bronze.
- E. Pigmented Organic Coating System: AAMA 2603 polyester or acrylic baked enamel finish; color as indicated.
- F. Apply one coat of bituminous paint to concealed aluminum surfaces in contact with cementitious or dissimilar materials.

2.07 FABRICATION TOLERANCES

- A. Squareness: 1/8 inch maximum difference in diagonal measurements.
- B. Maximum Offset Between Faces: 1/16 inch.
- C. Maximum Misalignment of Adjacent Members: 1/16 inch.
- D. Maximum Bow: 1/8 inch in 48 inches.
- E. Maximum Deviation From Plane: 1/16 inch in 48 inches.

PART 3 EXECUTION**3.01 EXAMINATION**

- A. Verify that field conditions are acceptable and are ready to receive work.

3.02 PREPARATION

- A. Clean and strip primed steel items to bare metal where site welding is required.
- B. Furnish setting templates to the appropriate entities for steel items required to be cast into concrete or embedded in masonry.

3.03 INSTALLATION

- A. Install items plumb and level, accurately fitted, free from distortion or defects.
- B. Provide for erection loads, and for sufficient temporary bracing to maintain true alignment until completion of erection and installation of permanent attachments.
- C. Field weld components as indicated on drawings.
- D. Perform field welding in accordance with AWS D1.1/D1.1M.
- E. Obtain approval prior to site cutting or making adjustments not scheduled.
- F. After erection, prime welds, abrasions, and surfaces not shop primed or galvanized, except surfaces to be in contact with concrete.

3.04 TOLERANCES

- A. Maximum Variation From Plumb: 1/4 inch per story, non-cumulative.
- B. Maximum Offset From True Alignment: 1/4 inch.
- C. Maximum Out-of-Position: 1/4 inch.

END OF SECTION 05 5000

SECTION 06 1000**ROUGH CARPENTRY****PART 1 GENERAL****1.01 SECTION INCLUDES**

- A. Structural dimension lumber framing.
- B. Nonstructural dimension lumber framing.
- C. Roof Sheathing.
- D. Subflooring.
- E. Preservative treated wood materials.
- F. Fire retardant treated wood materials.
- G. Miscellaneous framing and sheathing.
- H. Concealed wood blocking, nailers, and supports.
- I. Miscellaneous wood nailers, furring, and grounds.

1.02 RELATED REQUIREMENTS

- A. Section 03 5400 - SELF LEVELING UNDERLAYMENT.
- B. Section 06 1753 - Shop-Fabricated Wood Trusses.
- C. Section 07 3113 - Asphalt Shingles: Waterproof Underlayment

1.03 REFERENCE STANDARDS

- A. APA PRP-108 - Performance Standards and Qualification Policy for Structural-Use Panels (Form E445); 2001.
- B. ASTM A153/A153M - Standard Specification for Zinc Coating (Hot-Dip) on Iron and Steel Hardware; 2016a.
- C. ASTM A653/A653M - Standard Specification for Steel Sheet, Zinc-Coated (Galvanized) or Zinc-Iron Alloy-Coated (Galvannealed) by the Hot-Dip Process; 2020.
- D. ASTM C208 - Standard Specification for Cellulosic Fiber Insulating Board; 2012, with Editorial Revision (2019).
- E. ASTM C578 - Standard Specification for Rigid, Cellular Polystyrene Thermal Insulation; 2019.
- F. ASTM C1177/C1177M - Standard Specification for Glass Mat Gypsum Substrate for Use as Sheathing; 2017.
- G. ASTM D2898 - Standard Test Methods for Accelerated Weathering of Fire-Retardant-Treated Wood for Fire Testing; 2010 (Reapproved 2017).
- H. ASTM E84 - Standard Test Method for Surface Burning Characteristics of Building Materials; 2020.
- I. AWC (WFCM) - Wood Frame Construction Manual for One- and Two-Family Dwellings; 2015.
- J. AWPA C9 - Plywood -- Preservative Treatment by Pressure Processes; American Wood Protection Association; 2003.
- K. AWPA C20 - Structural Lumber -- Fire Retardant Treatment by Pressure Processes; American Wood-Protection Association; 2003.
- L. AWPA C27 - Plywood -- Fire-Retardant Treatment by Pressure Processes; American Wood-Protection Association; 2002.
- M. AWPA U1 - Use Category System: User Specification for Treated Wood; 2018.
- N. ICC (IBC) - International Building Code; Most Recent Edition Adopted by Authority Having Jurisdiction, Including All Applicable Amendments and Supplements.

- O. PS 1 - Structural Plywood; 2009.
- P. PS 20 - American Softwood Lumber Standard; 2020.
- Q. SPIB (GR) - Grading Rules; 2014.

1.04 SUBMITTALS

- A. See Section 01 3000 - Administrative Requirements for submittal procedures.
- B. Product Data: Provide technical data on wood preservative materials and application instructions.
- C. Samples: For rough carpentry members that will be exposed to view, submit two samples, ____by____ inch in size illustrating wood grain, color, and general appearance.
- D. Manufacturer's Certificate: Certify that wood products supplied for rough carpentry meet or exceed specified requirements.

1.05 DELIVERY, STORAGE, AND HANDLING

- A. General: Cover wood products to protect against moisture. Support stacked products to prevent deformation and to allow air circulation.
- B. Fire Retardant Treated Wood: Prevent exposure to precipitation during shipping, storage, and installation.

PART 2 PRODUCTS

2.01 GENERAL REQUIREMENTS

- A. Dimension Lumber: Comply with PS 20 and requirements of specified grading agencies.
 - 1. Species: Spruce-Pine-Fir (South), Kiln Dried After Treatment (KDAT) unless otherwise indicated.
 - 2. If no species is specified, provide species graded by the agency specified; if no grading agency is specified, provide lumber graded by grading agency meeting the specified requirements.
 - 3. Grading Agency: Grading agency whose rules are approved by the Board of Review, American Lumber Standard Committee at www.alsc.org, and who provides grading service for the species and grade specified; provide lumber stamped with grade mark unless otherwise indicated.
 - 4. Lumber of other species or grades is acceptable provided structural and appearance characteristics are equivalent to or better than products specified.

2.02 DIMENSION LUMBER FOR CONCEALED APPLICATIONS

- A. Grading Agency: Southern Pine Inspection Bureau, Inc; SPIB (GR).
- B. Sizes: Nominal sizes as indicated on drawings, S4S.
- C. Moisture Content: Kiln-dry or MC15.
- D. Dimensional Lumber: (2 by 2 through 2 by 6):
 - 1. Species: Southern Pine.
 - 2. Grade: No. 2.
- E. Joist, Rafter, and Small Beam Framing (2 by 6 through 4 by 16):
 - 1. Machine stress-rated (MSR) as follows:
 - a. Fb-single; minimum extreme fiber stress in bending: 1350 psi.
 - b. E; minimum modulus of elasticity: 1,300,000 psi.
- F. Miscellaneous Framing, Blocking, Nailers, Grounds, and Furring:
 - 1. Lumber: S4S, No. 1 or Construction Grade.
 - 2. Boards: Standard or No. 3.

2.03 EXPOSED BOARDS

- A. Submit manufacturer's certificate that products meet or exceed specified requirements, in lieu of grade stamping.
- B. Moisture Content: Kiln-dry (15 percent maximum).

- C. Surfacing: S4S.
- D. Species: Douglas Fir.
- E. Grade: No. 2, 2 Common, or Construction.

2.04 CONSTRUCTION PANELS

- A. Subfloor/Underlayment Combination: PS 1 or PS 2 type, rated Single Floor.
 - 1. Bond Classification: Exposure 1.
 - 2. Span Rating: 24.
 - 3. Performance Category: 5/8 PERF CAT.
 - 4. Edges: Tongue and groove.
- B. Roof Sheathing
 - 1. Roof Sheathing : APA Structural I Rated Sheathing, Exterior Exposure Class, and as follows:
 - a. Span Rating: 24/16.
 - b. Thickness: 3/4 inch, nominal.
 - 2. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
 - a. GP Georgia Pacific: www.gp.com.
 - b. LP Louisiana Pacific: www.lp.com
 - c. Weyerhaeuser :www.weyerhaeuser.com

2.05 ACCESSORIES

- A. Fasteners and Anchors:
 - 1. Metal and Finish: Hot-dipped galvanized steel per ASTM A 153/A 153M , no exceptions permitted.
- B. Die-Stamped Connectors: Hot dipped galvanized steel, sized to suit framing conditions.
 - 1. For contact with preservative treated wood in exposed locations, provide minimum G185 galvanizing complying with ASTM A653/A653M.
- C. Joist Hangers: Hot dipped galvanized steel, sized to suit framing conditions.
 - 1. For contact with preservative treated wood in exposed locations, provide minimum G185 galvanizing complying with ASTM A653/A653M.

2.06 FACTORY WOOD TREATMENT

- A. Treated Lumber and Plywood: Comply with requirements of AWPA U1 - Use Category System for wood treatments determined by use categories, expected service conditions, and specific applications.
 - 1. Fire-Retardant Treated Wood: Mark each piece of wood with producer's stamp indicating compliance with specified requirements.
 - 2. KDAT Preservative-Treated Wood: Provide lumber and plywood marked or stamped by an ALSC-accredited testing agency, certifying level and type of treatment in accordance with AWPA standards.
- B. Fire Retardant Treatment:
 - 1. Products:
 - a. Arch Wood Protection, Inc: www.wolmanizedwood.com.
 - b. Hoover Treated Wood Products, Inc: www.frtw.com.
 - c. Osmose, Inc: www.osmose.com.
 - d. Substitutions: See Section 01 6000 - Product Requirements.
 - 2. Exterior Type: AWPA U1, Category UCFB, Commodity Specification H, chemically treated and pressure impregnated; capable of providing a maximum flame spread index of 25 when tested in accordance with ASTM E84, with no evidence of significant combustion when test is extended for an additional 20 minutes both before and after accelerated weathering test performed in accordance with ASTM D2898.
 - a. Kiln dry wood after treatment to a maximum moisture content of 19 percent for lumber and 15 percent for plywood.

- b. Treat exposed exterior rough carpentry items, including stairways, balconies, and covered walkways
 - c. Do not use treated wood in direct contact with the ground.
- C. Preservative Treatment:
- 1. Products:
 - a. Arch Wood Protection, Inc: www.wolmanizedwood.com.
 - b. Viance, LLC: www.treatedwood.com.
 - c. Substitutions: See Section 01 6000 - Product Requirements.
 - D. Preservative Pressure Treatment of Lumber Above Grade: AWPA U1, Use Category UC3B, Commodity Specification A using waterborne preservative.
 - 1. Kiln dry lumber after treatment (KDAT) to maximum moisture content of 19 percent.
 - 2. Treat lumber in contact with roofing, flashing, or waterproofing.
 - 3. Treat lumber in contact with masonry or concrete.
 - 4. Treat lumber less than 18 inches above grade.
 - a. Treat lumber in other locations as indicated.

PART 3 EXECUTION

3.01 PREPARATION

- A. Coordinate installation of rough carpentry members specified in other sections.

3.02 INSTALLATION - GENERAL

- A. Select material sizes to minimize waste.
- B. Reuse scrap to the greatest extent possible, without piecing; clearly separate scrap for use on site as accessory components, including: shims, bracing, and blocking.

3.03 INSTALLATION

- A. Set structural members level, plumb, and true to line. Discard pieces with defects that would lower required strength or result in unacceptable appearance of exposed members.
- B. Make provisions for temporary construction loads, and provide temporary bracing sufficient to maintain structure in true alignment and safe condition until completion of erection and installation of permanent bracing.
- C. Install structural members full length without splices unless otherwise specifically detailed.
- D. Comply with member sizes, spacing, and configurations indicated, and fastener size and spacing indicated, but not less than required by applicable codes, AWC (WFCM) Wood Frame Construction Manual, and _____.
- E. Install horizontal spanning members with crown edge up and not less than 1-1/2 inches of bearing at each end.
- F. Construct double joist headers at floor and ceiling openings and under wall stud partitions that are parallel to floor joists; use metal joist hangers unless otherwise detailed.
- G. Provide bridging at joists in excess of 8 feet span as detailed. Fit solid blocking at ends of members.

3.04 BLOCKING, NAILERS, AND SUPPORTS

- A. Provide framing and blocking members as indicated or as required for support and backup.
- B. In framed assemblies that have concealed spaces, provide solid wood fireblocking as required by applicable local code, to close concealed draft openings between floors and between top story and roof/attic space; other material acceptable to authorities having jurisdiction may be used in lieu of solid wood blocking.
- C. In walls, provide blocking securely attached to existing substrates as backing and support for windows and doors.

- D. Where ceiling-mounting is indicated, provide blocking and supplementary supports above ceiling, unless other method of support is explicitly indicated.
- E. In addition, specifically, provide the following non-structural framing and blocking:
 - 1. Cabinets and shelf supports.
 - 2. Wall brackets.
 - 3. Handrails.
 - 4. Grab bars.
 - 5. Towel and bath accessories.
 - 6. Wall-mounted door stops.

3.05 ROOF-RELATED CARPENTRY

- A. Coordinate installation of roofing carpentry with deck construction, framing of roof openings, and roofing assembly installation.
- B. Provide wood curb at each roof opening except where prefabricated curbs are specified and where specifically indicated otherwise; form corners by alternating lapping side members.

3.06 INSTALLATION OF CONSTRUCTION PANELS

- A. Subflooring/Underlayment Combination: Glue and nail to framing; staples are not permitted.
- B. Subflooring: Glue and nail to framing; staples are not permitted.
- C. Underlayment: Secure to subflooring with nails and glue.
 - 1. Place building felt between floor underlayment and subflooring.
- D. Roof Sheathing: Secure panels with long dimension perpendicular to framing members, with ends staggered and over firm bearing.
 - 1. Screw panels to framing.
- E. Wall Sheathing: Secure with long dimension perpendicular to wall studs, with ends over firm bearing and staggered, using nails, screws, or staples.
- F. Communications and Electrical Room Mounting Boards: Secure with screws to studs with edges over firm bearing; space fasteners at maximum 24 inches on center on all edges and into studs in field of board.
 - 1. At fire-rated walls, install board over wall board indicated as part of the fire-rated assembly.
 - 2. Where boards are indicated as full floor-to-ceiling height, install with long edge of board parallel to studs.
 - 3. Install adjacent boards without gaps.
 - 4. Size and Location: As indicated on drawings.

3.07 SITE APPLIED WOOD TREATMENT

- A. Apply preservative treatment compatible with factory applied treatment at site-sawn cuts, complying with manufacturer's instructions.
- B. Allow preservative to dry prior to erecting members.

3.08 TOLERANCES

- A. Framing Members: 1/8 inch from true position, maximum.
- B. Surface Flatness of Floor: 1/8 inch in 10 feet maximum, and 1/4 inch in 30 feet maximum.
- C. Variation from Plane : 3/16 inch in 10 feet maximum, and 3/8 inch in 30 feet maximum.

3.09 FIELD QUALITY CONTROL

- A. See Section 01 4000 - Quality Requirements for additional requirements.

3.10 CLEANING

- A. Waste Disposal: See Section 01 7419 - Construction Waste Management and Disposal.
- B. Comply with Owner's applicable regulations.

1. Do not burn scrap on project site.
 2. Do not burn scraps that have been pressure treated.
 3. Do not send materials treated with pentachlorophenol, CCA, or ACA to co-generation facilities or “waste-to-energy” facilities.
- C. Do not leave wood, shavings, sawdust, etc. on the ground or buried in fill.
- D. Prevent sawdust and wood shavings from entering the storm drainage system.

3.11 SCHEDULES (COORDINATE WITH THE DRAWINGS IN THE FIELD)

END OF SECTION 06 1000

SECTION 06 2000**FINISH CARPENTRY****PART 1 GENERAL****1.01 SECTION INCLUDES**

- A. Finish carpentry items.
- B. Wood casings and moldings.
- C. Standing and Running Trim
- D. Hardware and attachment accessories.

1.02 RELATED REQUIREMENTS

- A. Section 06 1000 - Rough Carpentry: Support framing, grounds, and concealed blocking.
- B. Section 06 4100 - Architectural Wood Casework: Shop fabricated custom cabinet work.
- C. Section 08 1416 - Flush Wood Doors.
- D. Section 09 9113 - Exterior Painting: Painting of finish carpentry items.

1.03 REFERENCE STANDARDS

- A. 16 CFR 1201 - Safety Standard for Architectural Glazing Materials; Current Edition.
- B. ANSI A135.4 - American National Standard for Basic Hardboard; 2012.
- C. ANSI A135.4 - American National Standard for Basic Hardboard; 2004.
- D. ANSI A208.1 - American National Standard for Particleboard; 2016.
- E. ASTM E84 - Standard Test Method for Surface Burning Characteristics of Building Materials; 2020.
- F. AWI (QCP) - Quality Certification Program; Current Edition.
- G. AWI/AWMAC/WI (AWS) - Architectural Woodwork Standards; 2014, with Errata (2018).
- H. AWMAC/WI (NAAWS) - North American Architectural Woodwork Standards, U.S. Version 3.1; 2017, with Errata (2019).
- I. AWI/AWMAC (QSI) - Architectural Woodwork Quality Standards Illustrated; Architectural Woodwork Institute and Architectural Woodwork Manufacturers Association of Canada; 2005, 8th Ed., Version 2.0.
- J. AWPA U1 - Use Category System: User Specification for Treated Wood; 2018.
- K. BHMA A156.9 - American National Standard for Cabinet Hardware; 2015.
- L. HPVA HP-1 - American National Standard for Hardwood and Decorative Plywood; 2016.
- M. NEMA LD 3 - High-Pressure Decorative Laminates; 2005.
- N. NHLA G-101 - Rules for the Measurement & Inspection of Hardwood & Cypress; 2015.
- O. PS 1 - Structural Plywood; 2009.
- P. PS 20 - American Softwood Lumber Standard; 2020.
- Q. WDMA I.S. 4 - Industry Specification for Preservative Treatment for Millwork; 2015a.
- R. WI (MAN) - Manual of Millwork; Woodwork Institute; 2003.

1.04 ADMINISTRATIVE REQUIREMENTS

- A. Coordinate the work with installation of associated and adjacent components.
- B. Sequence installation to ensure utility connections are achieved in an orderly and expeditious manner.

1.05 SUBMITTALS

- A. See Section 01 3000 - Administrative Requirements for submittal procedures.
- B. Product Data:
 - 1. Provide data on fire retardant treatment materials and application instructions.

2. Provide instructions for attachment hardware and finish hardware.
- C. Shop Drawings: Indicate materials, component profiles, fastening methods, jointing details, and accessories.
 1. Scale of Drawings: 1-1/2 inch to 1 foot, minimum.
 2. Provide information as required by AWI/AWMAC/WI (AWS) or AWMAC/WI (NAAWS).
 3. Include certification program label.
- D. Samples: Submit two samples of finish plywood, 12 by 12 inches in size illustrating wood grain and specified finish.
- E. Samples: Submit two samples of wood handrail 12 inch long.
- F. Certificate: Submit labels and certificates required by quality assurance and quality control programs.

1.06 QUALITY ASSURANCE

- A. **Manufacturer qualifications: Company specializing in fabricating the products specified in this section with minimum five10 years of documented experience.**
 1. **Company with at least one project in the past 5 years with value of woodwork within 20 percent of cost of woodwork for this Project.**
 2. **Accredited participant in the AWI Quality Certification Program prior to the contract award for fabrication, installation and throughout the duration of the project.**
- B. **Quality Standard: Unless otherwise indicated, comply with AWI's Architectural Woodwork Quality Standards* Architectural Woodwork Standards (Edition 2) for indicated grades of interior architectural woodwork, construction, finishes and other requirements.**
- C. **Provide AWI Quality Certification indicating that the woodwork, including installation, complies with requirements of grades specified. For this project, the Contractor, upon award of work of this Section, shall perform the work under this section with the AWI Quality Certification Program (855-345-0991) including documentation as outlined below.**
 1. **Provide labels or certificates indicating that the installed work complies with 1 or 1 requirements for grade or grades specified.**
 2. **Provide designated labels on shop drawings as required by certification program.**
 3. **Provide designated labels on installed products as required by certification program.**
 4. **Submit certifications upon completion of installation that verifies this work is in compliance with specified requirements.**
 5. **Replace, repair, or rework all work for which certification is refused.**

1.07 MANUFACTURERS / FABRICATORS

- A. Southern Woodsmith Inc. :www.southernwoodsmith.com.
 1. Luttrell Architectural Woodworks, Inc.:www.luttrellwoodworks.com
 2. Fabrication Specialists, Inc.:www.fabricationspecialists.com.
 3. Malone Design / Fabrication: www.thinkmalone.com.
 4. Remmert & Company Architectural Millwork: www.remmertcompany.com.
 5. Other local or Regional fabricator subject to compliance with criteria and approval of Architect and Owner.
- B. Fabricator Qualifications: Company specializing in fabricating the products specified in this section with minimum five years of documented experience.
 1. Company with at least one project within the past 5 years with value of woodwork within 20 percent of cost of woodwork for this project.
 2. Accredited participant in the specified certification program prior to the commencement of fabrication and throughout the duration of the project.
 3. Single Source Responsibility: Provide and install this work from single fabricator.
- C. Quality Certification:

1. Provide labels or certificates indicating that work complies with AWI/AWMAC/WI (AWS) or AWMAC/WI (NAAWS) requirements for grade or grades specified.
 2. Provide designated labels on shop drawings as required by certification program.
 3. Provide designated labels on installed products as required by certification program.
 4. Submit certifications upon completion of installation that verifies this work is in compliance with specified requirements.
- D. Fabricator Qualifications: Company specializing in fabricating the products specified in this section with minimum ten years of documented experience.

1.08 DELIVERY, STORAGE, AND HANDLING

- A. Protect from moisture damage.

PART 2 PRODUCTS

2.01 FINISH CARPENTRY ITEMS

- A. Quality Standard: Custom Grade, in accordance with AWI/AWMAC/WI (AWS) or AWMAC/WI (NAAWS), unless noted otherwise.
- B. Surface Burning Characteristics: Provide materials having fire and smoke properties as required by applicable code.
- C. Interior Woodwork Items:
1. Loose Shelving: Other than residential living units, or as otherwise specified 3/4" Birch plywood; prepare for paint finish. Use Heavy Duty brackets and supports not to exceed 36" o.c.

2.02 LUMBER MATERIALS

- A. Softwood Lumber: indicated species, plain sawn, maximum moisture content of 6 percent; with vertical grain.
- B. Hardwood Lumber: As indicated species, plain sawn, maximum moisture content of 6 percent , of quality suitable for transparent finish.

2.03 SHEET MATERIALS

- A. Softwood Plywood, Not Exposed to View: Any face species, medium density fiberboard core; PS 1 Grade A-B, glue type as recommended for application.
- B. Hardboard: ANSI A135.4; Pressed wood fiber with resin binder, Class 1 - Tempered, 1/4 inch thick, smooth one side (S1S).
- C. Pegboard: Pressed wood fiber with resin binder, standard grade; 1/8 inch thick, with holes spaced at 1 inch on center in both directions.

2.04 PLASTIC LAMINATE MATERIALS AND ACCESSORIES

- A. Plastic Laminate: 1, HGS; color as selected by Architect; textured, low gloss finish.
- B. Laminate Backing Sheet: NEMA LD 3, BKL; undecorated plastic laminate.
- C. Laminate Adhesive: Type recommended by laminate manufacturer to suit application; not containing formaldehyde or other volatile organic compounds.
- D. Adhesive: Type recommended by laminate manufacturer to suit application .

2.05 FASTENINGS

- A. Adhesive for Purposes Other Than Laminate Installation: Suitable for the purpose; not containing formaldehyde or other volatile organic compounds.
- B. Fasteners: Of size and type to suit application; uncoated finish in concealed locations and stainless steel finish in exposed locations.
- C. Concealed Joint Fasteners: Threaded steel.

2.06 ACCESSORIES

- A. Lumber for Shimming and Blocking: Softwood lumber of SPF species.
- B. Safety Glass: Laminated glass complying with 16 CFR 1201 and ANSI Z97.1; clear; nominally 6 mm thick.
- C. Primer: Alkyd primer sealer.
- D. Wood Filler: Oil base, tinted to match surface finish color.

2.07 HARDWARE

- A. Hardware: Comply with BHMA A156.9.

2.08 WOOD TREATMENT

- A. Factory-Treated Lumber: Comply with requirements of AWPA U1 - Use Category System for pressure impregnated wood treatments determined by use categories, expected service conditions, and specific applications.
- B. Fire Retardant Treatment (FR-S Type): Chemically treated and pressure impregnated; capable of providing flame spread index of 25, maximum, and smoke developed index of 450, maximum, when tested in accordance with ASTM E84.
- C. Water Repellent Preservative Treatment by Dipping Method: WDMA I.S. 4, with 0.25 percent retainage.
- D. Shop pressure treat wood materials requiring fire rating to concealed wood blocking.
- E. Provide identification on fire retardant treated material.
- F. Deliver fire retardant treated materials cut to required sizes. Minimize field cutting.
- G. Redry wood after pressure treatment to maximum 6 percent moisture content.

2.09 FABRICATION

- A. Shop assemble work for delivery to site, permitting passage through building openings.
- B. Fit exposed sheet and veneered material edges with 3/8 inch matching hardwood edging. Use one piece for full length only.
- C. Cap exposed plastic laminate finish edges with material of same finish and pattern.
- D. Shop prepare and identify components for book match grain matching during site erection.
- E. When necessary to cut and fit on site, provide materials with ample allowance for cutting. Provide trim for scribing and site cutting.
- F. Apply plastic laminate finish in full uninterrupted sheets consistent with manufactured sizes. Fit corners and joints hairline; secure with concealed fasteners. Slightly bevel arises. Locate counter butt joints minimum 2 feet from sink cut-outs.
- G. Apply laminate backing sheet to reverse face of plastic laminate finished surfaces.

2.10 SHOP FINISHING

- A. Sand work smooth and set exposed nails and screws.
- B. Apply wood filler in exposed nail and screw insets.
- C. Resand, if necessary, reapply wood filler and sand until surface is smooth and will not "telegraph" fastener heads through final finish.
- D. On items to receive transparent finishes, use wood filler that matches surrounding surfaces and is of type recommended for the applicable finish.
- E. Finish work in accordance with AWI/AWMAC/WI (AWS) or AWMAC/WI (NAAWS), Section 5 - Finishing for grade specified and as follows:
 - 1. Transparent:
 - a. System best suited for application and expected performance.
 - b. Stain: As selected by Architect.

- c. Sheen: Satin.
- 2. Opaque:
 - a. System best suited for specified application and expected performance.
 - b. Color: As selected by Architect.
 - c. Sheen: Satin.
- F. Back prime woodwork items to be field finished, prior to installation.

PART 3 EXECUTION

3.01 EXAMINATION

- A. Verify adequacy of backing and support framing.
- B. Verify mechanical, electrical, and building items affecting work of this section are placed and ready to receive this work.

3.02 INSTALLATION

- A. Set and secure materials and components in place, plumb and level.
- B. Carefully scribe work abutting other components, with maximum gaps of 1/32 inch. Do not use additional overlay trim to conceal larger gaps.
- C. Install trim and mouldings with brads or nails evenly spaced at not more than six inches on center .
- D. Install prefinished paneling with full bed contact adhesive applied to substrate.
- E. Install hardware in accordance with manufacturer's written instructions.

3.03 SITE APPLIED WOOD TREATMENT

- A. Apply preservative treatment in accordance with manufacturer's instructions.
- B. Brush apply one coats of preservative treatment on wood in contact with cementitious materials. Treat site-sawn cuts.
- C. Allow preservative to dry prior to erecting members.

3.04 TOLERANCES

- A. Maximum Variation from True Position: 1/16 inch.
- B. Maximum Offset from True Alignment with Abutting Materials: 1/32 inch.

3.05 SCHEDULE SEE DRAWINGS

- A. Moldings, Bases, Casings, and Miscellaneous Trim: Clear white pine; prepare for paint finish.
- B. Loose Shelving: Birch plywood; prepare for paint finish.
- C. Handrails throughout Lobby and Atrium: Red Oak; transparent stain finish.

END OF SECTION 06 2000

SECTION 07 1800**TRAFFIC COATINGS****PART 1 GENERAL****1.01 SECTION INCLUDES**

- A. Coatings Schedule Existing pedestrian.
 - 1. TC - 2: Traffic Coating Scheduled for Pedestrian Surfaces, exterior covered.

1.02 REFERENCE STANDARDS

- A. ASTM D412 - Standard Test Methods for Vulcanized Rubber and Thermoplastic Elastomers--Tension; 2016.
- B. ASTM D903 - Standard Test Method for Peel or Stripping Strength of Adhesive Bonds; 1998 (Reapproved 2017).
- C. ASTM D4060 - Standard Test Method for Abrasion Resistance of Organic Coatings by the Taber Abraser; 2019.
- D. ASTM E84 - Standard Test Method for Surface Burning Characteristics of Building Materials; 2020.
- E. ASTM E96/E96M - Standard Test Methods for Water Vapor Transmission of Materials; 2016.
- F. ASTM F710 - Standard Practice for Preparing Concrete Floors to Receive Resilient Flooring; 2019, with Editorial Revision (2020).

1.03 SUBMITTALS

- A. See Section 01 3000 - Administrative Requirements for submittal procedures.
- B. Product Data: Include product characteristics and limitations. Identify dissolving solvents, fuels, and potential destructive compounds.
- C. Samples: Submit two composite samples of cured membrane and substrate, 12 x 12 inch in size, illustrating color, surface texture, and variations.
- D. Manufacturer's Installation Instructions: Include special field conditions required to install traffic membrane and potential incompatibilities with adjacent materials.
- E. Maintenance Data: Include procedures for stain removal, repairing surface, and cleaning.
- F. Warranty: Submit manufacturer warranty and ensure that forms have been completed in Owner's name and registered with manufacturer.

1.04 QUALITY ASSURANCE

- A. Manufacturer Qualifications: Company specializing in manufacturing products of the type specified in this section, with not less than 5 years of documented experience.
- B. Applicator Qualifications: Company specializing in performing installation of traffic membrane, with minimum 3 years documented experience and approved by manufacturer.

1.05 MOCK-UPS

- A. See Section 01 4000 - Quality Requirements for additional requirements.
- B. Provide in place mock-up, 10 feet long by 10 feet wide, with membrane system applied to representative substrate.
- C. Locate where directed.
- D. Mock-up may remain as part of work.

1.06 DELIVERY, STORAGE, AND HANDLING

- A. Maintain storage area at minimum ambient temperature of 55 degrees F.
- B. Keep away from fire or open flame.

1.07 FIELD CONDITIONS

- A. Do not install materials when temperature is below 50 degrees F or above 90 degrees F.
- B. Maintain this temperature range, 24 hours before, during and 72 hours after application.
- C. Restrict traffic from area where materials are being installed or are curing.

1.08 WARRANTY

- A. See Section 01 7800 - Project Closeout for additional warranty requirements.
- B. Correct defective Work within a 7 year period after Date of Substantial Completion.
- C. Provide five year manufacturer warranty for against material failure due to manufacturing, or installation..
 - 1. Include coverage for delamination of system from substrate.

PART 2 PRODUCTS**2.01 MANUFACTURERS****2.02 TRAFFIC COATINGS**

- A. Polyurethane Waterproof Pedestrian Traffic Coating System: Fluid-applied polyurethane system with base and top coat.
 - 1. Finished Coating Thickness: 48 mil, 0.048 inch, minimum.
 - 2. Color: Gray.
 - 3. Products:
 - a. Master Builders Solutions; MasterSeal Traffic 1500: www.master-builders-solutions.com/en-us/#sle.
 - b. Polycoat Products; Polydeck 150/150SC: www.polycoatusa.com/#sle.
 - c. Tremco Commercial Sealants & Waterproofing; Vulkem 350NF/351: www.tremcosealants.com/#sle.

PART 3 EXECUTION**3.01 EXAMINATION**

- A. Verify that substrate is ready to receive work, surface is clean, dry and free of substances that could adversely effect bond.
- B. Do not begin work until concrete substrate has cured at least 28 days and moisture content is 16 percent or less.
- C. Test concrete surfaces according to ASTM F710 for acceptable level of alkalinity.

3.02 PREPARATION

- A. Clean substrate surface free of foreign matter.
- B. Patch concrete substrate with filler to produce surface conducive to bond.
- C. Install cant strips securely at intersecting surfaces.
- D. Protect adjacent surfaces.

3.03 INSTALLATION

- A. Apply system materials in accordance with manufacturer's instructions.
- B. Apply surfacing to top coat before set.
- C. Apply sealant to junction of horizontal and intersecting surfaces to achieve watertight seal.

3.04 PROTECTION

- A. Do not permit traffic over unprotected surfaces.
- B. Protect installation until Substantial Completion.

3.05 SCHEDULES SEE DRAWINGS
END OF SECTION 07 1800

SECTION 07 1900**WATER REPELLENTS****PART 1 GENERAL****1.01 SECTION INCLUDES**

- A. Water repellents applied to exterior and interior, masonry, stone, and concrete surfaces.

1.02 RELATED REQUIREMENTS

- A. Section 03 0100 - Refurbishment and Repair of Architectural Concrete
- B. Section 04 4100 - Masonry Cleaning and Restoration.
- C. Section 04 2000 - Unit Masonry Assemblies
- D. Section 04 7200 - Cast Stone Masonry

1.03 REFERENCE STANDARDS

- A. ASTM C140/C140M - Standard Test Methods for Sampling and Testing Concrete Masonry Units and Related Units; 2020.
- B. ASTM C642 - Standard Test Method for Density, Absorption, and Voids in Hardened Concrete; 2013.
- C. ASTM D3960 - Standard Practice for Determining Volatile Organic Compound (VOC) Content of Paints and Related Coatings; 2005 (Reapproved 2018).
- D. ASTM D5095 - Standard Test Method for Determination of the Nonvolatile Content in Silanes, Siloxanes, and Silane-Siloxane Blends Used in Masonry Water Repellent Treatments; 1991 (Reapproved 2013).
- E. MPI (APSM) - Master Painters Institute Architectural Painting Specification Manual; Current Edition.

1.04 ADMINISTRATIVE REQUIREMENTS

- A. Preinstallation Meeting: Convene a meeting at least one week prior to starting work; require attendance of affected installers; invite Architect and Owner.

1.05 SUBMITTALS

- A. See Section 01 3000 - Administrative Requirements for submittal procedures.
- B. Product Data: Provide product description, details of tests performed, limitations, and chemical composition.
- C. Manufacturer's Installation Instructions: Indicate special procedures and conditions requiring special attention; cautionary procedures required during application.
- D. Manufacturer's Certificate: Certify that products meet or exceed specified requirements.
- E. Manufacturer's Field Reports: Report whether manufacturer's "best practices" are being followed; if not, state corrective recommendations. Email report to Architect the same day as inspection occurs; mail report on manufacturer's letterhead to Architect within 2 days after inspection.
- F. Manufacturer's Qualification Statement.
- G. Installer's Qualification Statement.
- H. Maintenance Materials: Furnish the following for Owner's use in maintenance of project.
 - 1. See Section 01 6000 - Product Requirements for additional provisions.
 - 2. Extra Water Repellent Material: 20 gallons of the type installed.

1.06 QUALITY ASSURANCE

- A. Manufacturer Qualifications: Company specializing in manufacturing the Products specified in this section with minimum 15 years documented experience.
- B. Installer Qualifications: Company specializing in performing the work of this section with minimum 10 years experience.

- C. Owner reserves the right to provide continuous independent inspection of surface preparation and application of water repellent.

1.07 MOCK-UPS

- A. Prepare a representative surface 36 by 36 inch in size, on each type of masonry to be sealed using specified materials and preparation and application methods on surfaces identical to those to be coated; approved mock-up constitutes standard for workmanship.
- B. For proposed substitutions, prepare side-by-side mock-ups of specified and substitute products.
- C. Locate where directed.
- D. Mock-up may remain as part of work.

1.08 FIELD CONDITIONS

- A. Protect liquid materials from freezing.
- B. Do not apply water repellent when ambient temperature is lower than 50 degrees F or higher than 100 degrees F.
- C. Do not apply water repellents when wind velocity is higher than 12 mph.

PART 2 PRODUCTS

2.01 MANUFACTURERS

- A. Basis of Design: Alkyltrialkoxysilane, Water Borne Water Repellents:
 - 1. EVONIK Industries; Protectosil® AQUA-TRETE® Concentrate: www.Protectosil.com
- B. Other Acceptable Manufacturers: Silane, Siloxane, Silane-Siloxane Blend, and Alkylalkoxysilane penetrating sealer providing protection against moisture intrusion, freeze/thaw cycles, and chloride intrusion:
 - 1. BASF Construction Chemicals; MasterProtect® H 400 : www.buildingsystems.basf.com.
 - 2. PROSOCO, Inc; Sure Klean® Weather Seal Siloxane PD: www.prosoco.com.
 - 3. Substitutions: Not permitted.

2.02 MATERIALS

- A. Water Repellent: Non-glossy, colorless, penetrating, water-vapor-permeable, non-yellowing sealer, that dries invisibly leaving appearance of substrate unchanged.
 - 1. Applications: Vertical surfaces and non-traffic horizontal surfaces.
 - 2. Number of Coats: Two.
 - 3. Moisture Absorption When Applied to Masonry: Five percent, maximum, when tested in accordance with ASTM C140/C140M using masonry sample completely coated with water repellent.
 - 4. Moisture Absorption When Applied to Concrete: Five percent, maximum, when tested in accordance with ASTM C642 concrete sample completely coated with water repellent.
 - 5. Maintains dry appearance when wetted.
 - 6. Products: Silane, siloxane, silane-siloxane blend, Alkyltrialkoxysilane, or silicate that reacts chemically with concrete and masonry; minimum 90 percent nonvolatile content.

PART 3 EXECUTION

3.01 EXAMINATION

- A. Verify existing conditions before starting work.
- B. Verify joint sealants are installed and cured.
- C. Verify surfaces to be coated are dry, clean, and free of efflorescence, oil, or other matter detrimental to application of water repellent.

3.02 PREPARATION

- A. Protection of Adjacent Work:

1. Protect adjacent landscaping, property, and vehicles from drips and overspray.
 2. Protect adjacent surfaces not intended to receive water repellent.
- B. Prepare surfaces to be coated as recommended by water repellent manufacturer for best results.
 - C. Do not start work until masonry mortar substrate is cured a minimum of 60 days.
 - D. Remove loose particles and foreign matter.
 - E. Remove oil and foreign substances with a chemical solvent that will not affect water repellent.
 - F. Scrub and rinse surfaces with water and let dry.
 - G. Allow surfaces to dry completely to degree recommended by water repellent manufacturer before starting coating work.

3.03 APPLICATION

- A. Apply water repellent in accordance with manufacturer's instructions, using procedures and application methods recommended as producing the best results.
- B. Apply two coats, minimum.
- C. Remove water repellent from unintended surfaces immediately by a method instructed by water repellent manufacturer.
- D. Provide manufacturer's field service representative to inspect preparation and application work continuously during entire application period to ensure that manufacturer's "best practices" for preparation and application are being followed.

END OF SECTION 07 1900

SECTION 07 2100**THERMAL INSULATION****PART 1 GENERAL****1.01 SECTION INCLUDES**

- A. Batt insulation in exterior wall, ceiling, and roof construction.
- B. Batt insulation for filling perimeter window and door shim spaces and crevices in exterior wall and roof.
- C. Accessories.

1.02 RELATED REQUIREMENTS

- A. Section 09 2116 - Gypsum Board Assemblies: Installation of acoustic batt insulation.
- B. Section 06 1000 - Rough Carpentry: Coordination of batt and blanket insulation installed in wood framed walls, ceilings and roofs.

1.03 REFERENCE STANDARDS

- A. ASTM C240 - Standard Test Methods for Testing Cellular Glass Insulation Block; 2019.
- B. ASTM C552 - Standard Specification for Cellular Glass Thermal Insulation; 2017, with Editorial Revision (2018).
- C. ASTM C578 - Standard Specification for Rigid, Cellular Polystyrene Thermal Insulation; 2019.
- D. ASTM C612 - Standard Specification for Mineral Fiber Block and Board Thermal Insulation; 2014 (Reapproved 2019).
- E. ASTM C665 - Standard Specification for Mineral-Fiber Blanket Thermal Insulation for Light Frame Construction and Manufactured Housing; 2017.
- F. ASTM C1289 - Standard Specification for Faced Rigid Cellular Polyisocyanurate Thermal Insulation Board; 2019.
- G. ASTM E84 - Standard Test Method for Surface Burning Characteristics of Building Materials; 2020.
- H. ASTM E96/E96M - Standard Test Methods for Water Vapor Transmission of Materials; 2016.
- I. ASTM E136 - Standard Test Method for Assessing Combustibility of Materials Using a Vertical Tube Furnace at 750°C; 2019a.

1.04 SUBMITTALS

- A. See Section 01 3000 - Administrative Requirements for submittal procedures.
- B. Product Data: Provide data on product characteristics and performance criteria.
- C. ABAA Field Quality Control Submittals: Submit third-party reports of testing and inspection required by ABAA QAP.
- D. Manufacturer's Certificate: Certify that products meet or exceed specified requirements.
- E. Manufacturer's Installation Instructions: Include information on special environmental conditions required for installation and installation techniques.
- F. ABAA Manufacturer Qualification: Submit documentation of current evaluation of proposed manufacturer and materials.
- G. ABAA Installer Qualification: Submit documentation of current contractor accreditation and current installer certification. Keep copies of contractor accreditation and installer certification on project site during and after installation. Present on-site documentation upon request.

1.05 FIELD CONDITIONS

- A. Do not install insulation when construction progress, or weather conditions are detrimental to successful installation.

PART 2 PRODUCTS**2.01 MANUFACTURERS**

- A. Insulation: Batt and Blanket material
 - 1. CertainTeed.
 - 2. Owens Corning Building Solutions
 - 3. Johns Manville
 - 4. Knauf EcoBatt®

2.02 APPLICATIONS

- A. Insulation in Wood Framed Walls: Batt insulation with integral vapor retarder.
- B. Insulation in Wood Framed Ceiling Structure: Batt, or blanket insulation with integral vapor retarder.

2.03 MINERAL FIBER BLANKET INSULATION MATERIALS

- A. Where batt insulation is indicated, either glass fiber or mineral fiber batt insulation may be used, at Contractor's option.
- B. Flexible Glass Fiber Blanket Thermal Insulation: Preformed insulation, complying with ASTM C665; friction fit.
- C. Batt Insulation: ASTM C 665; preformed batt; conforming to the following:
 - 1. Material: Mineral wool, or glass fiber.
 - 2. Flame Spread Index: 25 or less, when tested in accordance with ASTM E84.
 - 3. Smoke Developed Index: 450 or less, when tested in accordance with ASTM E84.
 - 4. Combustibility: Non-combustible, when tested in accordance with ASTM E136.
 - 5. Formaldehyde Content: Zero.
 - 6. Thermal Resistance: R -19 at wall cavities; R-30 at roof
 - 7. Thickness: Full thickness in cavity space.
 - 8. Facing: (single) kraft paper at exterior and interior wood stud walls.
 - 9. Facing: (single) Aluminum foil, flame spread 25 rated; one side above wood framed ceilings and attic floors.
 - 10. Products:
 - a. CertainTeed Corporation; Fiberglass Building Insulation: www.certainteed.com.
 - b. Johns Manville; JM Formaldehyde-free®: www.jm.com.
 - c. Knauf Insulation EcoBatt®
 - d. Owens Corning Corporation; EcoTouch® Flame Spread 25 Batt Insulation, unfaced, : www.ocbuildingspec.com/sle.
 - e. Thermafiber, Inc: www.thermafiber.com.
 - 11. Substitutions: See Section 01 6000 - Product Requirements.
- D. Mineral Fiber Batt Insulation: Flexible preformed batt or blanket, complying with ASTM C665; mechanically fastened; unfaced flame spread index of 25 or less when tested in accordance with ASTM E84.
 - 1. Flame Spread Index: 25 or less, when tested in accordance with ASTM E84.
 - 2. Products:
 - a. Johns Manville; MinWool Sound Attenuation Fire Batts: www.jm.com/#sle.
 - b. Knauf Insulation; EcoBatt Insulation: www.knaufinsulation.com/#sle.
 - c. ROCKWOOL; COMFORTBATT: www.rockwool.com/#sle.
 - d. Thermafiber, Inc; SAFB FF: www.thermafiber.com/#sle.
 - e. Substitutions: See Section 01 6000 - Product Requirements.

2.04 ACCESSORIES

- A. Insulation Fasteners: Impaling clip of galvanized steel with washer retainer, to be adhered and mechanically fastened to surface to receive insulation, length to suit insulation thickness and substrate,

capable of securely and rigidly fastening insulation in place. Basis of Design at Continuous for Rigid EXP Insulation

1. Products : Thermal-Grip® Impaling Fastener manufactured by Rodenhouse Fastening Systems :www.rodenhouse-inc.com
- B. Insulation Fasteners: Impaling clip of unfinished steel with washer retainer, to be adhered to receive insulation, length to suit insulation thickness and substrate, capable of securely and rigidly fastening insulation in place. Basis of Design for unfaced batt insulation:
 1. Products : Impaling clip of unfinished steel with self locking retainer cap manufactured by Midwest Fasteners Inc. :www.rodenhouse-inc.com
- C. Substitutions: See Section 01 6000 - Product Requirements.
- D. Nails or Staples: Steel wire; electroplated or galvanized; type and size to suit application.
- E. Wire Mesh: Galvanized steel, hexagonal wire mesh.

PART 3 EXECUTION

3.01 EXAMINATION

- A. Verify that substrate, adjacent materials, and insulation materials are dry and that substrates are ready to receive insulation.
- B. Verify substrate surfaces are flat, free of honeycomb, fins, irregularities, or materials or substances that may impede adhesive bond.

3.02 BOARD INSTALLATION AT EXTERIOR CAVITY WALLS

3.03 BATT INSTALLATION

- A. Install insulation and vapor retarder in accordance with manufacturer's instructions.
- B. Install in exterior wall, roof, and ceiling spaces where indicated without gaps or voids. Do not compress insulation.
- C. Trim insulation neatly to fit spaces. Insulate miscellaneous gaps and voids.
- D. Fit insulation tightly in cavities and tightly to exterior side of mechanical and electrical services within the plane of the insulation.
- E. Install with factory-applied vapor retarder membrane facing warm side of building spaces. Lap ends and side flanges of membrane over framing members.
- F. Staple facing tabs in place at maximum 6 inches on center.
- G. Optional Method: Retain insulation batts in place with spindle fasteners at 12 inches on center.
- H. Tape seal butt ends, lapped tabs, and tears or cuts in membrane.
- I. At wood framing, place vapor retarder on warm side of insulation by stapling at 6 inches on center. Lap and seal sheet retarder joints over face of member.
- J. Tape seal tears or cuts in vapor retarder.
- K. Extend vapor retarder tightly to full perimeter of adjacent window and door frames and other items interrupting the plane of the membrane; tape seal in place.

3.04 FIELD QUALITY CONTROL

- A. See Section 01 4000 - Quality Requirements for additional requirements.

3.05 PROTECTION

- A. Do not permit installed insulation to be damaged prior to its concealment.

END OF SECTION 07 2100

SECTION 07 2510**WEATHER BARRIERS (MECHANICALLY FASTENED SHEET)****PART 1 GENERAL****1.01 SECTION INCLUDES**

- A. Vapor Retarders: Materials to make exterior walls, joints between exterior walls and roof, joints around frames of openings in exterior walls, and joints between and penetrations through sheathing panels water vapor resistant and air tight.

1.02 RELATED REQUIREMENTS

- A. Section 054000 - Cold-Formed Metal Framing: Exterior Sheathing.
- B. Section 07 6200 - Sheet Metal Flashing and Trim: Metal flashings installed in conjunction with weather barriers.

1.03 DEFINITIONS

- A. Weather Barriers: Assemblies that form either water-resistive barriers, air barriers, or vapor retarders.
- B. Water-Resistive Barrier: A material behind an exterior wall covering that is intended to resist liquid water that has penetrated behind the exterior covering from further intruding into the exterior wall assembly.

1.04 REFERENCE STANDARDS

- A. AATCC Test Method 127 - Water Resistance: Hydrostatic Pressure Test; 2018.
- B. ASTM D412 - Standard Test Methods for Vulcanized Rubber and Thermoplastic Elastomers--Tension; 2016.
- C. ASTM D779 - Standard Test Method for Water Resistance of Paper, Paperboard, and Other Sheet Materials by the Dry Indicator Method; 2003.
- D. ASTM D1970/D1970M - Standard Specification for Self-Adhering Polymer Modified Bituminous Sheet Materials Used as Steep Roofing Underlayment for Ice Dam Protection; 2019.
- E. ASTM E84 - Standard Test Method for Surface Burning Characteristics of Building Materials; 2020.
- F. ASTM E96/E96M - Standard Test Methods for Water Vapor Transmission of Materials; 2016.
- G. ASTM E2178 - Standard Test Method for Air Permeance of Building Materials; 2013.
- H. ICC-ES AC308 - Acceptance Criteria for Water-Resistive Barriers; 2016.

1.05 SUBMITTALS

- A. See Section 01 3000 - Administrative Requirements for submittal procedures.
- B. Product Data: Provide data on material characteristics.
- C. Manufacturer's Installation Instructions: Indicate preparation, installation methods, and storage and handling criteria.

1.06 FIELD CONDITIONS

- A. Maintain temperature and humidity recommended by materials manufacturers before, during, and after installation.

PART 2 PRODUCTS**2.01 AIR BARRIER MATERIALS (WATER VAPOR PERMEABLE AND WATER-RESISTIVE)**

- A. Air Barrier Sheet, Mechanically Fastened:
 - 1. Water Vapor Permeance: <30 perms, maximum, when tested in accordance with ASTM E96/E96M Procedure A (desiccant procedure).
 - 2. Seam and Perimeter Tape: DuPont™ Tyvek® Contractor Tape self adhering type, mesh reinforced, 2 inches wide, compatible with sheet material; unless otherwise specified.
 - 3. Manufacturers:

- a. DuPont Building Innovations; Tyvek Commercial Wrap with Tyvek Fluid Applied Flashing - Brush Formulation, Tyvek Fluid Applied Flashing and Joint Compound, FlexWrap NF, StraightFlash, StraightFlash VF, Tyvek Wrap Caps, and DuPont™ Tyvek® Contractor Tape: www.dupont.com.

2.02 APPLICATIONS

- A. Outside Surface of exterior sheathing: Type mechanically fastened sheet.

2.03 SEALANTS

- A. Silicone: Type S-1 as recommended by Manufacturer.

2.04 ADHESIVES

- A. Adhesive : Compatible with sheet seal and substrate, thick mastic of uniform consistency and furnished consistency .

2.05 ACCESSORIES

- A. Sealants, Tapes, and Accessories Used for Sealing Water-Resistive Barrier and Adjacent Substrates: As indicated or complying with water-resistive barrier manufacturer's installation instructions.
- B. Flexible Flashing: Self-adhesive sheet flashing complying with ASTM D1970/D1970M, except slip resistance requirement is waived if not installed on a roof.
 1. Width: 4 inches.
 2. Products:
 - a. DuPont de Nemours, Inc; FlexWrap: www.dupont.com/building/#sle.
 - b. DuPont de Nemours, Inc; StraightFlash: www.dupont.com/building/#sle.
 - c. DuPont de Nemours, Inc; VersaFlange: www.dupont.com/building/#sle.

PART 3 EXECUTION

3.01 EXAMINATION

- A. Verify that surfaces and conditions comply with requirements of this section.

3.02 PREPARATION

- A. Remove projections, protruding fasteners, and loose or foreign matter that might interfere with proper installation.
- B. Clean and prime substrate surfaces to receive adhesives and sealants in accordance with manufacturer's installation instructions.

3.03 PREINSTALLATION MEETING

- A. Convene no later than three days prior to the commencement of the work of this Section and when surfaces have been adequately prepared and accepted by applicator.
 1. Notify Architect one week in advance.

3.04 INSTALLATION

- A. Install materials in accordance with manufacturer's instructions and as follows
- B. Mechanically Fastened Exterior Sheets:
 1. Install sheets shingle-fashion to shed water, with seams horizontal.
 2. Overlap seams as recommended by manufacturer but no less than 6 inches.
 3. Overlap at outside and inside corners as recommended by manufacturer but no less than 12 inches.
 4. Attach to framed construction with proprietary "Cap" type fasteners extending through sheathing into framing. Space fasteners at 12 inches on center, or the minimum spacing recommended by the manufacturer along each framing member supporting sheathing.
 5. For applications indicated to be airtight, seal seams, laps, penetrations, tears, and cuts with self-adhesive tape; use only large-headed, gasketed fasteners as recommended by manufacturer.
 6. Install water-resistive barrier over jamb flashings.

7. Install head flashings under water-resistive barrier.
 8. At openings to be filled with frames having nailing flanges, wrap excess sheet into opening; at head, seal sheet over flange and flashing with self adhering flashing material.
- C. Openings and Penetrations in Exterior Water-Resistive Barriers:
1. Install flashing over sills, covering entire sill framing member, and extend at least 5 inches onto water-resistive barrier and at least 6 inches up jambs; mechanically fasten stretched edges.
 2. At openings filled with frames having nailing flanges, seal head and jamb flanges using a continuous bead of sealant compressed by flange and cover flanges with sealing tape at least 4 inches wide; do not seal sill flange.
 3. At openings filled with nonflanged frames, seal water-resistive barrier to each side of framing at opening using flashing at least 9 inches wide, and covering entire depth of framing.
 4. At head of openings, install flashing under water-resistive barrier extending at least 2 inches beyond face of jambs; seal water-resistive barrier to flashing.
 5. At interior face of openings, seal gaps between window and door frames and rough framing using appropriate joint sealant over backer rod.
 6. Service and Other Penetrations: Form flashing around penetrating items and seal to surface of water-resistive barrier.

3.05 FIELD QUALITY CONTROL

- A. See Section 01 4000 - Quality Requirements for additional requirements.
- B. Owner's Inspection and Testing: Cooperate with Owner's testing agency.
 1. Allow access to work areas and staging.
 2. Notify Owner's testing agency in writing of schedule for work of this section to allow sufficient time for testing and inspection.
 3. Do not cover work of this section until testing and inspection is accepted.
- C. Do not cover installed water-resistive barriers until required inspections have been completed.
- D. Obtain approval of installation procedures from water-resistive barrier manufacturer based on a mock-up installed in place, prior to proceeding with remainder of installation.
- E. Take digital photographs of each portion of installation prior to covering up weather barriers.

3.06 PROTECTION

- A. Do not leave materials exposed to weather longer than recommended by manufacturer.

3.07 INSTALLATION

- A. Install materials in accordance with manufacturer's instructions.
- B. Install air and vapor seal materials and assemblies in conjunction with materials described in other sections to provide continuous sealed barrier in the exterior enclosure of the building.
- C. Sprayed Coating: Fill large joints; tape joints in substrate and between dissimilar materials; install sprayed coating over entire exterior surface; seal to adjacent construction with compatible sheet.
- D. Exterior Masonry Veneer: Install masonry anchors before installing air/vapor retarder; seal around anchors airtight.
- E. At junction of exterior wall and roof join wall seal to roof deck and seal.
- F. At window, door, and louver openings install self adhered sheet seal between frame and adjacent wall seal material and attach with adhesive. Seal laps with proprietary joint tape. Position lap seal over firm bearing.
- G. Apply sealants and adhesives within recommended application temperature ranges. Consult manufacturer if temperature is out of this range.

END OF SECTION 07 2510

SECTION 07 8400**FIRESTOPPING****PART 1 GENERAL****1.01 SECTION INCLUDES**

- A. Firestopping systems.
- B. Firestopping of joints and penetrations in fire-resistance-rated and smoke-resistant assemblies, whether indicated on drawings or not, and other openings indicated.

1.02 RELATED REQUIREMENTS

- A. Section 01 6116 - Volatile Organic Compound (VOC) Content Restrictions.
- B. Section 01 7000 - Execution Requirements: Cutting and patching.
- C. Section 07 8100 - Applied Fire Protection.
- D. Section 09 2116 - Gypsum Board Assemblies: Gypsum wallboard fireproofing.

1.03 REFERENCE STANDARDS

- A. ASTM E119 - Standard Test Methods for Fire Tests of Building Construction and Materials; 2020.
- B. ASTM E814 - Standard Test Method for Fire Tests of Penetration Firestop Systems; 2013a (Reapproved 2017).
- C. ASTM E1966 - Standard Test Method for Fire-Resistive Joint Systems; 2015 (Reapproved 2019).
- D. ASTM E2174 - Standard Practice for On-Site Inspection of Installed Firestop Systems; 2020a.
- E. ASTM E2393 - Standard Practice for On-Site Inspection of Installed Fire Resistive Joint Systems and Perimeter Fire Barriers; 2020.
- F. ASTM E2307 - Standard Test Method for Determining Fire Resistance of Perimeter Fire Barriers Using Intermediate-Scale, Multi-story Test Apparatus; 2020.
- G. ASTM E2837 - Standard Test Method for Determining the Fire Resistance of Continuity Head-of-Wall Joint Systems Installed Between Rated Wall Assemblies and Nonrated Horizontal Assemblies; 2013 (Reapproved 2017).
- H. ITS (DIR) - Directory of Listed Products; current edition.
- I. FM 4991 - Approval Standard for Firestop Contractors; 2013.
- J. FM (AG) - FM Approval Guide; current edition.
- K. SCAQMD 1168 - Adhesive and Sealant Applications; 1989 (Amended 2017).
- L. UL 2079 - Standard for Tests for Fire Resistance of Building Joint Systems; Current Edition, Including All Revisions.
- M. UL (DIR) - Online Certifications Directory; Current Edition.
- N. UL (FRD) - Fire Resistance Directory; Current Edition.

1.04 SUBMITTALS

- A. See Section 01 3000 - Administrative Requirements for submittal procedures.
- B. Schedule of Firestopping: List each type of penetration, fire rating of the penetrated assembly, and firestopping test or design number.
- C. Product Data: Provide data on product characteristics, performance ratings, and limitations.
- D. Manufacturer's Installation Instructions: Indicate preparation and installation instructions.
- E. Manufacturer's Certificate: Certify that products meet or exceed specified requirements.
- F. Manufacturer's qualification statement.
- G. Installer's qualification statement.

1.05 QUALITY ASSURANCE

- A. Fire Testing: Provide firestopping assemblies of designs that provide the scheduled fire ratings when tested in accordance with methods indicated.
 - 1. Listing in UL (FRD), FM (AG), or ITS (DIR) will be considered as constituting an acceptable test report.
 - 2. Valid evaluation report published by ICC Evaluation Service, Inc. (ICC-ES) at www.icc-es.org will be considered as constituting an acceptable test report.
- B. Manufacturer Qualifications: Company specializing in manufacturing the products specified in this section with minimum three years documented experience.
- C. Installer Qualifications: Company specializing in performing the work of this section and:
 - 1. Verification of minimum three years documented experience installing work of this type.
 - 2. Verification of at least five satisfactorily completed projects of comparable size and type.
 - 3. Licensed by local authorities having jurisdiction (AHJ).
 - 4. Approved by firestopping manufacturer.
- D. Installing Mechanic's Qualifications: Trained by firestopping manufacturer and able to provide evidence thereof.

1.06 MOCK-UPS

- A. Install one firestopping assembly representative of each fire rating design required on project.
 - 1. Where one design may be used for different penetrating items or in different wall constructions, install one assembly for each different combination.
 - 2. Where firestopping is intended to fill a linear opening, install at least 1 linear foot of firestopping.
- B. Obtain approval of authorities having jurisdiction (AHJ) before proceeding.
- C. If accepted, mock-up will represent minimum standard for this work.
- D. If accepted, mock-up may remain as part of this work. Remove and replace mock-ups not accepted.

1.07 FIELD CONDITIONS

- A. Comply with firestopping manufacturer's recommendations for temperature and conditions during and after installation; maintain minimum temperature before, during, and for three days after installation of materials.
- B. Provide ventilation in areas where solvent-cured materials are being installed.

PART 2 PRODUCTS**2.01 MATERIALS**

- A. Manufacturers:
 - 1. A/D Fire Protection Systems Inc.: www.adfire.com.
 - 2. 3M Fire Protection Products: www.3m.com/firestop.
 - 3. Nelson FireStop Products: www.nelsonfirestop.com.
 - 4. Specified Technologies, Inc.: www.stifirestop.com.
 - 5. NOTE: Contractors and sub-contractors to use same manufacturer's systems for all applicable firestopping.
- B. Mold and Mildew Resistance: Provide firestopping materials with mold and mildew resistance rating of zero(0) in accordance with ASTM G21.
- C. Primers, Sleeves, Forms, Insulation, Packing, Stuffing, and Accessories: Provide type of materials as required for tested firestopping assembly.
- D. Fire Ratings: Refer to drawings for required systems and ratings.

2.02 FIRESTOPPING ASSEMBLY REQUIREMENTS

- A. Perimeter Fire Containment Firestopping: Use system that has been tested according to ASTM E2307 to have fire resistance F Rating equal to required fire rating of floor assembly.

1. Movement: Provide systems that have been tested to show movement capability as indicated.
 2. Temperature Rise: Provide systems that have been tested to show T Rating as indicated.
 3. Air Leakage: Provide systems that have been tested to show L Rating as indicated.
 4. Where floor assembly is not required to have a fire rating, provide systems that have been tested to show L Rating as indicated.
- B. Head-of-Wall (HW) Joint System Firestopping at Joints Between Fire-Rated Wall Assemblies and Non-Rated Horizontal Assemblies: Use system that has been tested according to ASTM E2837 to have fire resistance F Rating equal to required fire rating of wall assembly.
1. Movement: Provide systems that have been tested to show movement capability as indicated.
- C. Floor-to-Floor (FF), Floor-to-Wall (FW), Head-of-Wall (HW), and Wall-to-Wall (WW) Joints, Except Perimeter, Where Both Are Fire-Rated: Use system that has been tested according to ASTM E1966 or UL 2079 to have fire resistance F Rating equal to required fire rating of the assembly in which the joint occurs.
1. Movement: Provide systems that have been tested to show movement capability as indicated.
 2. Air Leakage: Provide systems that have been tested to show L Rating as indicated.
 3. Listing by FM (AG), ITS (DIR), UL (DIR), or UL (FRD) in their certification directories will be considered evidence of successful testing.
- D. Through Penetration Firestopping: Use system that has been tested according to ASTM E814 to have fire resistance F Rating equal to required fire rating of penetrated assembly.
1. Temperature Rise: Provide systems that have been tested to show T Rating as indicated.
 2. Air Leakage: Provide systems that have been tested to show L Rating as indicated.
 3. Listing by FM (AG), ITS (DIR), UL (DIR), or UL (FRD) in their certification directories will be considered evidence of successful testing.

2.03 FIRESTOPPING SYSTEMS

- A. Firestopping:
1. Fire Ratings: See drawings for required systems and ratings. Contractors and sub-contractors to use same manufacturer's systems for all applicable firestopping.
- B. Firestopping Between Edge of Floor Slab and Curtain Wall (without Penetrations): Fiber firestopping with smoke seal coating; UL Design No. _____, T Rating 1 hour, T Rating 2 hour.

2.04 MATERIALS

- A. Elastomeric Silicone Firestopping: Single component silicone elastomeric compound and compatible silicone sealant; conforming to the following:
1. Color: red.
 2. Manufacturers:
 - a. Nelson Firestop Products; Product CLK Silicone Sealant www.nelsonfirestop.com.
- B. Fiber Firestopping: Mineral fiber insulation used in conjunction with elastomeric surface sealer forming airtight bond to opening; conforming to the following:
1. Water Absorption: < 1%
 2. Manufacturers:
 - a. Thermafiber; Product Safing Insulation; www.thermafiber.com.
- C. Firestop Devices - Wrap Type: Mechanical device with incombustible filler and sheet stainless steel jacket, collar, and / or galvanized steel collar, intended to be installed after penetrating item has been installed; conforming to the following:
1. Manufacturers:
 - a. Nelson Firestop Products; Product PCS Pipe Choke System www.nelsonfirestop.com.
- D. Firestop Devices - Cast-In Type: Sleeve and sealing material, intended to be cast in concrete floor forms or in concrete on metal deck, not requiring any additional materials to achieve penetration seal.
1. Manufacturers: Basis of Design

- E. Intumescent Putty: Compound that expands on exposure to surface heat gain; conforming to the following:
 - 1. Manufacturers:
 - a. Nelson Firestop Products; Product FSP Fire Stop Putty www.nelsonfirestop.com.
- F. Reusable Firestopping: Removable intumescent compressible shapes, pillows, or blocks specifically tested in removable configuration; conforming to the following:
 - 1. Manufacturers:
 - a. 3M Fire Protection Products Products Fire Barrier Pillow

PART 3 EXECUTION

3.01 EXAMINATION

- A. Verify openings are ready to receive the work of this section.

3.02 PREPARATION

- A. Clean substrate surfaces of dirt, dust, grease, oil, loose material, or other materials that could adversely affect bond of firestopping material.
- B. Remove incompatible materials that could adversely affect bond.

3.03 INSTALLATION

- A. Install materials in manner described in fire test report and in accordance with manufacturer's instructions, completely closing openings.
- B. Do not cover installed firestopping until inspected by Owner's Independent Testing Agency.
- C. Do not cover installed firestopping until inspected by authorities having jurisdiction.
- D. Install labeling required by code.

3.04 CLEANING

- A. Clean adjacent surfaces of firestopping materials.

3.05 PROTECTION

- A. Clean adjacent surfaces of firestopping materials.
- B. Protect adjacent surfaces from damage by material installation.

END OF SECTION 07 8400

SECTION 07 9200**JOINT SEALANTS****PART 1 - GENERAL****1.01 RELATED DOCUMENTS**

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

1.02 SUMMARY

- A. This Section includes sealants for the following:
 1. Interior joints in vertical surfaces and horizontal non-traffic surfaces.
 2. Vertical joints on exposed surfaces of walls.
 3. Perimeter joints between interior wall surfaces and frames of interior doors.
 4. Wall and hard ceiling penetrations.
 5. Joints between miscellaneous assemblies and walls and hard ceilings.
 6. See Division 8 Section for glazing gaskets.

1.03 SUBMITTALS

- A. Product Data: For each joint-sealant product indicated.
- B. Product Certificates: For each type of joint sealant and accessory, signed by product manufacturer.
- C. SWRI Validation Certificate: For each elastomeric sealant specified to be validated by SWRI's Sealant Validation Program.
- D. Compatibility and Adhesion Test Reports: From sealant manufacturer, indicating the following:
 1. Materials forming joint substrates and joint-sealant backings have been tested for compatibility and adhesion with joint sealants.
- E. Product Test Reports: Based on comprehensive testing of product formulations performed by a qualified testing agency, indicating that sealants comply with requirements.

1.04 QUALITY ASSURANCE

- A. Sealant Compatibility and Adhesion Testing: Use sealant manufacturer's standard test methods to determine whether priming and other specific joint preparation techniques are required to obtain rapid, optimum adhesion of joint sealants to joint substrates.
 1. Regardless of specification requirements for sealants, verify compatibility of each sealant with its respective substrates. Provide only materials known to be fully compatible with actual conditions of service. Advise Project Officer of any recommended revisions to specifications resulting from this requirement.
- B. Sealant Matrix: Use Sealant Matrix developed by the National Institutes of Health (NIH) attached to end of this specification section to determine appropriate sealant for each use. Advise the University if any deviations from Sealant Matrix are recommended due to incompatibility of substrate or other professional judgement concern.

PART 2 - PRODUCTS**2.01 MANUFACTURERS**

- A. Available Products: Subject to compliance with requirements, products that may be incorporated into the Work include, but are not limited to, the products specified.

2.02 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.

2.03 ELASTOMERIC JOINT SEALANTS

- A. Interior Joints: Paintable, siliconized latex sealant complying with performance requirements of ASTM C834:
 - 1. Available products include but are not limited to:
 - a. Tremco, Tremflex 834 Siliconized Acrylic Latex Sealant.
 - b. Silicones Unlimited, SU3000 Siliconized Latex Caulk.
 - c. AllPro Corporation, PRO 40 Siliconized Latex Sealant.
 - 2. Joint Movement: Minimum +/- 10% of manufacturers recommended minimum joint width.
 - 3. Color (Painted Applications): White, do not paint sealant until thoroughly inspected and accepted.
- B. Color (Non-Painted Applications): Clear.

2.04 JOINT-SEALANT BACKING

- A. General: 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.
- B. Retain or revise first paragraph below. Tubing is used as temporary seal and secondary water barrier. Verify acceptability of tubing for sealants selected. See Evaluations.
- C. Elastomeric Tubing Sealant Backings: Neoprene, butyl, EPDM, or silicone tubing complying with ASTM D 1056, non-absorbent to water and gas, and capable of remaining resilient at temperatures down to minus 26 deg F (minus 32 deg C). Provide products with low compression set and of size and shape to provide a secondary seal, to control sealant depth, and otherwise contribute to optimum sealant performance.
- D. 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.

2.05 MISCELLANEOUS MATERIALS

- A. Generally retain first paragraph below unless it is known that priming of substrates is not required with sealants specified. Purpose of primers is to improve adhesion of sealant to substrate.
- B. 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.
- C. 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 with joint substrates.
- D. Masking Tape: Non-staining, nonabsorbent material compatible with joint sealants and surfaces adjacent to joints.

PART 3 - EXECUTION**3.01 INSTALLATION**

- A. Surface Cleaning of Joints: Clean out joints immediately before installing joint sealants.
 - 1. Remove foreign material from joint substrates that could interfere with adhesion of joint sealant.
 - 2. 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 from above cleaning operations by vacuuming or blowing out joints with oil-free compressed air.
 - 3. Remove laitance and form-release agents from concrete.

4. Clean nonporous surfaces with chemical cleaners or other means that do not stain, harm substrates, or leave residues could interfere with adhesion of joint sealants.
- B. Joint Priming: Prime joint substrates where recommended in writing by joint sealant manufacturer, based on preconstruction joint-sealant-substrate tests or prior experience. Confine primers to areas of joint-sealant bond; do not allow spillage or migration onto adjoining surfaces.
- C. Delete first paragraph below if not required.
- D. 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.
- E. Sealant Installation: Comply with recommendations in ASTM C 1193 for use of joint sealants as applicable to materials, applications, and conditions indicated.
- F. Install sealant backings to support sealants during application and at position required to produce 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.
- G. Retain first paragraph below for sealants installed in moving joints without sealant backings.
- H. Install bond-breaker tape behind sealants where sealant backings are not used between sealants and back of joints.
- I. Place sealants so they directly contact and fully wet joint substrates.
 1. Completely fill recesses provided for each joint configuration.
 2. Produce uniform, cross-sectional shapes and depths that allow optimum sealant movement capability.
- J. Tooling of Non-sag Sealants: Immediately after sealant application and before skinning or curing begins, tool sealants to form smooth, uniform beads, to eliminate air pockets, and to ensure contact and adhesion of sealant with sides of joint.
 1. Remove excess sealants from surfaces adjacent to joint.
 2. Use tooling agents that are approved by sealant manufacturer and that do not discolor sealants or adjacent surfaces.
 3. Joint Configuration: Concave joint configuration per Figure 5A in ASTM C 1193, unless
 4. otherwise indicated.
- K. Clean excess sealants or sealant smears adjacent to joints as installation progresses by methods and with cleaning materials approved in writing by manufacturers of joint sealants and of products in which joints occur.

3.02 PART 4 - SEALANT SCHEDULE

- A. Provide sealant at all joints listed in the ABSL-2 column of the attached NIH Sealant Table.

END OF SECTION 07 9200

SECTION 07 9220**WEATHERSEAL JOINT SEALANT REHABILITATION AND REPLACEMENT****PART 1 - GENERAL****1.01 SECTION INCLUDES**

- A. Nonsag gunnable joint sealants.
- B. Joint backings and accessories.
- C. Owner-provided field quality control.
- D. Manufacturer-provided field quality control.

1.02 SUMMARY

- A. This Section Includes and is based upon the following assumption:
- B. One hundred percent (100%) of the exterior sealant joints in the building exhibit varying modes of failure and/or deterioration, therefore the general condition of the sealant based on its age and visual condition is considered to have passed the end of its service life and the best, most economic option is to entirely remove and restore all building joint seals and related materials as directed by the Architect.
 - 1. Removal, substrate preparation and replacement of failed and aged exterior elastomeric weatherproofing sealant materials.

1.03 RELATED SECTIONS:

- A. Section 07 9200 - Joint Sealants" for requirements for new joint sealant applications into prepared existing locations.

1.04 REFERENCE STANDARDS

- A. ASTM International (ASTM): www.astm.org :
 - 1. ASTM C 661 - Standard Test Method for Indentation Hardness of Elastomeric Type Sealants by Means of a Durometer.
 - 2. ASTM C 719 - Standard Test Method for Adhesion and Cohesion of Elastomeric Joint Sealants under Cyclic Movement (Hockman Cycle).
 - 3. ASTM C 920 - Specification for Elastomeric Joint Sealants.
 - 4. ASTM C 1135 - Standard Test Method for Determining Tensile Adhesion Properties of Structural Sealants.
 - 5. ASTM C 1184 - Standard Specification for Structural Silicone Sealants.
 - 6. ASTM C 1193 - Standard Guide for Use of Joint Sealants.
 - 7. ASTM C 1248 - Test Method for Staining of Porous Substrate by Joint Sealants.
 - 8. ASTM C 1330 - Cylindrical Sealant Backing for Use with Cold Liquid Applied Sealants.
 - 9. ASTM D 2240 - Standard Test Method for Rubber Property - Durometer Hardness.
 - 10. ASTM D 412 - Standard Test Methods for Vulcanized Rubber and Thermoplastic Elastomers - Tension.
- B. Sealant, Waterproofing, and Restoration Institute (SWRI): www.swrionline.org.
 - 1. SWRI Validation Program.

1.05 ADMINISTRATIVE REQUIREMENTS

- A. Coordination: Coordinate installation of joint sealants with cleaning of joint sealant substrates and other operations that may impact installation or finished joint sealant work.
- B. Preinstallation Conference: Conduct conference at Project Site.

1.06 ACTION SUBMITTALS

- A. Product Data: For each type of joint sealant product specified, including:
 - 1. Preparation instructions and recommendations.
 - 2. Standard drawings illustrating manufacturer's recommended sealant joint profiles and dimensions applicable to Project.

- B. Joint Sealant Schedule: Indicate joint sealant location, joint sealant type, manufacturer and product name, and color, for each application. Utilize joint sealant designations included in this Section.
- C. Samples for Color Selection: For each joint sealant type.
- D. Samples for Verification: For each exterior joint sealant product, for each color selected.
- E. Maintain one copy of each referenced document covering installation requirements on site.
- F. Manufacturer Qualifications: Company specializing in manufacturing the products specified in this section with minimum three years documented experience.
- G. Installer Qualifications: Company specializing in performing the work of this section and with at least three years of documented experience.
- H. Preconstruction Laboratory Testing: Arrange for sealant manufacturer(s) to test each combination of sealant, substrate, backing, and accessories.
 - 1. Adhesion Testing: In accordance with 1.
 - 2. Compatibility Testing: In accordance with 1.
 - 3. Stain Testing: In accordance with 1; required only for stone substrates.
 - 4. Allow sufficient time for testing to avoid delaying the work.
 - 5. Deliver to manufacturer sufficient samples for testing.
 - 6. Report manufacturer's recommended corrective measures, if any, including primers or techniques not indicated in product data submittals.
 - 7. Testing is not required if sealant manufacturer provides data showing previous testing, not older than 24 months, that shows satisfactory adhesion, lack of staining, and compatibility.
- I. Installation Plan: Include schedule of sealed joints, including the following.
 - 1. Joint width indicated in contract documents and / or required by as built conditions.
 - 2. Joint depth indicated estimated by existing width of existing joints and the required depth to face of backing material at centerline of joint.
 - 3. Method to be used to protect adjacent surfaces from sealant droppings and smears, with acknowledgement that some surfaces cannot be cleaned to like-new condition and therefore prevention is imperative.
 - 4. Approximate date of installation, for evaluation of thermal movement influence.
 - 5. Installation Log Form: Include the following data fields, with known information filled out.
 - a. Unique identification of each length or instance of sealant installed.
 - b. Location on project.
 - c. Substrates.
 - d. Sealant used.
 - e. Stated movement capability of sealant.
 - f. Primer to be used, or indicate as "No primer" used.
 - g. Size and actual backing material used.
 - h. Date of installation.
 - i. Name of installer.
 - j. Actual joint width; provide space to indicate maximum and minimum width.
 - k. Actual joint depth to face of backing material at centerline of joint.
 - l. Air temperature.
- J. Preinstallation Field Adhesion Test Plan: Include destructive field adhesion testing of one sample of each combination of sealant type and substrate, except interior acrylic latex sealants, and include the following for each tested sample.
 - 1. Identification of testing agency.
 - 2. Name(s) of sealant manufacturers' field representatives who will be observing
 - 3. Preinstallation Field Adhesion Test Log Form: Include the following data fields, with known information filled out.

- a. Substrate; if more than one type of substrate is involved in a single joint, provide two entries on form, for testing each sealant substrate side separately.
- b. Test date.
- c. Location on project.
- d. Sealant used.
- e. Stated movement capability of sealant.
- f. Test method used.
- g. Date of installation of field sample to be tested.
- h. Date of test.
- i. Copy of test method documents.
- j. Age of sealant upon date of testing.
- k. Test results, modeled after the sample form in the test method document.
- l. Indicate use of photographic record of test.

1.07 QUALITY ASSURANCE

- A. Owner will employ an independent testing agency to perform the field quality control inspection and testing as referenced in PART 3 of this section and as follows, to prepare and submit the field quality control plan and log, and to provide recommendations of remedies in the case of failure.
 1. Contractor shall cooperate with testing agency and repair failures discovered and destructive test location damage.
- B. Field Quality Control Plan:
 1. Visual inspection of entire length of sealant joints.
 2. Non-destructive field adhesion testing of sealant joints, except interior acrylic latex sealants.
 - a. For each different sealant and substrate combination, allow for one test every 12 inches in the first 10 linear feet of joint and one test every 72 inches thereafter.
 - b. If any failures occur in the first 10 linear feet, continue testing at 12 inch intervals at no extra cost to Owner.
 3. Field testing agency's qualifications.
 4. Field Quality Control Log Form: Show same data fields as on Preinstallation Field Adhesion Test Log, with known information filled out and lines for multiple tests per sealant/substrate combinations; include visual inspection and specified field testing; allow for possibility that more tests than minimum specified may be necessary.
- C. Field Adhesion Test Procedures:
 1. Allow sealants to fully cure as recommended by manufacturer before testing.
 2. Have a copy of the test method document available during tests.
 3. Take photographs or make video records of each test, with joint identification provided in the photos/videos; for example, provide small erasable whiteboard positioned next to joint.
 4. Record the type of failure that occurred, other information required by test method, and the information required on the Field Quality Control Log.
 5. When performing destructive tests, also inspect the opened joint for proper installation characteristics recommended by manufacturer, and report any deficiencies.
 6. Deliver the samples removed during destructive tests in separate sealed plastic bags, identified with project, location, test date, and test results, to Owner.
 7. If any combination of sealant type and substrate does not show evidence of minimum adhesion or shows cohesion failure before minimum adhesion, report results to Architect.
- D. Non-Destructive Field Adhesion Test: Test for adhesion in accordance with 1, using Nondestructive Spot Method.
 1. Record results on Field Quality Control Log.
 2. Repair failed joints, having a length of 48 inches, or less.
 3. Repair failed portions of joints having increments of 48 inches or more.

- E. Destructive Field Adhesion Test: Test for adhesion in accordance with 1, using Destructive Tail Procedure.
 - 1. Sample: At least 18 inch long.
 - 2. Minimum Elongation Without Adhesive Failure: Consider the tail at rest, not under any elongation stress; multiply the stated movement capability of the sealant in percent by two; then multiply 1 inch by that percentage; if adhesion failure occurs before the "1 inch mark" is that distance from the substrate, the test has failed.
 - 3. If either adhesive or cohesive failure occurs prior to minimum elongation, take necessary measures to correct conditions and re-test; record each modification to products or installation procedures.
 - 4. Record results on Field Quality Control Log.
 - 5. Repair failed portions of joints in their entirety..
- F. Field Adhesion Tests of Joints: Test for adhesion using most appropriate method in accordance with 1, or other applicable method as recommended by manufacturer.

1.08 INFORMATIONAL SUBMITTALS

- A. Qualification Data: For qualified applicator.
- B. Sealant, Waterproofing, and Restoration Institute (SWRI) Validation Certificate: For each sealant specified to be validated by SWRI's Sealant Validation Program.
- C. Preconstruction compatibility and adhesion test reports.
- D. Preconstruction field-adhesion test reports.
- E. Field quality control adhesion test reports.
- F. Warranty: Sample of unexecuted manufacturer and installer special warranties.

1.09 QUALITY ASSURANCE

- A. Installer Qualifications: Experienced Installer equipped and trained for application of joint sealants required for this Project with record of successful completion of projects of similar scope.
- B. Single Source Responsibility: Provide exterior joint sealants by a single manufacturer responsible for testing of Project substrates to verify compatibility and adhesion of joint sealants.
- C. Preconstruction Compatibility, Staining, and Adhesion Testing: Submit [four] samples of material that will be in contact with or affect joint sealants. Test sealants with substrate materials using manufacturer's standard test method to determine requirements for joint preparation, including priming. Test sealants with related materials to verify compatibility.
- D. Preconstruction Field-Adhesion Testing: Prior to installing joint sealants, field test adhesion to joint substrates using ASTM C 1193 Method A or method recommended by manufacturer. Verify adhesion is adequate. Modify joint preparation recommendations for failed joints and re-test. Submit written report to Architect.
- E. Mockups: Provide joint sealant application within mockups required in other sections identical to specified joint sealants and installation methods.

1.10 VERIFICATION OF FIELD CONDITIONS

- A. Contractor and Installer shall be aware that existing joint sealant, backer materials and adjacent surfaces may be found to contain hazardous materials such as asbestos or PCBs.
- B. Owner shall verify that Hazardous Materials Testing has been done and indicates that materials to be removed or rehabilitated do not contain hazardous materials.
 - 1. If suspected hazardous materials are encountered, do not disturb materials, and immediately notify Architect and Owner.
 - a. Contractor shall obtain and Owner shall pay for additional testing in order to determine the presence of undiscovered hazardous material.

1.11 WARRANTY

- A. Special Installer's Warranty: Original statement on Installer's letterhead in which Installer agrees to repair or replace joint sealants that demonstrate deterioration or failure within warranty period specified shall include inadequate substrate and joint preparation.
 - 1. Warranty Period: Four years from date of Substantial Completion.
- B. Special Manufacturer's Warranty: Manufacturer's standard form in which joint sealant manufacturer agrees to furnish joint sealants to repair or replace those that demonstrate deterioration or failure under normal use within warranty period specified.
 - 1. Warranty Period for Silicone Sealants: 20 years date of Substantial Completion.
- C. Warranty Conditions: The above Special Warranty provisions exclude deterioration or failure of joint sealants in normal use due to structural movement resulting in stresses on joint sealants exceeding sealant manufacturer's written specifications, mechanical damage, or normal accumulation of dirt or other contaminants.

PART 2 - PRODUCTS**2.01 MANUFACTURERS**

- A. Gunnable and Pourable Sealants - Basis of Design:
 - 1. The Dow Chemical Company DOWSIL® Contractors Weatherproofing Sealant: www.dowcorning.com.
- B. Gunnable and Pourable Sealants - Other Acceptable Manufacturers
 - 1. BASF Construction Chemicals-Building Systems: www.buildingsystems.basf.com.
 - 2. Tremco Global Sealants: www.tremcosealants.com.
 - 3. Sika Corporation: www.usa-sika.com.
- C. Silicone Sealants: Purpose and application as indicated: Basis of Design Product:
 - 1. DOWSIL® ; Product 790 Silicone Building Sealant; General Purpose: Color : CUSTOM www.dowcorning.com.
 - 2. DOWSIL® ; Product 756 SMS Building Sealant; Mold and Mildew Resistant:Color : CUSTOM [:www.dowcorning.com](http://www.dowcorning.com).
 - 3. DOWSIL® ; Product 791 Silicone Weatherproofing Sealant; Glazing applications, Curtainwall components, building facade:Color : CUSTOM www.dowcorning.com.
 - 4. DOWSIL® Product 795 Silicone Building Sealant: Structural and non-structural glazing, structural attachment for panel systems and above-grade weathersealing joints most common constructions materials:Color : CUSTOM www.dowcorning.com.
 - 5. DOWSIL® Product 758 Silicone Weather Barrier Sealant: Above-grade weathersealing joints with compatible with construction materials, including peel-and-stick window flashings, building wraps, polyolefins, and PVCs :Color : As selected from Manufacturer's standard colors: www.dowcorning.com
- D. Silicone Sealants: Purpose and application as indicated: Other Acceptable Manufacturers Subject to Compliance With Requirements:
 - 1. BASF Construction Chemicals-Building Systems: www.buildingsystems.basf.com.
 - 2. Tremco Commercial Sealants and Waterproofing; www.tremcosealants.com.
 - 3. Sika Corporation: www.usa-sika.com.
 - 4. Substitutions: See Section 01 6000 - Product Requirements.

2.02 MATERIALS, GENERAL

- A. Compatibility: Provide joint sealants and accessory materials that are compatible with one another, with joint substrates, and with materials in close proximity under use conditions, as demonstrated by sealant manufacturer by testing and related experience.
- B. Joint Sealant Standard: Comply with ASTM C 920 and other specified requirements for each liquid-applied joint sealant.

- C. Stain Test Characteristics: Where sealants are required to be nonstaining, provide sealants tested per ASTM C 1248 as non-staining on porous joint substrates indicated for Project.
- D. Provide: ASTM C 920 Joint Sealant Use Types, Grades, Classes, and Uses that are used in reference specifications below are as follows:
- E. Type S: Single component: ultra-low modulus, neutral-cure, silicone rubber
- F. Type S: Single component, medium-modulus, neutral-cure silicone sealant
- G. Grade NS: Non-sag
- H. Class XX: Movement capability, percent
- I. Class XX/YY: Movement capability, percent, expansion/contraction
- J. Substrate Use G: Glass
- K. Substrate Use M: Mortars
- L. Substrate Use A: Aluminum
- M. Substrate Use O: Other

2.03 ACCESSORIES

- A. Joint Substrate Cleaners and Primers: Use only substrate preparation and primer materials which are recommended or provided by sealant manufacturer for application.
- B. Cylindrical Sealant Backing: ASTM C 1330, Type B non-absorbent, bi-cellular material with surface skin, or Type O open-cell polyurethane, as recommended by sealant manufacturer for application.
- C. Bond Breaker Tape: Polymer tape compatible with joint sealant materials and recommended by sealant manufacturer.

PART 3 - EXECUTION

3.01 EXAMINATION

- A. Examination of Existing Joint Sealants: Examine existing joint sealants and indicate extent of joint sealant replacement and rehabilitation on shop drawings. Examine joints for compliance with requirements for joint configuration, installation tolerances, condition of joint substrate, and other conditions affecting joint-sealant performance.
- B. Preinstallation Testing: Perform preinstallation adhesion tests in accordance with manufacturer's instructions and with ASTM C 1193, Method A. Verify substrate preparation and priming result in adhesion of sealants meeting sealant manufacturer's published performance data.
 - 1. If adhesion does not comply with published data, modify preparation and priming in accordance with sealant manufacturer's written instructions and retest.
- C. Submit report indicating conditions that cannot be corrected to comply with joint sealant manufacturer's recommendations as part of the specified joint replacement or rehabilitation. Proceed with work once non-complying conditions are corrected.

3.02 PREPARATION

- A. Removal of Failed Joint Sealant Materials: Cut out and completely remove joint materials and associated backing materials as indicated on drawings and required by existing field conditions as well as those identified during pre-installation conference].
- B. Surface Cleaning of Joint Substrates: Clean out joints immediately before installing joint sealants to comply with joint-sealant manufacturer's written instructions and the following requirements:
 - 1. Remove all foreign material from joint substrates that could interfere with adhesion of joint sealant, including dust, paints (except for permanent, protective coatings tested and approved for sealant adhesion and compatibility by sealant manufacturer), old joint sealants, oil, grease, waterproofing, water repellents, water, surface dirt, and frost.

2. Clean porous joint substrate surfaces by brushing, grinding, mechanical abrading, or a combination of these methods in addition to solvent cleaning 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. Remove laitance and form-release agents from concrete.
3. Clean porous and nonporous joint substrate surfaces with chemical cleaners or other means that do not stain, harm substrates, or leave residues capable of interfering with adhesion of joint sealants.

3.03 APPLICATION

- A. Masking: Mask adjacent surfaces to prevent staining or damage by contact with sealant or primer.
- B. Joint Priming: Prime joint substrates when recommended by sealant manufacturer or when indicated by preconstruction testing or experience. Apply recommended primer using sealant manufacturer's recommended application techniques.
- C. Joint Backing: Select joint backing materials recommended by sealant manufacturer to be compatible with sealant material. Install backing material at depth required to produce profile of joint sealant allowing optimal sealant movement.
 1. Install bond breaker tape over substrates when sealant backings are not used.
- D. Sealant Application: Install sealants using methods recommended by sealant manufacturer, in depths between 1/4 and 1/2 inch (6.4 and 12.7 mm) unless otherwise recommended for application. Apply in continuous operation from bottom to top of joint vertically and horizontally in a single direction. Apply using adequate pressure to fill and seal joint width.
 1. Tool sealants immediately with appropriately shaped tool to force sealants against joint backing and joint substrates, eliminating voids and ensuring full contact.
 2. Using tooling agents approved by sealant manufacturer for application.
- E. Note: Depending on substrate, primers may or may not be required to promote sealant adhesion. Testing should be conducted to determine optimum adhesion and if primer is required. Contact Sealant Manufacturer for primer recommendations.
- F. Primer: Apply primer to substrates determined by manufacturer's recommended adhesion test to require primer. Apply in accordance with manufacturer's instructions.
- G. Sealant: Apply bead of silicone sealant on each side of joint and 1/4 inch (6 mm) inside of applied masking tape, with minimum bonding area of 3/8 inch (9 mm), and minimum bead size as follows:
 1. Rough substrate: 0.25 inch (6 mm).
 2. Smooth substrate: 0.125 inch (3 mm).
- H. Silicone Seal: Within 10 minutes of sealant application, press silicone extrusion into wet sealant. Apply consistent pressure with roller to ensure uniform contact.
- I. Complete horizontal joints prior to vertical joints. Lap vertical seal over seal on horizontal joint.

3.04 CLEANING

- A. Cleaning: Remove excess sealant using materials and methods approved by sealant manufacturer that will not damage joint substrate materials.
 1. Remove masking tape immediately after tooling joint without disturbing seal.
 2. Remove excess sealant from nonporous surfaces while still uncured.

3.05 FIELD QUALITY CONTROL

- A. [Retain] [Owner may retain] testing agency to perform the following tests:
 1. Verification that substrate preparation meets requirements.
 2. Testing and certification that joint sealant materials comply with requirements.
 3. Testing of application for compliance with adhesion requirements.
- B. Field-Adhesion Testing: Perform adhesion tests in accordance with manufacturer's instructions and with ASTM C 1193, Method A.

1. Perform [5] tests for the first [1000 feet (300 m)] of joint length for each kind of sealant and joint substrate, and one test for each [1000 feet (300 m)] of joint length thereafter or 1 test per each floor per building elevation, minimum.
 2. For sealant applied between dissimilar materials, test both sides of joint.
- C. Remove sealants failing adhesion test, clean substrates, reapply sealants, and re-test. Test adjacent sealants to failed sealants.
- D. Submit report of field adhesion testing indicating tests, locations, dates, results, and remedial actions taken.

3.06 EXTERIOR JOINT-SEALANT SCHEDULE

- A. Joint Sealant: Single-component neutral-curing non-staining silicone JS# 1 :DOW CORNING® 790_.
1. Joint-Sealant Color: Match Architect's custom color.
 2. Exterior joints in metal panel cladding systems.
 3. Exterior movement joints in concrete unit masonry, or movement joints in CIP Concrete.
- B. Joint Sealant: Single-component neutral-curing non-staining silicone JS# 2, 2a: DOW CORNING® 790 or 795_.
1. Joint-Sealant Color: Match Architect's custom color.
 2. Exterior movement joints in brick, stone or concrete masonry.
- C. Joint Sealant: Single-component neutral-curing non-staining silicone JS#3, 3a, or 3b: DOW CORNING® 790, 756, or 795_.
1. Joint-Sealant Color: As selected by Architect from manufacturer's full range Match Architect's custom color.
 2. Exterior joints at stain, or mold and mildew sensitive materials, Stone Masonry, EIFS, or Stucco within exterior insulation finish systems.
- D. Joint Sealant: Single-component neutral-curing non-staining silicone JS# 4: _DOW CORNING® 756_.
1. Joint-Sealant Color: Match Architect's custom color.
 2. Exterior concealed watertight joints in cladding systems.
- E. Joint Sealant: Single-component neutral-curing silicone JS#_5_ DOW CORNING® 791.
1. Exterior joints between different materials listed above.
 2. Joint-Sealant Color: As selected by Architect from manufacturer's full range
 3. olor:
- F. Joint Sealant: Single-component neutral-curing non-staining silicone JS#6,6a, 6b DOW CORNING® 790, 756, or 795_.
1. Joint-Sealant Joint-Sealant Color: As selected by Architect from manufacturer's full range.
 2. Multiple colors required to match several conditions.
 3. Exterior perimeter joints at frames of doors, windows, storefront frames, curtain wall frames, and louvers.
- G. Joint Sealant: Single-component neutral-curing non-staining silicone JS#7, 7a_ DOW CORNING® 795, or 756_.
1. Joint-Sealant Color: As selected by Architect from manufacturer's full range .
 2. Multiple colors required to match several conditions.
 3. Aluminum Storefront Framing and Curtain Wall Joints, Glazing, and Structural Glazing: .
 4. All other exterior non-traffic joints.
- H. Joint Sealant: Single-component neutral-curing silicone JS# 8_ DOW CORNING® 790_.
1. Exterior horizontal traffic and traffic isolation joints [: Refer to Division 32 Section: Concrete Paving Joint Sealants].
 2. Joint-Sealant Color: As selected by Architect from manufacturer's full range

END OF SECTION 07 9220

SECTION 08 1115**INSULATED STEEL ENTRY DOORS****PART 1 GENERAL****1.01 SECTION INCLUDES**

- A. Fire rated 5 panel steel doors and frames at unit entrance doors.
- B. Accessories, including glazing.

1.02 RELATED REQUIREMENTS

- A. Section 08 7100 - Door Hardware.
- B. Section 08 8000 - Glazing: Glass for doors and borrowed lites.
- C. Section 09 9000 - Painting and Coating: Field painting.

1.03 REFERENCE STANDARDS

- A. ANSI/ICC A117.1 - American National Standard for Accessible and Usable Buildings and Facilities; International Code Council; 2009.
- B. ANSI A250.3 - Test Procedure and Acceptance Criteria for Factory-Applied Finish Painted Steel Surfaces for Steel Doors and Frames; 2007 (R2011).
- C. ANSI A250.8 - SDI-100 Recommended Specifications for Standard Steel Doors and Frames; 2003.
- D. ANSI A250.10 - Test Procedure and Acceptance Criteria for Prime Painted Steel Surfaces for Steel Doors and Frames; 1998 (R2011).
- E. ASTM A653/A653M - Standard Specification for Steel Sheet, Zinc-Coated (Galvanized) or Zinc-Iron Alloy-Coated (Galvannealed) by the Hot-Dip Process; 2011.
- F. ASTM C236 - Standard Test Method for Steady-State Thermal Performance of Building Assemblies by Means of a Guarded Hot Box; 1989 (Reapproved 1993).
- G. ASTM C1363 - Standard Test Method for Thermal Performance of Building Assemblies by Means of a Hot Box Apparatus; 2011.
- H. BHMA A156.115 - Hardware Preparation in Steel Doors and Steel Frames; 2006.
- I. DHI A115 Series - Specifications for Steel Doors and Frame Preparation for Hardware; Door and Hardware Institute; 2000 (ANSI/DHI A115 Series).
- J. ITS (DIR) - Directory of Listed Products; Intertek Testing Services NA, Inc.; current edition.
- K. NAAMM HMMA 840 - Guide Specifications for Installation and Storage of Hollow Metal Doors and Frames; The National Association of Architectural Metal Manufacturers; 2007.
- L. NFPA 80 - Standard for Fire Doors and Other Opening Protectives; 2013.
- M. NFPA 252 - Standard Methods of Fire Tests of Door Assemblies; National Fire Protection Association; 2012.
- N. UL (BMD) - Building Materials Directory; Underwriters Laboratories Inc.; current edition.
- O. UL 10B - Standard for Fire Tests of Door Assemblies; Current Edition, Including All Revisions.
- P. UL 10C - Standard for Positive Pressure Fire Tests of Door Assemblies; Current Edition, Including All Revisions.
- Q. UL 1784 - Standard for Air Leakage Tests of Door Assemblies; Current Edition, Including All Revisions.

1.04 SUBMITTALS

- A. See Section 01 3000 - Administrative Requirements for submittal procedures.
- B. Product Data: Materials and details of design and construction, hardware locations, reinforcement type and locations, anchorage and fastening methods, and finishes.

- C. Shop Drawings: Details of each opening, showing elevations, glazing, frame profiles, and identifying location of different finishes, if any.
- D. Samples: Submit two samples of metal, 2 x 2 inches in size showing factory finishes, colors, and surface texture.
- E. Installation Instructions: Manufacturer's published instructions, including any special installation instructions relating to this project.
- F. Manufacturer's Certificate: Certification that products meet or exceed specified requirements.

1.05 QUALITY ASSURANCE

- A. Manufacturer Qualifications: Company specializing in manufacturing the products specified in this section with minimum three years documented experience.
- B. Maintain at the project site a copy of all reference standards dealing with installation.

1.06 DELIVERY, STORAGE, AND HANDLING

- A. Store in accordance with NAAMM HMMA 840.
- B. Protect with resilient packaging; avoid humidity build-up under coverings; prevent corrosion.

PART 2 PRODUCTS

2.01 MANUFACTURERS

- A. Insulated, pre-hung Steel Doors : Basis of Design:
 - 1. Taylor Doors ; Product Duradoor Steel Entry Doors; www.taylordoor.com
 - 2. Therma Tru Corporation; Product Premium Steel Series www.thermatru.com.
- B. Substitutions: See Section 01 6000 - Product Requirements.

2.02 DOORS AND FRAMES

- A. Requirements for All Doors and Frames:
 - 1. Accessibility: Comply with ANSI/ICC A117.1.
 - 2. Door Top Closures: Flush with top of faces and edges.
 - 3. Door Edge Profile: Beveled on both edges.
 - 4. Door Texture: Smooth faces.
 - 5. Hardware Preparation: In accordance with BHMA A156.115, with reinforcement welded in place, in addition to other requirements specified in door grade standard.
 - 6. Galvanizing at exterior locations: All components hot-dipped zinc-iron alloy-coated (galvannealed), manufacturer's standard coating thickness.
 - 7. Style and Finish: 6 Panel, raised panel, factory primed for field finish.
 - a. Color: As scheduled.
- B. Combined Requirements: If a particular door and frame unit is indicated to comply with more than one type of requirement, comply with all the specified requirements for each type; for instance, an exterior door that is also indicated as being sound-rated must comply with the requirements specified for exterior doors and for sound-rated doors; where two requirements conflict, comply with the most stringent.

2.03 STEEL DOORS

- A. Exterior Doors :
 - 1. Grade: ANSI A250.8 Level 3, physical performance Level A, Model 3, stile and rail.
 - 2. Core: Polyurethane.
 - 3. Top Closures for Outswinging Doors: Flush with top of faces and edges.
 - 4. Galvanizing: All components hot-dipped zinc-iron alloy-coated (galvannealed) in accordance with ASTM A653/A653M, with manufacturer's standard coating thickness.
 - 5. Texture: Smooth faces.
 - 6. Insulating Value: U-value of 0.50, when tested in accordance with ASTM C1363 or ASTM C236.

7. Weatherstripping: Integral, recessed into door edge or frame.

2.04 STEEL FRAMES

- A. General:
 1. Comply with the requirements of grade specified for corresponding door.
 - a. ANSI A250.8 Level 1 Doors: 16 gage frames.
 2. Finish: Same as for door.
- B. Exterior Door Frames: Face welded, seamless with joints filled.
 1. Galvanizing: All components hot-dipped zinc-iron alloy-coated (galvannealed) in accordance with ASTM A653/A653M, with manufacturer's standard coating thickness.
 2. Finish: Factory primed, for field finishing.

2.05 ACCESSORY MATERIALS

- A. Silencers: Resilient rubber, fitted into drilled hole; 3 on strike side of single door, 3 on center mullion of pairs, and 2 on head of pairs without center mullions.
- B. Temporary Frame Spreaders: Provide for all factory- or shop-assembled frames.

2.06 FINISH MATERIALS

- A. Primer: Rust-inhibiting, complying with ANSI A250.10, door manufacturer's standard.
- B. Bituminous Coating: Asphalt emulsion or other high-build, water-resistant, resilient coating.

PART 3 EXECUTION

3.01 EXAMINATION

- A. Verify existing conditions before starting work.
- B. Verify that opening sizes and tolerances are acceptable.

3.02 PREPARATION

- A. Coat inside of frames to be installed in masonry or to be grouted, with bituminous coating, prior to installation.
- B. Coat inside of other frames with bituminous coating to a thickness of 1/16 inch.

3.03 INSTALLATION

- A. Install in accordance with the requirements of the specified door grade standard and NAAMM HMMA 840.
- B. Coordinate frame anchor placement with wall construction.
- C. Coordinate installation of hardware.
- D. Coordinate installation of glazing.
- E. Touch up damaged factory finishes.

3.04 TOLERANCES

- A. Clearances Between Door and Frame: As specified in ANSI A250.8.
- B. Maximum Diagonal Distortion: 1/16 in measured with straight edge, corner to corner.

3.05 ADJUSTING

- A. Adjust for smooth and balanced door movement.

3.06 SCHEDULE - SEE DRAWINGS

END OF SECTION 08 1115

SECTION 08 1416**FLUSH WOOD DOORS****PART 1 GENERAL****1.01 SECTION INCLUDES**

- A. Flush wood doors; flush configuration; non-rated.

1.02 RELATED REQUIREMENTS

- A. Section 08 1113 - Hollow Metal Doors and Frames.
- B. Section 08 1115 - Insulated Steel Entry Doors

1.03 REFERENCE STANDARDS

- A. ANSI A135.4 - American National Standard for Basic Hardboard; 2012.
- B. ASTM E413 - Classification for Rating Sound Insulation; 2016.
- C. ASTM E1408 - Standard Test Method for Laboratory Measurement of the Sound Transmission Loss of Door Panels and Door Systems; 1991 (Reapproved 2000).
- D. ICC (IBC) - International Building Code; 2012.
- E. ITS (DIR) - Directory of Listed Products; Intertek Testing Services NA, Inc.; current edition.
- F. NFC
- G. NFPA 80 - Standard for Fire Doors and Other Opening Protectives; 2019.
- H. NFPA 252 - Standard Methods of Fire Tests of Door Assemblies; 2017.
- I. UBC Std 7-2, Part II - Test Standard for Smoke- and Draft-control Assemblies; International Conference of Building Officials; 1997.
- J. UL (BMD) - Building Materials Directory; Underwriters Laboratories Inc.; current edition.
- K. UL 10B - Standard for Fire Tests of Door Assemblies; Current Edition, Including All Revisions.
- L. UL 10C - Standard for Positive Pressure Fire Tests of Door Assemblies; Current Edition, Including All Revisions.
- M. UL 1784 - Standard for Air Leakage Tests of Door Assemblies; Current Edition, Including All Revisions.
- N. WDMA I.S. 1A - Interior Architectural Wood Flush Doors; 2013.

1.04 SUBMITTALS

- A. See Section 01 3000 - Administrative Requirements for submittal procedures.
- B. Product Data: Indicate door core materials and construction; veneer species, type and characteristics.
- C. Samples: Submit two samples of door construction, 12 by 12 inches in size cut from top corner of door.
- D. Shop Drawings: Illustrate comprehensively door opening criteria, elevations, sizes, types, swings, undercuts required, special beveling, special blocking for hardware, factory machining criteria, factory finishing criteria., identify cutouts for glazing and louvers.
- E. Manufacturer's Installation Instructions: Indicate special installation instructions.
- F. Warranty, executed in Owner's name.

1.05 QUALITY ASSURANCE

- A. Maintain one copy of the specified door quality standard on site for review during installation and finishing.
- B. Manufacturer Qualifications: Company specializing in manufacturing the products specified in this section with minimum 10 years of documented experience.
 - 1. Company with at least one project within past five years with value of woodwork within at least 20 percent of cost of woodwork for this project.

1.06 DELIVERY, STORAGE, AND HANDLING

- A. Package, deliver and store doors in accordance with specified quality standard.
- B. Accept doors on site in manufacturer's packaging, and inspect for damage.
- C. Protect doors with resilient packaging sealed with heat shrunk plastic; do not store in damp or wet areas or areas where sunlight might bleach veneer; seal top and bottom edges with tinted sealer if stored more than one week, and break seal on site to permit ventilation.

1.07 WARRANTY

- A. See Section 01 7800 - Project Closeout for additional warranty requirements.
- B. Interior Doors: Provide manufacturer's warranty for the life of the wall assembly.
- C. Include coverage for delamination of veneer, warping beyond specified installation tolerances, defective materials, and telegraphing core construction.

PART 2 PRODUCTS**2.01 MANUFACTURERS FLUSH WOOD DOORS**

- A. Wood Veneer Faced Doors: Basis of Design
 - 1. Masonite Architectural; Product Cendura Standard Painted: www.architectural.masonite.com/.
- B. Other Acceptable Manufacturers
 - 1. Haley Brothers; Standard Flush Hollow Core Door: www.haleybros.com/#sle.
 - 2. Weyerhaeuser Co.
 - 3. Substitutions: See Section 01 6000 - Product Requirements.

2.02 DOORS

- A. Doors: See drawings for locations and additional requirements.
 - 1. Quality Level: Economy Grade, light duty performance, in accordance with WDMA I.S.1-A and with AWI/AWMAC/WI Architectural Woodwork Standards..
 - 2. Wood Veneer Faced Doors: Hollow Core unless otherwise indicated.
- B. Interior Doors: 1-3/4 inches thick unless otherwise indicated; flush construction.
 - 1. Provide hollow core doors at each location.

2.03 DOOR FACINGS

- A. Veneer Facing for Transparent Finish: Select Lauan Mahogany, Grade A Veneer, plain sliced,, with random match (mismatched) between leaves of veneer, random match of spliced veneer leaves assembled on door or panel face, book and balanced matched.
 - 1. Vertical Edges: Any option allowed by quality standard for grade.

2.04 DOOR CONSTRUCTION

- A. Fabricate doors in accordance with door quality standard specified.
- B. Cores Constructed with stiles and rails:
- C. Provide solid blocks at lock edge for hardware reinforcement.
 - 1. Provide solid blocking for other throughbolted hardware.
- D. Factory machine doors for hardware other than surface-mounted hardware, in accordance with hardware requirements and dimensions.
- E. Factory fit doors for frame opening dimensions identified on shop drawings, with edge clearances in accordance with specified quality standard.
- F. Provide edge clearances in accordance with the quality standard specified.

2.05 FINISHES - WOOD VENEER DOORS

- A. Field finish doors in accordance with approved sample.

PART 3 EXECUTION

3.01 EXAMINATION

- A. Verify existing conditions before starting work.
- B. Verify that opening sizes and tolerances are acceptable.
- C. Do not install doors in frame openings that are not plumb or are out-of-tolerance for size or alignment.

3.02 INSTALLATION

- A. Install doors in accordance with manufacturer's instructions and specified quality standard.
- B. Use machine tools to cut or drill for hardware.
- C. Coordinate installation of doors with installation of frames and hardware.
- D. Coordinate installation of glazing.
- E. Install door louvers plumb and level.

3.03 TOLERANCES

- A. Comply with specified quality standard for fit and clearance tolerances.
- B. Comply with specified quality standard for telegraphing, warp, and squareness.
- C. Maximum Vertical Distortion (Bow): 1/8 inch measured with straight edge or taut string, top to bottom, over an imaginary 36 by 84 inches surface area.
- D. Maximum Width Distortion (Cup): 1/8 inch measured with straight edge or taut string, edge to edge, over an imaginary 36 by 84 inches surface area.

3.04 ADJUSTING

- A. Adjust doors for smooth and balanced door movement.
- B. Adjust closers for full closure.

3.05 SCHEDULE - SEE DRAWINGS

END OF SECTION 08 1416

SECTION 08 3100**ACCESS DOORS AND PANELS****PART 1 GENERAL****1.01 SECTION INCLUDES**

- A. Wall-mounted access units.
- B. Ceiling-mounted access units.
- C. Access door and frame units, fire-rated and non-fire-rated, in wall and ceiling locations.

1.02 RELATED REQUIREMENTS

- A. Section 03 3000 - Cast in Place Concrete: Openings in concrete.
- B. Section 04 2000 - Unit Masonry Assemblies: Openings in masonry.
- C. Section 09 2116 Gypsum Board Assemblies: Access in partitions.
- D. Section 09 2116 Gypsum Board Assemblies: Access in ceilings.
- E. Section 08 7100 - Door Hardware: Mortise cylinder and core hardware.
- F. Division 22 and 23 Sections : Plumbing and HVAC components requiring access.
- G. Section 23 3300 - Air Duct Accessories: Access doors in ductwork.
- H. Division 26 Sections: Electrical components requiring access.

1.03 REFERENCE STANDARDS

- A. ASTM A240/A240M - Standard Specification for Chromium and Chromium-Nickel Stainless Steel Plate, Sheet, and Strip for Pressure Vessels and for General Applications; 2019.
- B. ASTM A276/A276M - Standard Specification for Stainless Steel Bars and Shapes; 2017.
- C. ASTM B209 - Standard Specification for Aluminum and Aluminum-Alloy Sheet and Plate; 2014.
- D. FM (AG) - FM Approval Guide; current edition.
- E. ITS (DIR) - Directory of Listed Products; current edition.
- F. UL (FRD) - Fire Resistance Directory; Current Edition.

1.04 SUBMITTALS

- A. See Section 01 3000 - Administrative Requirements for submittal procedures.
- B. Product Data: Provide sizes, types, finishes, hardware, scheduled locations, and details of adjoining work based on access function, i.e., hand hole, personnel access, visual inspection, etc.
- C. Shop Drawings: Indicate exact position and installation detailing of each access door and/or panel unit.
- D. Samples: Submit complete access units, 12 by 12 and 24 by 24 inches in size illustrating frame configuration and construction, panel construction and metal.
- E. Manufacturer's Installation Instructions: Indicate installation requirements.
- F. Project Record Documents: Record actual locations of each access unit.

1.05 QUALITY ASSURANCE

- A. Manufacturer Qualifications: Company specializing in manufacturing the products specified in this section with minimum 15 years documented experience.
- B. Installer Qualifications: Company specializing in performing work of the type specified and with at least 7-1/2 years documented experience and approved by manufacturer.

PART 2 PRODUCTS**2.01 ACCESS DOORS AND PANELS ASSEMBLIES**

- A. Wall-Mounted Units with Return Air Grille:

1. Material: Stainless Steel, type 316.
 2. Size: 12 by 12 inch, unless otherwise functionally required for adequate access to components.
 3. Door/Panel: Hinged, standard duty, with tool-operated spring or cam lock and no handle.
 4. In All Wall Types: Surface mounted face frame and door surface flush with frame surface.
 5. In Gypsum Board: Drywall bead frame with door surface flush with ceiling surface.
 6. Masonry Mounting Criteria: Provide surface-mounted frame with door surface flush with frame surface.
- B. Wall-Mounted Units in Wet Areas:
1. Material: Stainless Steel type 316.
 2. Size: 12 by 12 inch, unless otherwise functionally required for adequate access to components.
 3. Door/Panel: Hinged, standard duty, with tool-operated spring or cam lock and no handle.
 4. In Gypsum Board: Drywall bead frame with door surface flush with ceiling surface.
 5. Masonry Mounting Criteria: Provide surface-mounted frame with door surface flush with frame surface.
- C. Fire-Rated Wall-Mounted Units:
1. Wall Fire-Rating: As indicated on drawings.
 2. Material: Stainless Steel type 316.
 3. Size: 12 by 12 inch, unless otherwise functionally required for adequate access to components.
 4. Door/Panel: Insulated double-surface panel, with tool-operated spring or cam lock and no handle.
- D. Ceiling-Mounted Units with Return Air Grille:
1. Material: Stainless Steel type 316.
 2. Size - Lay-In Grid Ceilings: To match module of ceiling grid.
 3. Size in Other Ceilings: 12 by 12 inch, unless otherwise indicated, or required for adequate access to component.
 4. Door/Panel: Hinged, standard duty, with tool-operated spring or cam lock and no handle.
- E. Fire-Rated Ceiling-Mounted Units:
1. Ceiling Fire-Rating: As indicated on drawings.
 2. Material: Stainless Steel type 316.
 3. Size: 12 by 12 inch, unless otherwise indicated or required for adequate access to component.
 4. Door/Panel: Hinged, standard duty, with tool-operated spring or cam lock and no handle.

2.02 MANUFACTURERS

- A. Wall and Ceiling Access Doors:
1. Milcor by Commercial Products Group of Hart & Cooley, Inc: www.milcorinc.com.
 2. Babcock-Davis: www.babcockdavis.com.
 3. J.L. Industries
 4. Substitutions: See Section 01 6000 - Product Requirements.

2.03 ACCESS DOORS AND PANELS

- A. All Units: Factory fabricated, fully assembled units with corner joints welded, filled, and ground flush; square and without rack or warp; coordinate requirements with assemblies units are to be installed in.
- B. Units in Fire Rated Assemblies: Fire rating equivalent to the fire rated assembly in which they are to be installed.
1. Provide products listed and labeled by UL or ITS (Warnock Hersey) as suitable for the purpose specified and indicated.
 2. Provide certificate of compliance from authority having jurisdiction indicating approval of fire rated doors.

PART 3 EXECUTION

3.01 EXAMINATION

- A. Verify that rough openings are correctly sized and located.

3.02 INSTALLATION

- A. Install units in accordance with manufacturer's instructions.
- B. Install frames plumb and level in openings, and secure units rigidly in place.
- C. Position units to provide convenient access to concealed equipment when necessary.

END OF SECTION 08 3100

SECTION 08 5313**VINYL WINDOWS****PART 1 GENERAL****1.01 SECTION INCLUDES**

- A. Vinyl-framed, factory-glazed windows to be installed where indicated.
- B. Factory glazed .
- C. Operating hardware.

1.02 RELATED REQUIREMENTS

- A. Section 07 2510 - Weather Barriers (Mechanically fastened sheet): Sealing frames to water-resistive barrier installed on adjacent construction.
- B. Section 07 9200 - Joint Sealants: Sealing joints between frames and adjacent construction.
- C. Section 08 8000 - Glazing.

1.03 REFERENCE STANDARDS

- A. AAMA/WDMA/CSA 101/I.S.2/A440 - North American Fenestration Standard/Specification for windows, doors, and skylights; 2017.
- B. AAMA 701/702 - Combined Voluntary Specifications for Pile Weatherstrip and Replaceable Fenestration Weatherseals; 2011.
- C. AAMA 1503 - Voluntary Test Method for Thermal Transmittance and Condensation Resistance of Windows, Doors and Glazed Wall Sections; 2009.
- D. ASTM E90 - Standard Test Method for Laboratory Measurement of Airborne Sound Transmission Loss of Building Partitions and Elements; 2009 (Reapproved 2016).
- E. ASCE 7 - Minimum Design Loads for Buildings and Other Structures; American Society of Civil Engineers; 2010.
- F. ASTM E283 - Standard Test Method for Determining the Rate of Air Leakage Through Exterior Windows, Curtain Walls, and Doors Under Specified Pressure Differences Across the Specimen; 2004.
- G. ASTM E330 - Standard Test Method for Structural Performance of Exterior Windows, Doors, Skylights and Curtain Walls by Uniform Static Air Pressure Difference; 2002 (Reapproved 2010).
- H. ASTM E331 - Standard Test Method for Water Penetration of Exterior Windows, Skylights, Doors, and Curtain Walls by Uniform Static Air Pressure Difference; 2000 (Reapproved 2009).
- I. ASTM E1105 - Standard Test Method for Field Determination of Water Penetration of Installed Exterior Windows, Skylights, Doors, and Curtain Walls, by Uniform or Cyclic Static Air Pressure Difference; 2015.
- J. ASTM E1332 - Standard Classification for Rating Outdoor-Indoor Sound Attenuation; 2016.
- K. ASTM E2112 - Standard Practice for Installation of Exterior Windows, Doors and Skylights; 2019c.
- L. ASTM F588 - Standard Test Methods for Measuring the Forced Entry Resistance of Window Assemblies, Excluding Glazing Impact; 2017.
- M. FS L-S-125 - Screening, Insect, Nonmetallic; Federal Specifications and Standards; Revision B, 1972.

1.04 PERFORMANCE REQUIREMENTS

- A. Performance Requirements: As specified in PART 2, with the following additional requirements:
- B. Forced Entry Resistance: Conform to ASTM F588 requirements for performance level 10 .
- C. System Design: Design and size components to withstand dead and live loads caused by pressure and suction of wind acting normal to plane of window.
 - 1. Calculate design pressures in accordance with ASCE 7
 - 2. Measure performance of units by testing in accordance with ASTM E330, using test pressure equal to 1.5 times the design wind pressure and 10 second duration of maximum load.

- D. Deflection: Limit member deflection to 1/200 of the longer dimension with full recovery of glazing materials.
- E. Assembly: To accommodate, without damage to components or deterioration of seals, movement between window and perimeter framing, deflection of lintel.
- F. Air Infiltration: Limit air infiltration through assembly to 0.3 cu ft/min/sq ft of wall area, measured at a reference differential pressure across assembly of 1.57 psf as measured in accordance with ASTM E283.
- G. Vapor Seal: No vapor seal failure at interior static pressure of 1 inch, 72 degrees F, and 40 percent relative humidity.
- H. Water Leakage: None, when measured in accordance with ASTM E331.
- I. 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.
- J. Air and Vapor Seal: Maintain continuous air barrier and vapor retarder throughout assembly, primarily in line with inside pane of glass and heel bead of glazing compound. Position thermal insulation on exterior surface of air barrier and vapor retarder.
- K. Thermal Movement: Design sections to permit movement caused by thermal expansion and contraction of plastic to suit glass, infill, and perimeter opening construction.
- L. Design Temperature Range: 120 F degrees.

1.05 ADMINISTRATIVE REQUIREMENTS

- A. Preinstallation Meeting: Convene one week week before starting work of this section.

1.06 SUBMITTALS

- A. See Section 01 3000 - Administrative Requirements for submittal procedures.
- B. Product Data: Provide component dimensions, anchors, fasteners, glass, and internal drainage.
- C. Shop Drawings: Indicate opening dimensions, framed opening tolerances, affected related work, and installation requirements.
- D. Samples: Submit two window corners, 24 by 24 inch in size, illustrating window frame section, mullion section, finished surfaces, glass units, and trim.
- E. Operating Hardware: Two samples of each type of operating hardware.
- F. Manufacturer's Certificate: Certify that products of this section meet or exceed specified requirements.
- G. Test Reports: Prior to submitting shop drawings or starting fabrication, submit test report(s) by independent testing agency showing compliance with performance requirements in excess of those prescribed by specified grade.
- H. Manufacturer's qualification statement.
- I. Installer's qualification statement.

1.07 QUALITY ASSURANCE

- A. Manufacturer Qualifications: Company specializing in manufacturing products specified in this section, with not less than three years of documented experience.
- B. Installer Qualifications: Company specializing in performing of type specified and with at least three years documented experience.

1.08 DELIVERY, STORAGE, AND HANDLING

- A. Protect finished surfaces with wrapping. Do not use adhesive papers or sprayed coatings that bond when exposed to sunlight or weather.
- B. Jig, brace, and box the window frame assemblies for transport to minimize flexing of members or joints.

1.09 FIELD CONDITIONS

- A. Do not install sealants when ambient temperature is less than 40 degrees F.
- B. Maintain this minimum temperature during and after installation of sealants.

1.10 WARRANTY

- A. See Section 01 7800 - Project Closeout for additional warranty requirements.
- B. Correct defective work within a 5-year period after Date of Substantial Completion.
- C. Manufacturer's Warranty: Provide five-year manufacturer warranty for insulated glass units from seal failure, interpane dusting or misting, and replacement of same. Include coverage for degradation of vinyl color finish. Complete form in Owner's name and register with manufacturer.

PART 2 PRODUCTS**2.01 MANUFACTURERS**

- A. Vinyl Windows : Basis of Design
 - 1. Window World; Product Match existing configurations as closely as possible.: www.windowworld.com.com.
- B. Other Acceptable Manufacturers
 - 1. Craft Windows; Product Contractor's Choice www.monarchwindows.com.
 - 2. Substitutions: See Section 01 6000 - Product Requirements.

2.02 DESCRIPTION

- A. Vinyl Windows: Factory fabricated frame and sash members of extruded, hollow, ultra-violet-resistant, polyvinyl chloride (PVC) with integral color; with factory-installed glazing, hardware, related flashings, anchorage and attachment devices.
 - 1. Configuration: See Drawings.
 - 2. Color: White.
 - 3. Size to fit openings with minimum clearance around perimeter of assembly providing necessary space for perimeter seals.
 - 4. Operable Units: Double weatherstripped.
 - 5. Framing Members: Fusion welded corners and joints, with internal reinforcement where required for structural rigidity; concealed fasteners.
 - 6. System Internal Drainage: Drain to exterior side by means of weep drainage network any water entering joints, condensation within glazing channel, or other migrating moisture within system.
 - 7. Glazing Stops, Trim, Flashings, and Accessory Pieces: Formed of rigid PVC, fitting tightly into frame assembly.
 - 8. Mounting Flange: Integral to frame assembly, providing weather stop at entire perimeter of frame.
 - 9. Insect Screens: Tight fitting for operating sash location.

2.03 PERFORMANCE REQUIREMENTS

- A. Design Pressure: In accordance with applicable codes.
- B. Condensation Resistance Factor: CRF of 50, minimum, the lower value of the glass and frame window components and determined in accordance with AAMA 1503.
- C. Overall Thermal Transmittance (U-value): 0.29, maximum, including glazing, measured on window sizes required for this project.
- D. Forced Entry Resistance (FER): Tested to comply with ASTM F588 requirements having at least Grade 10 performance for each required window assembly.
- E. Acoustic Performance: Minimum outdoor-indoor transmission class (OITC) rating of 34, when tested in accordance with ASTM E90 and ASTM E1332.

2.04 COMPONENTS

- A. Glazing: Insulated double pane, annealed glass, clear, low-E coated, manufacturer's standard fill, with glass thicknesses as recommended by manufacturer for specified wind conditions and acoustic rating indicated.
 - 1. Glass Stops: Snap-on PVC glazing bead with color to match sash and frame.
 - 2. Glazing Tape: Closed cell foam type with double sided adhesive.
 - 3. Setting Blocks: Manufacturer's standard.
- B. Windows: Extruded, hollow, tubular, ultra-violet resistant polyvinyl chloride (PVC) with integral color; factory fabricated; with vision glass, related flashings, anchorage and attachment devices.
 - 1. Performance Requirements: AAMA/WDMA/CSA 101/1.S.2/A440 R15.
 - 2. Configuration: As shown on Drawings, sash as scheduled.
 - 3. Color: White.
- C. Frame Depth: 3 inches nominal.
- D. Divided Lite Grid: Installed on exterior face of insulating glass, 5/8 inch wide flat metal bars, color to match frame and sash.
 - 1. Pattern: To match original window grid patterns.
- E. Fasteners: Stainless steel.
- F. Safety Stops: As required by code, as stated on the drawings.
- G. Sealants for Setting Window Sill Pan Flashing: Provide silicone sealant; in compliance with industry installation practices.
 - 1. See Section 07 9200 for additional requirements.

2.05 GLASS AND GLAZING MATERIALS

- A. Glass and Glazing Materials: As specified in Section 08 8000 of Types described below:
 - 1. Glass Lights: 3/4-7/8 inch clear insulating w/ Low E coating on 3rd surface.
 - 2. Tempered in locations required by IBC 2021 code.

2.06 HARDWARE

- A. Horizontal Sliding Sash: Rigid PVC interfacing tracks with dual brass wheel and stainless steel axle assembly housing, provide two sets for each operating sash and opening stops in head and sill track as required.
- B. Single-Hung Sash: Metal and nylon spiral friction slide cylinder, each sash, each jamb.
- C. Sash lock: Lever handle and keeper with cam lock, provide at least one for each operating sash.
- D. Finish of Exposed Hardware: Baked enamel, match interior sash and frame color.
- E. Finish For Exposed Hardware: Selected from manufacturers standard options.

2.07 FABRICATION

- A. Fabricate framing, mullions and sash members with fusion welded corners and joints, in a rigid jig. Supplement frame sections with internal reinforcement where required for structural rigidity.
- B. Form sills in one piece. Slope sills for wash.
- C. Form snap-in glass stops, closure molds, weather stops, and flashings of extruded PVC for tight fit into window frame section.
- D. Form weather stop flange to perimeter of unit.
- E. Fabricate components with minimum clearances and shim spacing around perimeter of assembly, yet enabling installation and dynamic movement of perimeter seal.
- F. Arrange fasteners to be concealed from view.
- G. Permit internal drainage weep holes and channels to migrate moisture to exterior. Provide internal drainage of glazing spaces to exterior through weep holes.

- H. Assemble insect screen frame, miter and reinforced frame corners. Fit mesh taut into frame and secure. Fit frame with four spring loaded steel pin retainers.
- I. Double weatherstrip operable units.
- J. Factory glaze window units.

PART 3 EXECUTION

3.01 EXAMINATION

- A. Verify wall openings and adjoining water-resistive barrier seal materials are ready to receive this work.
 - 1. Maintain square and plumb of opening within 1/8" head and jambs.

3.02 INSTALLATION

- A. Install window unit assemblies in accordance with manufacturers instructions and applicable building codes.
- B. Attach window frame and shims to perimeter opening to accommodate construction tolerances and other irregularities as necessary.
- C. Align window plumb and level, free of warp or twist, and maintain dimensional tolerances and alignment with adjacent work.
- D. Provide thermal isolation where components penetrate or disrupt building insulation. Pack fibrous insulation in shim spaces at perimeter of assembly to maintain continuity of thermal barrier.
- E. Install operating hardware.
- F. Install glass and infill panels in accordance with glazing method required to achieve performance criteria; see Section 08 8000.
- G. Install perimeter sealant and backing materials in accordance with Section 07 9200 and installation details on drawings.
 - 1. Maintain consistent, minimum 3/8" - Maximum 1/2" joint at perimeter for installation of backer rod and sealant.

3.03 TOLERANCES

- A. Maximum Variation from Level or Plumb: 0.06 inches every 3 ft non-cumulative or 0.5 inches per 100 ft, whichever is less.

3.04 FIELD QUALITY CONTROL

- A. Provide services of vinyl window manufacturer's field representative to observe for proper installation of system and submit report.

3.05 ADJUSTING

- A. Adjust hardware for smooth operation and secure weathertight closure.

3.06 CLEANING

- A. Remove protective material from pre-finished surfaces.
- B. Wash surfaces by method recommended and acceptable to window manufacturer; rinse and wipe surfaces clean.
- C. Remove excess glazing sealant by moderate use of mineral spirits or other solvent acceptable to sealant manufacturer and appropriate for application indicated.

END OF SECTION 08 5313

SECTION 08 7100**DOOR HARDWARE****PART 1 GENERAL****1.01 SECTION INCLUDES**

- A. Hardware for wood and Insulated metal doors.
- B. Hardware for fire-rated doors.
- C. Access Control hardware. (Cipher Locks)
- D. Thresholds.
- E. Weatherstripping, seals and door gaskets.

1.02 RELATED REQUIREMENTS

- A. Section 08 1115 - Insulated Steel Entry Doors
- B. Section 08 1416 - Flush Wood Doors.

1.03 REFERENCE STANDARDS

ADA Standards - Americans with Disabilities Act (ADA) Standards for Accessible Design; 2010.

- A. ANSI/ICC A117.1 - American National Standard for Accessible and Usable Buildings and Facilities; International Code Council; 2009.
- B. BHMA A156.1 - American National Standard for Butts and Hinges; 2016.
- C. BHMA A156.2 - American National Standard for Bored and Preassembled Locks & Latches; 2017.
- D. BHMA A156.3 - American National Standard for Exit Devices; 2014.
- E. BHMA A156.4 - American National Standard for Door Controls - Closers; 2013.
- F. BHMA A156.5 - American National Standard for Cylinders and Input Devices for Locks; 2014.
- G. BHMA A156.14 - American National Standard for Sliding and Folding Door Hardware; 2013.
- H. BHMA A156.15 - American National Standard for Release Devices - Closer Holder, Electromagnetic and Electromechanical; 2015.
- I. BHMA A156.21 - American National Standard for Thresholds; 2014.
- J. BHMA A156.22 - American National Standard for Door Gasketing and Edge Seal Systems Sponsor; 2017.
- K. BHMA A156.23 - American National Standard for Electromagnetic Locks; 2017.
- L. BHMA A156.115 - American National Standard for Hardware Preparation in Steel Doors and Steel Frames; 2016.
- M. NFPA 101 - Life Safety Code; Most Recent Edition Adopted by Authority Having Jurisdiction, Including All Applicable Amendments and Supplements.
- N. UL (DIR) - Online Certifications Directory; Current Edition.

1.04 ADMINISTRATIVE REQUIREMENTS

- A. Coordinate the manufacture, fabrication, and installation of products that door hardware will be installed upon.
- B. Furnish templates for door and frame preparation to manufacturers and fabricators of products requiring internal reinforcement for door hardware.
- C. Convey Owner's keying requirements to manufacturers.
- D. Preinstallation Meeting: Convene a preinstallation meeting one week prior to commencing work of this section; require attendance by all affected installers.
- E. Sequence installation to ensure utility connections are achieved in an orderly and expeditious manner.

1.05 SUBMITTALS

- A. See Section 01 3000 - Administrative Requirements, for submittal procedures.
- B. Product Data: Manufacturer's catalog literature for each type of hardware, marked to clearly show products to be furnished for this project.
- C. Samples: Prior to preparation of hardware schedule:
 - 1. Submit 1 sample of hinge, latchset, lockset, and closer illustrating style, color, and finish.
 - 2. Samples will be returned to supplier.
- E. Hardware Schedule: Detailed listing of each item of hardware to be installed on each door. Use door numbering scheme as included in the Contract Documents. Identify electrically operated items and include power requirements.
- F. Keying Schedule: Submit for approval of Owner.
- G. Samples: Provide the following prior to preparation of hardware schedule;
 - 1. Submit one (1) sample of hinge, latchset, lockset, and closer illustrating style, color, and finish.
 - 2. Samples will be returned to supplier.
- H. Manufacturer's Installation Instructions: Indicate special procedures, perimeter conditions requiring special attention.
- J. Maintenance Data: Include data on operating hardware, lubrication requirements, and inspection procedures related to preventative maintenance.
 - 1. Submit manufacturer's parts lists and templates.
 - 2. Bitting List: List of combinations as furnished.
- K. Keys: Deliver with identifying tags to Owner by security shipment direct from hardware supplier.
- L. Warranty: Submit manufacturer's warranty and ensure that forms have been completed in Owner's name and registered with manufacturer.
- M. Maintenance Materials and Tools: Furnish the following for Owner's use in maintenance of project.
 - 1. See Section 01 6000 - Product Requirements, for additional provisions.
 - 2. Extra Lock Cylinders: One for each master keyed group.

1.06 QUALITY ASSURANCE

- A. Standards for Fire-Rated Doors: Maintain one copy of each referenced standard on site, for use by Architect and Contractor.
- B. Manufacturer Qualifications: Company specializing in manufacturing the products specified in this section with minimum three years of documented experience.
- C. Hardware Supplier Qualifications: Company specializing in supplying the type of products specified in this section with at least three years documented experience.
- D. Hardware Supplier Personnel: Employ an Architectural Hardware Consultant (AHC) to assist in the work of this section.

1.07 DELIVERY, STORAGE, AND HANDLING

- A. Package hardware items individually; label and identify each package with door opening code to match hardware schedule.
- B. Hardware should be marked by hardware set and door number prior to delivery.
- C. Delivery: Hardware to be delivered by supplier – no direct shipments are permitted.
- D. Storage: Provide a secure storage that includes shelving adequate for hardware.

1.08 WARRANTY

- A. See Section 01 7800 - Project Closeout, for additional warranty requirements.
- B. Provide five year warranty for door closers and Automatic Flushbolts.

- C. Extra Materials: Provide 1 lockset of each function (L9010, L9050, L9070, L9080) with appropriate trim. (4 required)
- D. 3 each tools for adjustment of doors closers and exit devices.
- E. 2 copies of approved finish hardware schedule which also reflects keying schedule.
- F. 2 copies of installation instruction for closers, locksets and exit devices.

PART 2 PRODUCTS

2.01 MANUFACTURERS

- A. Allegion Brands, Ives, LCN, Schlage, Steelcraft, or Von Duprin: www.allegion.com/us/#sle.
- B. Assa Abloy Brands, Corbin Russwin, Curries, McKinney, Norton, Sargent, or Yale: www.assaabloydss.com/#sle.
- C. Best Access Systems, division of Stanley Security Solutions: www.bestaccess.com/#sle.
- D. DORMA USA, Inc: www.dorma.com/#sle.
- E. Hager Companies: www.hagerco.com/#sle.
- F. Trimco Hardware: www.trimcohardware.com/#sle.
- G. Substitutions: See Section 01 6000 - Product Requirements.

2.02 GENERAL REQUIREMENTS

- A. Provide door hardware specified, or as required to make doors fully functional, compliant with applicable codes, and secure to the extent indicated.
- B. Provide items of a single type of the same model by the same manufacturer.
- C. Provide products that comply with the following:
 1. Applicable provisions of federal, state, and local codes.
 2. ANSI/ICC A117.1, American National Standard for Accessible and Usable Buildings and Facilities.
 3. Applicable provisions of NFPA 101, Life Safety Code.
 4. Fire-Rated Doors: NFPA 80.
 5. Hardware on Fire-Rated Doors, Except Hinges: Listed and classified by UL (DIR) as suitable for the purpose specified and indicated.
 6. Auxiliary Hardware: BHMA A156.16.
 7. Straps, Tee Hinges and Hasps: BHMA A156.20.
 8. Hardware Preparation for Steel Doors and Steel Frames: BHMA A156.115.
 9. Hardware Preparation for Wood Doors with Wood or Steel Frames: BHMA A156.115W.
 10. Hardware for Smoke and Draft Control Doors (Indicated as "S" on Drawings): Provide hardware that enables door assembly to comply with air leakage requirements of the applicable code.
 11. Products Requiring Electrical Connection: Listed and classified by UL (DIR) as suitable for the purpose specified and indicated.
- D. Function: Lock and latch function numbers and descriptions of manufactures series as listed in hardware schedule.
- E. Electrically Operated and/or Controlled Hardware: Provide all power supplies, power transfer hinges, relays, and interfaces required for proper operation; provide wiring between hardware and control components and to building power connection.
- F. Finishes: Provide door hardware of the same finish unless otherwise indicated.
 1. Primary Finish: Satin Stainless Steel US 26D.
 2. Secondary Finish: Satin chrome plated over nickel on brass or bronze, 626 (approx US26D).
 - a. Use secondary finish in kitchens, bathrooms, and other spaces containing chrome or stainless steel finished appliances, fittings, and equipment; provide primary finish on one side of door and secondary finish on other side if necessary.
 3. Finish Definitions: BHMA A156.18.

4. Exceptions:
 - a. Where base metal is specified to be different, provide finish that is an appearance equivalent according to BHMA A156.18.
 - b. Hinges for Fire-Rated Doors: Steel base metal with painted finish.
 - c. Door Closer Covers and Arms: Color to be selected by Architect from manufacturer's standard colors.
 - d. Aluminum Surface Trim and Gasket Housings: Anodized to match door, not to match other hardware.
 - e. Hardware for Aluminum Storefront Doors: Finished to match door, except hand contact surfaces to be satin stainless steel.

2.03 LOCKS AND LATCHES

- A. Locks: Provide a lock for every door, unless specifically indicated as not requiring locking.
 1. Hardware Sets indicate locking functions required for each door.
 2. If no hardware set is indicated for a swinging door provide an office lockset.
 3. Trim: Provide lever handle or pull trim on outside of all locks unless specifically stated to have no outside trim.
 4. Lock Cylinders: Provide key access on outside of all locks unless specifically stated to have no locking or no outside trim.
 5. In door sections, where a lock cylinder referenced to this Section is specified, furnish and install a mortise lock cylinder keyed to the building keying system.
- B. Lock Cylinders: Manufacturer's standard tumbler type, six-pin standard core.
 1. Provide cams and/or tailpieces as required for locking devices required.
- C. Keying: Key to existing Masterkey System.
 1. Include construction keying.
 2. When providing keying information, comply with DHI Handbook "Keying systems and nomenclature".
- D. Latches: Provide a latch for every door that is not required to lock, unless specifically indicated "push/pull" or "not required to latch".
 1. Roller Latches:
 1. Bommer Industries, Inc: www.bommer.com.
 2. C. R. Laurence Company, Inc: www.crl-arch.com.
 3. Hager Companies: www.hagerco.com.
 4. Substitutions: See Section 01 6000 - Product Requirements.
 2. Hiawatha, Inc, division of Activar Construction Products Group, Inc: www.activarcpg.com/hiawatha.
 3. Trimco Hardware: www.trimcohardware.com.

2.06 CYLINDRICAL LOCKSETS

- A. Locking Functions: As defined in BHMA A156.2, and as follows.
 1. Passage: No locking, always free entry and exit.
 2. Privacy: F76, emergency tool unlocks.
 3. Office: F82 Grade 1, key not required to lock, unlocks upon exit.
 4. Classroom: F84, key required to lock.
 5. Intruder Classroom: F110, keyed both sides.
 6. Communicating: F80 or F113.
 7. Hotel: F93.
 8. Always-Locked: F86, key required to lock, may not be left unlocked.
 9. Two-Key Entry: F88, outside locked by key from both sides, free egress
 10. Store Door: F91, locked by key from both sides, not an emergency exit (must be unlocked during occupied hours).

11. Exit Only: F89, may not be left unlocked.

B. Manufacturers - Cylindrical Locksets:

1. Yale: www.yale.com.com/#sle.
2. Best Access Systems, division of Stanley Security Solutions: www.bestaccess.com/#sle.
3. Hager Companies: www.hagerco.com.
4. Schlage, an Allegion brand: www.allegion.com/us.

2.09 CLOSERS

A.. Closers: Complying with BHMA A156.4.

1. Provide surface-mounted, door-mounted closers unless otherwise indicated.
2. Provide a door closer on every exterior door.
3. Provide a door closer on every fire- and smoke-rated door. Spring hinges are not an acceptable self-closing device unless specifically so indicated.
4. On pairs of swinging doors, if an overlapping astragal is present, provide coordinator to ensure the leaves close in proper order.
5. At corridors, locate door-mounted closer on room side of door.
6. At outswinging exterior doors, mount closer in inside of door.

B. Manufacturers - Surface Mounted Closers:

1. Assa Abloy Brands, Corbin Russwin, Norton, Rixson, Sargent, or Yale: www.assaabloydss.com/#sle.
2. Other Acceptable Manufacturers
 - a. DORMA USA, Inc; 7400 Series, 8600 Series, 8900 Series, and TS93: www.dorma.com/#sle.
3. LCN, an Allegion brand; _____: www.allegion.com/us/#sle. LCN, an Allegion brand; _____: www.allegion.com/us/#sle.

2.10 STOPS AND HOLDERS

A. Stops: Complying with BHMA A156.8; provide a stop for every swinging door, unless otherwise indicated.

1. Provide wall stops, unless otherwise indicated.
2. If wall stops are not practical, due to configuration of room or furnishings, provide overhead stop.
3. Stop is not required if positive stop feature is specified for door closer; positive stop feature of door closer is not an acceptable substitute for a stop unless specifically so stated.

B. Manufacturers - Wall and Floor Stops/holders:

1. Yale, McKinney: www.assaabloydss.com/#sle.
2. C. R. Laurence Company, Inc: www.crl-arch.com.
3. Trimco., Inc: www.trimcohardware.com/#sle.
4. Substitutions: See Section 01 6000 - Product Requirements.

2.11 GASKETING AND THRESHOLDS

A. Thresholds / Weatherstripping and Gasketing: .

B. Gaskets: Complying with BHMA A156.22.

1. On each door in smoke partition, provide smoke gaskets; top, sides, and meeting stile of pairs. If fire/smoke partitions are not indicated on drawings, provide smoke gaskets on each door identified as a "smoke door" and 20-minute rated fire doors.
2. On each exterior door, provide weatherstripping gaskets, unless otherwise indicated; top, sides, and meeting stiles of pairs.
 - a. Where exterior door is also required to have fire or smoke rating, provide gaskets functioning as both smoke and weather seals.
3. On each exterior door, provide door bottom sweep, unless otherwise indicated.

C. Thresholds: Complying with BHMA A156.21.

1. At each exterior door, provide a threshold unless otherwise indicated.

2. Field cut threshold to frame for tight fit.

2.12 PROTECTION PLATES AND ARCHITECTURAL TRIM

- A. Protection Plates:
- B. Protection Plates:
 1. Kickplate: Provide on push side of every door with closer, except aluminum storefront and glass entry doors.
- C. Drip Guard: Provide projecting drip guard over all exterior doors unless they are under a projecting roof or canopy.
- D. Manufacturers - Protection Plates and Architectural Trim:
 1. Rockwood Manufacturing Company, an Assa Abloy brand: www.rockwoodmfg.com/#sle.
 2. Hager Companies.: www.hager.com
 3. Hiawatha, Inc: www.hiawathainc.com.
 4. IVES Hardware: www.iveshardware.com
 5. Trimco: www.trimcohardware.com/#sle.

2.13 GENERAL REQUIREMENTS FOR DOOR HARDWARE PRODUCTS

- A. Provide products that comply with the following:
 1. Applicable provisions of Federal, State, and local codes.
 2. ANSI/ICC A117.1, American National Standard for Accessible and Usable Buildings and Facilities.
 3. Applicable provisions of NFPA 101, Life Safety Code.
 4. Fire-Rated Doors: NFPA 80.
 5. All Hardware on Fire-Rated Doors : Listed and classified by UL as suitable for the purpose specified and indicated.
 6. Hardware for Smoke and Draft Control Doors (Indicated as "S" on Drawings): Provide hardware that enables door assembly to comply with air leakage requirements of the applicable code.
 7. Products Requiring Electrical Connection: Listed and classified by UL as suitable for the purpose specified and indicated.
- B. Finishes: Identified in schedule at end of section and as follows.
 1. Continuous Hinges628
 2. Butts (Interior)652
 3. Flush Bolts626
 4. Locksets626
 5. Closers689
 6. Exit Devices626
 7. Exit Trim626
 8. SilencersGray
 9. Cylinders626
 10. Wall Stops630
 11. Floor Stops626
 12. Kickplates / Mopplates630
 13. Wall Magnets628
 14. Overhead Stops652
 15. Hospital Push/Pulls626

2.14 KEYING

- A. Door Locks: Great grand master keyed, and as follows.
 1. Include construction keying.
 2. Key to existing Falcon Great Grand Masterkey keying system.
- B. Supply keys in the following quantities:
 1. 4 construction keys.

- 2. 2 change keys for each lock.

PART 3 EXECUTION

3.01 EXAMINATION

- A. Verify that doors and frames are ready to receive work; labeled, fire-rated doors and frames are present and properly installed, and dimensions are as indicated on shop drawings.
- B. Verify that electric power is available to power operated devices and of the correct characteristics.

3.02 INSTALLATION

- A. Install hardware in accordance with manufacturer's instructions and applicable codes.
- B. Use templates provided by hardware item manufacturer.
- C. Install hardware on fire-rated doors and frames in accordance with code and NFPA 80.
- D. Mounting heights for hardware from finished floor to center line of hardware item. As indicated in the following list; unless noted otherwise in Door Hardware Sets Schedule or on the drawings.
 - 1. For steel doors and frames: Comply with DHI (LOCS) "Recommended Locations for Architectural Hardware for Standard Steel Doors and Frames".
 - 2. For Wood Doors: Comply with DHI WDHS.3 "Recommended Locations for Architectural Hardware for Flush Wood Doors".
- E. Set exterior door thresholds with full-width bead of elastomeric sealant on each point of contact with floor providing a continuous weather seal; anchor thresholds with stainless steel countersunk screws.

3.03 FIELD QUALITY CONTROL

- A. Provide an Architectural Hardware Consultant to inspect installation and certify that hardware and installation has been furnished and installed in accordance with manufacturer's instructions and as specified.

3.04 ADJUSTING

- A. Adjust work under provisions of Section 01 7000 - Execution Requirements.
- B. Adjust hardware for smooth operation.

3.05 PROTECTION

- A. Protect finished Work under provisions of Section 01 7000 - Execution Requirements.
- B. Do not permit adjacent work to damage hardware or finish.

3.06 DOOR SCHEDULE SEE DRAWINGS (FOR LOCATIONS AND AS FOLLOWS).

PART 4 HARDWARE SETS

HW-1: Unit Entry Door

Electronic Lock	Yale Assure – YRD226
Lever	Yale – Norwood
Peephole	Hager - 1755
Wall Stop	Hager - 232W

HW-1A: Telecom Entry Door

Electronic Lock	Yale Assure – YRD226
Lever	Yale – Norwood

HW-2: Bedroom Door

Electronic Lock	Yale Assure – YRL226
Wall Stop	Hager - 232W

HW-3: Bath Door

Privacy Lock Hager – 3640 (August Lever)
Wall Stop Hager – 232W

HW-4: Small Laundry Door / Closet Door

Passage Lock Hager – 3610 (August Lever)
Wall Stop Hager – 232W

HW-5: Bi-Fold Laundry Door

Hardware by door supplier

HW-7: Closet Door (PR)

Dummy Lock Hager – 3617 (August Lever)
Magnetic Catch Rockwood – 900
Wall Stop Hager – 232W

HW-9: Water Heater Door

Deadlock Hager – 3215
Wall Stop Hager – 232W

HW-10: Bedroom Barn Door

ADA accessible hardware by door supplier

END OF SECTION 08 7100

SECTION 08 8000**GLAZING****PART 1 GENERAL****1.01 SECTION INCLUDES**

- A. Float Glass
- B. Safety Glass
- C. Insulating glass.
- D. Glazing compounds.

1.02 RELATED REQUIREMENTS

- A. Section 07 9200 - Joint Sealants: Sealants for other than glazing purposes.

1.03 REFERENCE STANDARDS

- A. 16 CFR 1201 - Safety Standard for Architectural Glazing Materials; Current Edition.
- B. ANSI Z97.1 - American National Standard for Safety Glazing Materials Used in Buildings - Safety Performance Specifications and Methods of Test; 2015.
- C. ASCE 7 - Minimum Design Loads and Associated Criteria for Buildings and Other Structures; Most Recent Edition Cited by Referring Code or Reference Standard.
- D. ASTM C864 - Standard Specification for Dense Elastomeric Compression Seal Gaskets, Setting Blocks, and Spacers; 2005 (Reapproved 2015).
- E. ASTM C920 - Standard Specification for Elastomeric Joint Sealants; 2018.
- F. ASTM C1036 - Standard Specification for Flat Glass; 2016.
- G. ASTM C1048 - Standard Specification for Heat-Strengthened and Fully Tempered Flat Glass; 2018.
- H. ASTM C1172 - Standard Specification for Laminated Architectural Flat Glass; 2014.
- I. ASTM C1193 - Standard Guide for Use of Joint Sealants; 2016.
- J. ASTM C1376 - Standard Specification for Pyrolytic and Vacuum Deposition Coatings on Flat Glass; 2015.
- K. ASTM E84 - Standard Test Method for Surface Burning Characteristics of Building Materials; 2020.
- L. ASTM E90 - Standard Test Method for Laboratory Measurement of Airborne Sound Transmission Loss of Building Partitions and Elements; 2009 (Reapproved 2016).
- M. ASTM E1300 - Standard Practice for Determining Load Resistance of Glass in Buildings; 2016.
- N. ASTM E1996 - Standard Specification for Performance of Exterior Windows, Curtain Walls, Doors, and Impact Protective Systems Impacted by Windborne Debris in Hurricanes; 2017.
- O. ASTM E2190 - Standard Specification for Insulating Glass Unit Performance and Evaluation; 2010.
- P. ASTM F1233 - Standard Test Method for Security Glazing Materials And Systems; 2008 (Reapproved 2019).
- Q. GANA (GM) - GANA Glazing Manual; 2008.
- R. GANA (SM) - GANA Sealant Manual; 2008.
- S. GANA (LGRM) - Laminated Glazing Reference Manual; 2009.
- T. ICC (IBC) - International Building Code; Most Recent Edition Adopted by Authority Having Jurisdiction, Including All Applicable Amendments and Supplements.
- U. IGMA TM-3000 - North American Glazing Guidelines for Sealed Insulating Glass Units for Commercial & Residential Use; 1990 (2016).
- V. NFRC 100 - Procedure for Determining Fenestration Product U-factors; 2017.

- W. NFRC 200 - Procedure for Determining Fenestration Product Solar Heat Gain Coefficient and Visible Transmittance at Normal Incidence; 2014, with Errata (2017).
- X. NFRC 300 - Test Method for Determining the Solar Optical Properties of Glazing Materials and Systems; 2017.
- Y. UL 752 - Standard for Bullet-Resisting Equipment; Current Edition, Including All Revisions.

1.04 ADMINISTRATIVE REQUIREMENTS

- A. Preinstallation Meeting: Convene a preinstallation meeting one week before starting related work of this section; require attendance by each affected trade.

1.05 SUBMITTALS

- A. See Section 01 3000 - Administrative Requirements for submittal procedures.
- B. Product Data on insulating, float and safety Glazing Types: Provide structural, physical and environmental characteristics, size limitations, special handling and installation requirements.
- C. Product Data on Glazing Compounds and Accessories: Provide chemical, functional, and environmental characteristics, limitations, special application requirements, and identify available colors.
- D. Samples: Submit two samples 12 by 12 inches in size for each type of glass to be used.
- E. Certificates: Certify that products meet or exceed specified requirements.
- F. Warranty Documentation: Submit manufacturer warranty and ensure that forms have been completed in Owner's name and registered with manufacturer.
- G. Maintenance Materials: Furnish the following for Owner's use in maintenance of project.
 - 1. See Section 01 6000 - Product Requirements, for additional provisions.

1.06 QUALITY ASSURANCE

- A. Perform Work in accordance with GANA (GM), GANA (SM), GANA (LGRM), and IGMA TM-3000 for glazing installation methods. Maintain one copy on site.
- B. Installer Qualifications: Company specializing in performing the work of this section with minimum 15 years documented experience.

1.07 MOCK-UPS

- A. See Section 01 4000 - Quality Requirements for additional requirements.

1.08 FIELD CONDITIONS

- A. Do not install glazing when ambient temperature is less than 40 degrees F.
- B. Maintain minimum ambient temperature before, during and 24 hours after installation of glazing compounds.

1.09 WARRANTY

- A. See Section 01 7800 - Project Closeout for additional warranty requirements.
- B. Insulating Glass Units: Provide a ten (10) year manufacturer warranty to include coverage for seal failure, interpane dusting or misting, including replacement of failed units.
- C. Laminated Glass: Provide a ten (10) year manufacturer warranty to include coverage for delamination, including replacement of failed units.

PART 2 PRODUCTS

2.01 MANUFACTURERS

- A. Glass Fabricators:
 - 1. Trulite Glass & Aluminum Solutions, LLC: www.trulite.com.
 - 2. Viracon, Inc: www.viracon.com.
- B. Float Glass Manufacturers: Basis of Design

1. Vitro Architectural Glass (formerly PPG Industries, Inc.) Products: www.ppgideascales.com.
 - a. Clear Float: Solarban® 70 XL solar control low-e Glass by PPG®
 - b. Tinted: None
- C. Other Acceptable Float Glass Manufacturers
 1. AGC Glass Company North America, Inc: www.us.agc.com.
 2. Cardinal Glass Industries: www.cardinalcorp.com.
 3. Guardian Industries Corp: www.sunguardglass.com.
- D. Laminated Glass Manufacturers:
 1. Guardian Industries Corp: www.sunguardglass.com.
 2. Cardinal Glass Industries: www.cardinalcorp.com.
 3. Viracon, Architectural Glass segment of Apogee Enterprises, Inc: www.viracon.com.
 4. Substitutions: See Section 01 6000 - Product Requirements.

2.02 PERFORMANCE REQUIREMENTS - EXTERIOR GLAZING ASSEMBLIES

- A. Provide type and thickness of exterior glazing assemblies to support assembly dead loads, and to withstand live loads caused by positive and negative wind pressure acting normal to plane of glass.
 1. Design Pressure: Calculated in accordance with ASCE 7.
 2. Comply with ASTM E1300 for design load resistance of glass type, thickness, dimensions, and maximum lateral deflection of supported glass.
 3. Provide glass edge support system sufficiently stiff to limit the lateral deflection of supported glass edges to less than 1/175 of their lengths under specified design load.
 4. Glass thicknesses listed are minimum.

2.03 GLASS MATERIALS

- A. Clear Float Glass: Provide float glass based glazing unless noted otherwise.
 1. Annealed Type: ASTM C1036, Type I - Transparent Flat, Class 1 - Clear, Quality - Q3.
 2. Kind HS - Heat-Strengthened Type: Complies with ASTM C1048.
 3. Kind FT - Fully Tempered Type: Complies with ASTM C1048.
 4. Impact Resistant Safety Glass: Complies with ANSI Z97.1 - Class B, or 16 CFR 1201 - Category I criteria.
 5. Thicknesses: 6 mm (0.25 inch) minimum and as indicated. Provide greater thickness as required for exterior glazing wind load design, or interior structural glazing applications.
- B. Laminated Glass: Float glass laminated in accordance with ASTM C1172.
 1. Laminated Safety Glass: Complies with ANSI Z97.1 - Class B or 16 CFR 1201 - Category I impact test requirements.
 2. Polyvinyl Butyral (PVB) Interlayer: 0.030 inch thick, minimum.

2.04 GLASS MATERIALS

- A. Clear Float Glass (Type G-1): Clear, annealed.
 1. Comply with ASTM C 1036, Type I, transparent flat, Class 1 clear, Quality Q3 (glazing select).
 2. Comply with ASTM C 1048.
 3. 6 mm minimum thick.
- B. Safety Glass (Type SG-1): Clear; fully tempered.
 1. Comply with ASTM C 1036, Type I, transparent flat, Class 1 clear, Quality Q3 (glazing select) and ASTM C 1048.
 2. Comply with 16 CFR 1201 test requirements for Category II.
 3. Where glazing is to be installed in fire-rated partition, provide glazing that is also fire-protection rated in accordance with applicable code.
 4. 6 mm minimum thick.
 5. Provide this type of glazing in the locations required by code.
- C. Safety Glass Type [SG-2]: Laminated Glass: Clear Float glass laminated in accordance with ASTM C1172.

1. Laminated Safety Glass: Comply with 16 CFR 1201 test requirements for Category II.
 2. Plastic Interlayer: 0.060 inch thick, minimum.
 3. Where fully tempered is specified or required, provide glass that has been tempered by the tong-less horizontal method.
- D. Low E Glass (Type G-5): Float type, heat strengthened, tempered where required, clear.
1. Coating on inner surface.
 2. Visible light transmittance of 64 percent, visible light transmittance of 12 percent, U-Value - winter of .28, U-Value - summer of .26, shading coefficient of 0.32, solar heat gain coefficient of .27, light to solar gain of 2.37. Basis of design/performance is PPG Solarban 70XL.
 3. Comply with ASTM C 1036, Type I, transparent flat, Quality Q3 (glazing select).
 4. 6 mm minimum thick.

2.05 INSULATING GLASS UNITS

- A. Manufacturers:
1. Glass: Any of the manufacturers specified for float glass.
- B. Basis of Design Manufacturer.
1. PPG Industries, Inc: www.ppgideascales.com.
- C. Other Acceptable Manufacturers
1. Cardinal Glass Industries; _____: www.cardinalcorp.com/#sle.
 2. Guardian Glass, LLC; _____: www.guardianglass.com/#sle.
 3. Substitutions: See Section 01 6000 - Product Requirements.
- D. Insulating Glass Units: Types as indicated.
1. Durability: Certified by an independent testing agency to comply with ASTM E2190.
 2. Coated Glass: Comply with requirements of ASTM C1376 for pyrolytic (hard-coat) or magnetic sputter vapor deposition (soft-coat) type coatings on flat glass; coated vision glass, Kind CV; coated overhead glass, Kind CO; or coated spandrel glass, Kind CS.
 3. Metal Edge Spacers: Stainless steel, bent and soldered corners.
 4. Spacer Color: Brushed Stainless.
 5. Edge Seal:
 6. Color: Grey.
 7. Purge interpane space with dry air, hermetically sealed.
- E. Type IGU-1A - Insulating Glass Units: Vision glass, double glazed.
1. Applications: Exterior glazing unless otherwise indicated.
 2. Space between lites filled with air.
 3. Outboard Lite: Annealed float glass, 1/4 inch thick, minimum, low E coated..
 - a. Tint: Clear.
 - b. Coating: Low-E (passive type), on #2 surface.
 4. Inboard Lite: Annealed float glass, 1/4 inch thick, minimum.
 - a. Tint: Clear.
- F. Total Thickness: 1 inch.
1. Thermal Transmittance (U-Value), Winter - Center of Glass: 0.29, nominal.
 2. Thermal Transmittance (U-Value), Summer - Center of Glass: 0.27, nominal.
 3. Visible Light Transmittance (VLT): 42 percent, nominal.
 4. Solar Heat Gain Coefficient (SHGC): 0.23 percent, nominal.
 5. Shading Coefficient 0.27
 6. Outdoor Visible Light Transmittance: 64%

2.06 GLAZING COMPOUNDS

- A. Type GC-1 - Glazing Putty: Polymer modified latex recommended by manufacturer for outdoor use, knife grade consistency; gray color.

- B. Type GC-2 - Butyl Sealant: Single component; ASTM C920, Grade NS, Class 12-1/2, Uses M and A, Shore A hardness of 10 to 20; black color.
- C. Type GC-5 - Silicone Sealant: Single component; neutral curing; capable of water immersion without loss of properties; non-bleeding, non-staining; ASTM C920, Type S, Grade NS, Class 25, Uses M, A, and G; with cured Shore A hardness range of 15 to 25; color as selected.

2.07 ACCESSORIES

- A. Setting Blocks: Silicone, with 80 to 90 Shore A durometer hardness; ASTM C864 Option II. Length of 0.1 inch for each square foot of glazing or minimum 4 inch by width of glazing rabbet space minus 1/16 inch by height to suit glazing method and pane weight and area.
- B. Spacer Shims: Neoprene, 50 to 60 Shore A durometer hardness; ASTM C864 Option II. Minimum 3 inch long by one half the height of the glazing stop by thickness to suit application, self adhesive on one face.
- C. Glazing Tape, Back Bedding Mastic Type: Preformed, butyl-based, 100 percent solids compound with integral resilient spacer rod applicable to application indicated; 5 to 30 cured Shore A durometer hardness; coiled on release paper; black color.
 - 1. Width: As required for application.
 - 2. Thickness: As required for application.
 - 3. Spacer Rod Diameter: As required for application.
 - 4. Manufacturers:
 - a. Pecora Corporation: www.pecora.com/#sle.
 - b. Tremco Global Sealants: www.tremcosealants.com/#sle.
 - c. Substitutions: See Section 01 6000 - Product Requirements.
- D. Glazing Splines: Resilient silicone extruded shape to suit glazing channel retaining slot; ASTM C864 Option II; color black.
- E. Glazing Clips: Manufacturer's standard type.
- F. Smoke Removal Window/Glazing Unit Markings: Adhesive backed markings affixed to manually operable or fixed windows of high-rise buildings to identify units intended for post-fire smoke removal in compliance with ICC (IBC) and local building officials.

2.08 SOURCE QUALITY CONTROL

- A. See Section 01 4000 - Quality Requirements for additional requirements.

PART 3 EXECUTION

3.01 VERIFICATION OF CONDITIONS

- A. Verify that openings for glazing are correctly sized and within tolerances, including those for size, squareness, and offsets at corners.
- B. Verify that the minimum required face and edge clearances are being provided.
- C. Verify that surfaces of glazing channels or recesses are clean, free of obstructions that may impede moisture movement, weeps are clear, and support framing is ready to receive glazing system.
- D. Verify that sealing between joints of glass framing members has been completed effectively.
- E. Proceed with glazing system installation only after unsatisfactory conditions have been corrected.

3.02 PREPARATION

- A. Clean contact surfaces with appropriate solvent and wipe dry within maximum of 24 hours before glazing. Remove coatings that are not tightly bonded to substrates.
- B. Seal porous glazing channels or recesses with substrate compatible primer or sealer.
- C. Prime surfaces scheduled to receive sealant where required for proper sealant adhesion.

3.03 INSTALLATION, GENERAL

- A. Install glazing in compliance with written instructions of glass, gaskets, and other glazing material manufacturers, unless more stringent requirements are indicated, including those in glazing referenced standards.
- B. Install glazing sealants in accordance with ASTM C1193, GANA (SM), and manufacturer's instructions.
- C. Do not exceed edge pressures around perimeter of glass lites as stipulated by glass manufacturer.
- D. Set glass lites of system with uniform pattern, draw, bow, and similar characteristics.
- E. Set glass lites in proper orientation so that coatings face exterior or interior as indicated.

3.04 INSTALLATION - DRY GLAZING METHOD (GASKET GLAZING)

- A. Application - Exterior and/or Interior Glazed: Set glazing infills from either the exterior or the interior of the building.
- B. Place setting blocks at 1/4 points with edge block no more than 6 inch from corners.
- C. Rest glazing on setting blocks and push against fixed stop with sufficient pressure on gasket to attain full contact.
- D. Install removable stops without displacing glazing gasket; exert pressure for full continuous contact.

3.05 INSTALLATION - WET GLAZING METHOD (SEALANT AND SEALANT)

- A. Application - Exterior Glazed: Set glazing infills from the exterior of the building.
- B. Place setting blocks at 1/4 points and install glazing pane or unit.
- C. Install removable stops with glazing centered in space by inserting spacer shims both sides at 24 inch intervals, 1/4 inch below sight line.
- D. Fill gaps between glazing and stops with Silicone type sealant to depth of bite on glazing, but not more than 3/8 inch below sight line to ensure full contact with glazing and continue the air and vapor seal.
- E. Apply sealant to uniform line, flush with sight line. Tool or wipe sealant surface smooth.

3.06 INSTALLATION - WET/DRY GLAZING METHOD (PREFORMED TAPE AND SEALANT)

- A. Application - Exterior Glazed: Set glazing infills from the exterior of the building.
- B. Cut glazing tape to length and set against permanent stops, 3/16 inch below sight line. Seal corners by butting tape and dabbing with butyl sealant.
- C. Apply heel bead of butyl sealant along intersection of permanent stop with frame ensuring full perimeter seal between glass and frame to complete the continuity of the air and vapor seal.
- D. Place setting blocks at 1/4 points with edge block no more than 6 inch from corners.
- E. Rest glazing on setting blocks and push against tape and heel bead of sealant with sufficient pressure to attain full contact at perimeter of pane or glass unit.
- F. Install removable stops, with spacer strips inserted between glazing and applied stops 1/4 inch below sight lines.
 - 1. Place glazing tape on glazing pane of unit with tape flush with sight line.
- G. Fill gap between glazing and stop with Silicone type sealant to depth equal to bite of frame on glazing, but not more than 3/8 inch below sight line.
- H. Apply cap bead of Silicone type sealant along void between the stop and the glazing, to uniform line, flush with sight line. Tool or wipe sealant surface smooth.

3.07 FIELD QUALITY CONTROL

- A. See Section 01 4000 - Quality Requirements for additional requirements.
- B. Glass and Glazing product manufacturers to provide field surveillance of the installation of their products.

- C. Monitor and report installation procedures and unacceptable conditions.

3.08 CLEANING

- A. See Section 01 7419 - Construction Waste Management and Disposal, for additional requirements.
- B. Remove excess glazing materials from finish surfaces immediately after application using solvents or cleaners recommended by manufacturers.
- C. Remove nonpermanent labels immediately after glazing installation is complete.
- D. Clean glass and adjacent surfaces after sealants are fully cured.
- E. Clean glass on both exposed surfaces not more than 4 days prior to Date of Substantial Completion in accordance with glass manufacturer's written recommendations.

3.09 PROTECTION

- A. After installation, mark pane with an 'X' by using removable plastic tape or paste; do not mark heat absorbing or reflective glass units.
- B. Remove and replace glass that is damaged during construction period prior to Date of Substantial Completion.

3.10 SCHEDULES SEE DRAWINGS

END OF SECTION 08 8000

SECTION 08 8300**MIRRORS****PART 1 GENERAL****1.01 SECTION INCLUDES**

- A. Glass mirrors.
 - 1. Annealed float glass.

1.02 RELATED REQUIREMENTS

- A. Section 06 2000 - Finish Carpentry: Wood mirror frames.
- B. Section 10 2800 - Toilet, Bath, and Laundry Accessories: Metal mirror frames.

1.03 REFERENCE STANDARDS

- A. ASTM C920 - Standard Specification for Elastomeric Joint Sealants; 2018.
- B. ASTM C1036 - Standard Specification for Flat Glass; 2016.
- C. ASTM C1193 - Standard Guide for Use of Joint Sealants; 2016.
- D. ASTM C1503 - Standard Specification for Silvered Flat Glass Mirror; 2018.
- E. GANA (GM) - GANA Glazing Manual; 2008.
- F. GANA (SM) - GANA Sealant Manual; 2008.

1.04 SUBMITTALS

- A. See Section 01 3000 - Administrative Requirements, for submittal procedures.
- B. Product Data on Mirror Types: Submit structural, physical and environmental characteristics, size limitations, special handling and installation requirements.
- C. Product Data on Glazing Compounds: Submit chemical, functional, and environmental characteristics, limitations, special application requirements, and identify available colors.
- D. Manufacturer's Certificate: Certify that mirrors, meets or exceeds specified requirements.
- E. Warranty: Submit manufacturer warranty and ensure that forms have been completed in Owner's name and registered with manufacturer.
- F. Maintenance Materials: Furnish the following for Owner's use in maintenance of project.
 - 1. See Section 01 6000 - Product Requirements, for additional provisions.

1.05 QUALITY ASSURANCE

- A. Perform Work in accordance with GANA (GM), GANA (SM), and _____ for glazing installation methods.
- B. Fabricate, store, transport, receive, install, and clean mirrors in accordance with manufacturer's recommendations.

1.06 FIELD CONDITIONS

- A. Do not install mirrors when ambient temperature is less than 50 degrees F.
- B. Maintain minimum ambient temperature before, during and 24 hours after installation of glazing compounds.

1.07 WARRANTY

- A. See Section 01 7800 - Project Closeout, for additional warranty requirements.
- B. Provide five year manufacturer warranty for reflective coating on mirrors and replacement of same.

PART 2 PRODUCTS**2.01 MANUFACTURERS**

- A. Mirrors:
 - 1. Binswanger Mirror/ACI Distribution; ____: www.binswangerglass.com/#sle.

2. Lenoir Mirror Co; ____: www.lenoirmirror.com/#sle.
3. Substitutions: See Section 01 6000 - Product Requirements.

2.02 MATERIALS

- A. Mirror Design Criteria: Select materials and/or provide supports as required to limit mirror material deflection to 1/200, or to the flexure limit of glass, with full recovery of glazing materials, whichever is less.
- B. Mirror Glass; Type ____: Clear, annealed float glass; ASTM C1036, with copper and silver coatings, and protective overcoating.
 1. Size: As indicated on drawings.

2.03 GLAZING COMPOUNDS

- A. Silicone Sealant; Type ____: ASTM C920, Type S, Grade NS, Class 25, Uses M and A; single component; chemical or solvent curing; non-bleeding, non-staining, cured Shore A hardness of 15 to 25; ____ color.

2.04 ACCESSORIES

- A. Glazing Clips: Manufacturer's standard type.
- B. Mirror Attachment Accessories: Stainless steel clips.
- C. Mirror Adhesive: Silicone pre-polymer based, chemically compatible with mirror coating and wall substrate.

PART 3 EXECUTION

3.01 EXAMINATION

- A. Verify that openings for mirrored glazing are correctly sized and within tolerance.
- B. Verify that surfaces of mirror frames or recesses are clean, free of obstructions, and ready for installation of mirrors.

3.02 PREPARATION

- A. Clean contact surfaces with solvent and wipe dry.
- B. Seal porous mirror frames or recesses with substrate compatible primer or sealer. Prime surfaces scheduled to receive sealant.
- C. Prepare installation in accordance with ASTM C1193 for solvent release sealants, and install sealant in accordance with manufacturer's instructions.

3.03 INSTALLATION

- A. Install mirrors in accordance with manufacturer's recommendations.
- B. Set mirrors plumb and level, and free of optical distortion.
- C. Set mirrors with edge clearance free of surrounding construction including countertops or backsplashes.
- D. Frameless Mirrors: Set mirrors in proper place with adhesive, applied in accordance with adhesive manufacturer's instructions.

3.04 CLEANING

- A. Remove wet glazing materials from finish surfaces.
- B. Remove labels after work is complete.
- C. Clean mirrors and adjacent surfaces.

END OF SECTION 08 8300

SECTION 09 2116**GYPSUM BOARD ASSEMBLIES****PART 1 GENERAL****1.01 SECTION INCLUDES**

- A. Performance criteria for gypsum board assemblies.
- B. Cold Formed Metal channel ceiling framing.
- C. Shaft wall system.
- D. Fire rated area separation walls.
- E. Acoustic insulation.
- F. Gypsum wallboard.
- G. Joint treatment and accessories.

1.02 RELATED REQUIREMENTS

- A. Section 06 1000 - Rough Carpentry: wood blocking for support of wall mounted components .
- B. Section 09 9610 - High Performance Coatings - Specialty

1.03 REFERENCE STANDARDS

- A. AISI S100 - North American Specification for the Design of Cold-Formed Steel Structural Members; 2016, with Supplement (2018).
- B. AISI S220 - North American Standard for Cold-Formed Steel Framing - Nonstructural Members; 2015.
- C. AISI S240 - North American Standard for Cold-Formed Steel Structural Framing; 2015 (Amended 2017).
- D. ANSI A108.11 - American National Standard Specifications for Interior Installation of Cementitious Backer Units; 2018.
- E. ANSI A118.9 - American National Standard Specifications for Test Methods and Specifications for Cementitious Backer Units; 1999 (Reaffirmed 2016).
- F. ASTM A653/A653M - Standard Specification for Steel Sheet, Zinc-Coated (Galvanized) or Zinc-Iron Alloy-Coated (Galvannealed) by the Hot-Dip Process; 2020.
- G. ASTM A1003/A1003M - Standard Specification for Steel Sheet, Carbon, Metallic- and Nonmetallic-Coated for Cold-Formed Framing Members; 2015.
- H. ASTM C475/C475M - Standard Specification for Joint Compound and Joint Tape for Finishing Gypsum Board; 2017.
- I. ASTM C514 - Standard Specification for Nails for the Application of Gypsum Board; 2004 (Reapproved 2020).
- J. ASTM C645 - Standard Specification for Nonstructural Steel Framing Members; 2018.
- K. ASTM C665 - Standard Specification for Mineral-Fiber Blanket Thermal Insulation for Light Frame Construction and Manufactured Housing; 2017.
- L. ASTM C754 - Standard Specification for Installation of Steel Framing Members to Receive Screw-Attached Gypsum Panel Products; 2020.
- M. ASTM C840 - Standard Specification for Application and Finishing of Gypsum Board; 2019b.
- N. ASTM C954 - Standard Specification for Steel Drill Screws for the Application of Gypsum Panel Products or Metal Plaster Bases to Steel Studs From 0.033 in. (0.84 mm) to 0.112 in. (2.84 mm) in Thickness; 2018.
- O. ASTM C1047 - Standard Specification for Accessories For Gypsum Wallboard and Gypsum Veneer Base; 2019.
- P. ASTM C1278/C1278M - Standard Specification for Fiber-Reinforced Gypsum Panel; 2017.

- Q. ASTM C1288 - Standard Specification for Discrete Non-Asbestos Fiber-Cement Interior Substrate Sheets; 2017.
- R. ASTM C1325 - Standard Specification for Fiber-Mat Reinforced Cementitious Backer Units; 2019.
- S. ASTM C1396/C1396M - Standard Specification for Gypsum Board; 2017.
- T. ASTM D3273 - Standard Test Method for Resistance to Growth of Mold on the Surface of Interior Coatings in an Environmental Chamber; 2016.
- U. ASTM E84 - Standard Test Method for Surface Burning Characteristics of Building Materials; 2020.
- V. ASTM E90 - Standard Test Method for Laboratory Measurement of Airborne Sound Transmission Loss of Building Partitions and Elements; 2009 (Reapproved 2016).
- W. ASTM E413 - Classification for Rating Sound Insulation; 2016.
- X. GA-214 - Recommended Levels of Gypsum Board Finish; Gypsum Association; 2007.
- Y. GA-216 - Application and Finishing of Gypsum Panel Products; 2016.
- Z. GA-224 - Installation of Predecorated Gypsum Board; Gypsum Association; 2008.
- AA. GA-226 - Application of Gypsum Board to Form Curved Surfaces; Gypsum Association; 2016.
- AB. GA-600 - Fire Resistance Design Manual; 2015.
- AC. ICC (IBC) - International Building Code; Most Recent Edition Adopted by Authority Having Jurisdiction, Including All Applicable Amendments and Supplements.
- AD. ICC-ES AC308 - Acceptance Criteria for Water-Resistive Barriers; 2016.
- AE. ITS (DIR) - Directory of Listed Products; Intertek Testing Services NA, Inc.; current edition.

1.04 SYSTEM DESCRIPTION

- A. Acoustic Attenuation for Interior Gypsum Board Ceilings : STC of 60 minimum calculated in accordance with ASTM E 413, based on tests conducted in accordance with ASTM E 90.
- B. Shaft Wall: Configure and install components as required to achieve the following performance levels:
 - 1. Air Pressure Within Shaft: Intermittent loads of 5 lbf/sq ft with maximum mid-span deflection of L/240.
 - 2. Acoustic Attenuation: STC of 50-54 calculated in accordance with ASTM E 413, based on tests conducted in accordance with ASTM E 90.

1.05 SUBMITTALS

- A. See Section 01 3000 - Administrative Requirements for submittal procedures.
- B. Shop Drawings: Indicate special details associated with fireproofing and acoustic seals.
- C. Product Data:
 - 1. Provide manufacturer's data on partition head to structure connectors, showing compliance with requirements.
- D. Product Data: Provide manufacturer's data on partition head to structure connectors, showing compliance with requirements.
- E. Test Reports: For stud framing products that do not comply with AISI S220 or ASTM C754, provide independent laboratory reports showing maximum stud heights at required spacings and deflections.
- F. Samples: Submit two samples of gypsum board finished with simulated plaster application, 12 by 12 inches in size, illustrating finish color and texture.

1.06 QUALITY ASSURANCE

- A. Perform in accordance with ASTM C 840. Comply with requirements of GA-600 for fire-rated assemblies.
 - 1. Maintain one copy of standards at project site.
- B. Installer Qualifications: Company specializing in performing gypsum board installation and finishing, with minimum 10 years of experience.

1.07 REGULATORY REQUIREMENTS

- A. Conform to applicable code for fire rated assemblies as indicated on drawings.

PART 2 PRODUCTS**2.01 GYPSUM BOARD ASSEMBLIES**

- A. Provide completed assemblies complying with ASTM C840 and GA-216.
- B. Shaft Walls at HVAC Shafts: Provide completed assemblies with the following characteristics:
 - 1. Air Pressure Within Shaft: Sustained loads of 5 lbf/sq ft with maximum mid-span deflection of L/240.
 - 2. Acoustic Attenuation: STC of 45-49 calculated in accordance with ASTM E413, based on tests conducted in accordance with ASTM E90.

2.02 METAL FRAMING MATERIALS

- A. Steel Sheet: ASTM A1003/A1003M, subject to the ductility limitations indicated in AISI S240.
- B. Manufacturers - Metal Framing, Connectors, and Accessories:
 - 1. Clarkwestern Dietrich Building Systems LLC: www.clarkdietrich.com.
 - 2. Dietrich Metal Framing: www.dietrichindustries.com.
 - 3. Marino: www.marinoware.com.
 - 4. The Steel Network, Inc: www.SteelNetwork.com.
 - 5. Substitutions: See Section 01 6000 - Product Requirements.
- C. Nonstructural Framing System Components: AISI S220; galvanized sheet steel, of size and properties necessary to comply with ASTM C754 for the spacing indicated, with maximum deflection of wall framing of L/120 at 5 psf.
 - 1. Exception: The minimum metal thickness and section properties requirements of ASTM C645 are waived provided steel of 40 ksi minimum yield strength is used, the metal is continuously dimpled, the effective thickness is at least twice the base metal thickness, and maximum stud heights are determined by testing in accordance with ASTM E72 using assemblies specified by ASTM C754.
 - 2. Studs: C-shaped with knurled or embossed faces.
 - 3. Runners: U shaped, sized to match studs.
 - 4. Ceiling Channels: C-shaped.
 - 5. Furring Members: Hat-shaped sections, minimum depth of 7/8 inch.
 - 6. Resilient Furring Channels: Single or double leg configuration; 1/2 inch channel depth.
 - a. Products:
- D. Shaft Wall Studs and Accessories: AISI S220; galvanized sheet steel, of size and properties necessary to comply with ASTM C754 and specified performance requirements.
 - 1. Products:
 - a. Same manufacturer as other framing materials.
- E. Partition Head to Structure Connections: Provide mechanical anchorage devices that accommodate deflection and prevent rotation of studs while maintaining structural performance of partition.
 - 1. Structural Performance: Maintain lateral load resistance and vertical movement capacity required by applicable code, when evaluated in accordance with AISI S100.
 - 2. Material: ASTM A653/A653M steel sheet, SS Grade 50/340, with G60/Z180 hot-dipped galvanized coating.
 - 3. Provide components UL-listed for use in UL-listed fire-resistance-rated head of partition joint systems indicated on drawings.
 - 4. Provide top track preassembled with connection devices spaced to fit stud spacing indicated on drawings; minimum track length of 12 feet.
- F. Preformed Top Track Firestop Seal:
 - 1. Provide components UL-listed for use in UL-listed fire-resistance-rated head of partition joint systems indicated on drawings.

2.03 BOARD MATERIALS

- A. Manufacturers - Gypsum-Based Board:
 - 1. American Gypsum Company: www.americangypsum.com.
 - 2. CertainTeed Corporation: www.certainteed.com.
 - 3. Continental Building Products: www.continental-bp.com.
 - 4. Georgia-Pacific Gypsum: www.gpgypsum.com.
 - 5. National Gypsum Company: www.nationalgypsum.com.
 - 6. USG Corporation: www.usg.com.
- B. Backing Board For Wet Areas: One of the following products:
 - 1. Application: Surfaces behind tile in wet areas including ceilings.
 - 2. Mold Resistance: Score of 10, when tested in accordance with ASTM D3273.
 - 3. Glass Mat Faced Board: Coated glass mat water-resistant gypsum backing panel as defined in ASTM C1178/C1178M.
 - a. Standard Type: Thickness 5/8 inch.
 - b. Products:
- C. Backing Board For Non Wet Areas: One of the following products:
 - 1. Application: Surfaces behind tile in non wet areas including ceilings.
 - 2. Mold Resistance: Score of 10, when tested in accordance with ASTM D3273.
 - 3. Glass Mat Faced Board: Coated glass mat water-resistant gypsum backing panel as defined in ASTM C1178/C1178M.
 - a. Standard Type: Thickness 5/8 inch.
 - b. Products:
 - 1) Georgia-Pacific Gypsum; DensArmor Plus.
 - 2) National Gypsum Company; Gold Bond eXP Tile Backer.
- D. Gypsum Board For Non-Wet Areas: Water-resistant gypsum backing board as defined in ASTM C1396/C1396M; sizes to minimum joints in place; ends square cut.
 - 1. Application: Ceilings with high performance coatings.
 - 2. Mold Resistance: Score of 10, when tested in accordance with ASTM D3273.
 - 3. Type: Regular, in locations indicated.
 - 4. Regular Board Thickness: 5/8 inch.
 - 5. Edges: Tapered.
 - 6. Products:
 - a. American Gypsum Company; M-Bloc: www.americangypsum.com/#sle.
 - b. Georgia-Pacific Gypsum; ToughRock Mold-Guard Gypsum Board: www.gpgypsum.com/#sle.
 - c. Georgia-Pacific Gypsum; DensArmor Plus: www.gpgypsum.com/#sle.
 - d. Substitutions: See Section 01 6000 - Product Requirements.
- E. Gypsum Wallboard: ASTM C 1396/C 1396M. Sizes to minimize joints in place; ends square cut.
 - 1. Regular Type:
 - a. Application: Use for vertical surfaces, unless otherwise indicated.
 - b. Thickness: 5/8 inch, as indicated.
 - c. Edges: Tapered.
 - 2. Ceiling Board: Special sag-resistant type.
 - a. Application: Ceilings, unless otherwise indicated.
 - b. Thickness: 5/8 inch.
 - c. Edges: Tapered.
- F. Water-Resistant Gypsum Backing Board: ASTM C 1396/C 1396M; ends square cut.
 - 1. Application: Ceilings for high performance coatings{Ceilings for high performance coatings}.
 - 2. Core Type: Regular, as indicated.
 - 3. Thickness: 5/8 inch, as indicated.

4. Edges: Tapered.
- G. Shaftwall and Coreboard: Type X; 1 inch thick by 24 inches wide, beveled long edges, ends square cut.
 1. Glass Mat Faced Type: Glass mat shaftliner gypsum panel or glass mat coreboard gypsum panel as defined in ASTM C1658/C1658M.
 2. Mold Resistance: Score of 10, when tested in accordance with ASTM D3273.
 3. Products:
 - a. Georgia-Pacific Gypsum LLC; DensGlass Ultra Shaftliner.

2.04 FIBERGLASS REINFORCED BOARD MATERIALS

2.05 GYPSUM BOARD ACCESSORIES

- A. Acoustic Insulation: ASTM C665; preformed mineral-fiber, friction fit type, unfaced; thickness ___ inch.
- B. Acoustic Insulation: ASTM C 665; preformed glass fiber, friction fit type, unfaced. Thickness: Full depth of framing. .
- C. Acoustic Sealant: See Section 07 9200 - Joint Sealants
- D. Finishing Accessories: ASTM C1047, rolled zinc or rigid plastic, unless noted otherwise.
 1. Types: As detailed or required for finished appearance.
 2. Special Shapes: In addition to conventional corner bead and control joints, provide U-bead at exposed panel edges.
 3. Products:
 - a. Same manufacturer as framing materials.
- E. Joint Materials: ASTM C475/C475M and as recommended by gypsum board manufacturer for project conditions.
- F. Screws for Fastening of Gypsum Panel Products to Cold-Formed Steel Studs Less than 0.033 inches in Thickness and Wood Members: ASTM C1002; self-piercing tapping screws, corrosion-resistant.
- G. Screws for Fastening of Gypsum Panel Products to Steel Members from 0.033 to 0.112 inch in Thickness: ASTM C954; steel drill screws, corrosion-resistant.

PART 3 EXECUTION

3.01 EXAMINATION

- A. Verify that project conditions are appropriate for work of this section to commence.

3.02 SHAFT WALL INSTALLATION

- A. Shaft Wall Framing: Install in accordance with manufacturer's installation instructions.
 1. Fasten runners to structure with short leg to finished side, using appropriate power-driven fasteners at not more than 16 inches on center.
 2. Install studs at spacing required to meet performance requirements.
- B. Shaft Wall Liner: Cut panels to accurate dimensions and install sequentially between special friction studs.

3.03 FRAMING INSTALLATION

- A. Metal Framing: Install in accordance with AISI S220 and manufacturer's instructions.
- B. Suspended Ceilings and Soffits: Space framing and furring members as indicated.
 1. Level ceiling system to a tolerance of 1/1200.
 2. Laterally brace entire suspension system.
 3. Install bracing as required at exterior locations to resist wind uplift.
- C. Openings: Reinforce openings as required for weight of doors or operable panels, using not less than double studs at jambs.
- D. Blocking: Install light gage, mechanically fastened steel channel blocking for support of:
 1. Framed openings.

2. Provide 6 inch, 16 gage, steel runner notched to bypass steel studs and secure with two 3/8" pan head screws at each stud.

3.04 ACOUSTIC ACCESSORIES INSTALLATION

- A. Acoustic Insulation: Place tightly within spaces, around cut openings, behind and around electrical and mechanical items within partitions, and tight to items passing through partitions.
- B. Acoustic Sealant: Install in accordance with manufacturer's instructions.
 1. Seal around all penetrations by conduit, pipe, ducts, and rough-in boxes, except where firestopping is provided.

3.05 BOARD INSTALLATION

- A. Comply with ASTM C840, GA-216, and manufacturer's instructions. Install to minimize butt end joints, especially in highly visible locations.
- B. Single-Layer Nonrated: Install gypsum board in most economical direction, with ends and edges occurring over firm bearing.
 1. Exception: Tapered edges to receive joint treatment at right angles to framing.
- C. Provide 1/2" gap between bottom of gypsum board and floor at all partitions to ceiling transitions for sealant joint.
- D. Glass Mat Faced Gypsum Board: Install in strict accordance with manufacturer's instructions.
- E. Installation on Metal Framing: Use screws for attachment of gypsum board except face layer of nonrated double-layer assemblies, which may be installed by means of adhesive lamination.

3.06 INSTALLATION OF TRIM AND ACCESSORIES

- A. Control Joints: as indicated.
 1. Extend partition control joints to the ceiling structure centered on top of the frame and extend through a bulkhead/soffit condition.
 2. Control joints in ceilings should be located to intersect column penetrations, light fixtures, and air diffusers that can impose stresses on the ceiling.
 3. Place control joints consistent with lines of building spaces and as follows:
 - a. Not more than 30 feet apart on walls and ceilings over 50 feet long.
 - b. At exterior soffits, not more than 20 feet apart in both directions.
 - c. Where a partition, furring or column fireproofing abuts a structural element (except for a floor) or dissimilar wall or ceiling
 - d. Where a ceiling or soffit abuts a structural elements, dissimilar wall or partition, or other vertical penetration
 - e. Where construction changes within the plane of the partition or ceiling
 - f. Where a partition or furring run exceeds 30 feet
 - g. Where ceiling dimensions exceed 50 feet in either direction with perimeter relief, or 30 feet without relief
 - h. Where exterior soffits and ceilings exceed 30 feet in either direction
 - i. Where wings of L, U, and T shaped ceiling areas are joined
- B. Corner Beads: Install at external corners, using longest practical lengths.
- C. Edge Trim: Install at locations where gypsum board abuts dissimilar materials.

3.07 JOINT TREATMENT

- A. Glass Mat Faced Gypsum Board and Exterior Glass Mat Faced Sheathing: Use fiberglass joint tape, embed and finish with setting type joint compound.
- B. Finish gypsum board in accordance with levels defined in ASTM C840, as follows:
 1. Level 5: ceilings to receive semi-gloss or gloss paint finish and other areas specifically indicated.
 2. Level 4: ceilings to receive HP coating finish unless otherwise indicated.

- C. Tape, fill, and sand exposed joints, edges, and corners to produce smooth surface ready to receive finishes.
 - 1. Feather coats of joint compound so that camber is maximum 1/32 inch.
 - 2. Taping, filling, and sanding are not required at surfaces behind adhesive applied ceramic tile and fixed cabinetry.
 - 3. Taping, filling, and sanding are not required at base layer of double-layer applications.
- D. Where Level 5 finish is indicated, spray apply high build drywall surfacer over entire surface after joints have been properly treated; achieve a flat and tool mark-free finish.
- E. Fill and finish joints and corners of cementitious backing board as recommended by manufacturer.

3.08 TOLERANCES

- A. Maximum Variation of Finished Gypsum Board Surface from True Flatness: 1/8 inch in 10 feet in any direction.

3.09 FINISH LEVEL SCHEDULE

- A. Level 2: Fire rated partitions above finished ceilings concealed from view.
- B. Level 2: Utility areas and areas behind cabinetry.
- C. Level 3: Walls scheduled to receive textured wall finish.
- D. Level 4: Walls and ceilings scheduled to receive flat or eggshell paint finish.
- E. Level 5: Walls and ceilings scheduled to receive semi-gloss or gloss paint finish, or high performance coating..

END OF SECTION 09 2116

SECTION 09 3000**TILING****PART 1 GENERAL****1.01 SECTION INCLUDES**

- A. Tile for floor applications.
- B. Tile for wall applications.
- C. Cementitious backer board as tile substrate.
- D. Ceramic accessories.
- E. Ceramic trim.
- F. Non-ceramic trim.
- G. Crack Isolation / Waterproofing Membrane

1.02 RELATED REQUIREMENTS

- A. Section 03 5400 - SELF LEVELING UNDERLAYMENT.
- B. Section 09 2116 - Gypsum Board Assemblies: Tile backing substrate materials and installation.

1.03 REFERENCE STANDARDS

- A. ANSI A108/A118/A136.1 - American National Standard Specifications for the Installation of Ceramic Tile (Compendium); 2017.
 - 1. ANSI A108.1a - American National Standard Specifications for Installation of Ceramic Tile in the Wet-Set Method, with Portland Cement Mortar; 2017.
 - 2. ANSI A108.1b - American National Standard Specifications for Installation of Ceramic Tile on a Cured Portland Cement Mortar Setting Bed with Dry-Set or Latex-Portland Cement Mortar; 2017.
 - 3. ANSI A108.1c - Specifications for Contractors Option: Installation of Ceramic Tile in the Wet-Set Method with Portland Cement Mortar or Installation of Ceramic Tile on a Cured Portland Cement Mortar Bed with Dry-Set or Latex-Portland Cement; 1999 (Reaffirmed 2016).
 - 4. ANSI A108.2 - American National Standard General Requirements: Materials, Environmental and Workmanship; 2019.
 - 5. ANSI A108.4 - American National Standard Specifications for Installation of Ceramic Tile with Organic Adhesives or Water Cleanable Tile-Setting Epoxy Adhesive; 2009 (Revised).
 - 6. ANSI A108.5 - American National Standard Specifications for Installation of Ceramic Tile with Dry-Set Portland Cement Mortar or Latex-Portland Cement Mortar; 1999 (Reaffirmed 2010).
 - 7. ANSI A108.10 - American National Standard Specifications for Installation of Grout in Tilework; 2017.
 - 8. ANSI A108.11 - American National Standard Specifications for Interior Installation of Cementitious Backer Units; 2018.
 - 9. ANSI A108.12 - American National Standard for Installation of Ceramic Tile with EGP (Exterior Glue Plywood) Latex-Portland Cement Mortar; 1999 (Reaffirmed 2010).
 - 10. ANSI A108.13 - American National Standard for Installation of Load Bearing, Bonded, Waterproof Membranes for Thin-Set Ceramic Tile and Dimension Stone; 2005 (Reaffirmed 2016).
 - 11. ANSI A108.19 - American National Standard Specifications for Interior Installation of Gauged Porcelain Tiles and Gauged Porcelain Tile Panels/Slabs by the Thin-Bed Method Bonded with Modified Dry-Set Cement Mortar or Improved Modified Dry-Set Cement Mortar; 2020.
 - 12. ANSI A108.20 - American National Standard Specifications for Exterior Installation of Vertical and Overhead Gauged Porcelain Tiles and Gauged Porcelain Tile Panels/Slabs by the Thin-Bed Method Bonded with Improved Modified Dry-Set Cement Mortar; 2020.
 - 13. ANSI A118.1 - American National Standard Specifications for Dry-Set Cement Mortar; 2012 (Revised).
 - 14. ANSI A118.4 - American National Standard Specifications for Modified Dry-Set Cement Mortar; 2012 (Revised).

15. ANSI A118.5 - American National Standard Specifications for Chemical Resistant Furan Mortars and Grouts for Tile Installation; 1999 (Reaffirmed 2016).
 16. ANSI A118.6 - American National Standard Specifications for Standard Cement Grouts for Tile Installation; 2010 (Reaffirmed 2016).
 17. ANSI A118.7 - American National Standard Specifications for High Performance Cement Grouts for Tile Installation; 2010 (Reaffirmed 2016).
 18. ANSI A118.9 - American National Standard Specifications for Test Methods and Specifications for Cementitious Backer Units; 1999 (Reaffirmed 2016).
 19. ANSI A118.8 - American National Standard Specifications for Modified Epoxy Emulsion Mortar/Grout; 2013.1.
 20. ANSI A118.10 - American National Standard Specifications for Load Bearing, Bonded, Waterproof Membranes For Thin-Set Ceramic Tile And Dimension Stone Installation; 2014.
- B. ANSI A118.12 - American National Standard Specifications for Crack Isolation Membranes for Thin-Set Ceramic Tile and Dimension Stone Installation; 2014.
 - C. ANSI A118.15 - American National Standard Specifications for Improved Modified Dry-Set Cement Mortar; 2013.1.
 1. ANSI A136.1 - American National Standard for Organic Adhesives for Installation of Ceramic Tile; 2008 (Reaffirmed 2013).
 2. ANSI A137.1 - American National Standard Specifications for Ceramic Tile; 2019.
 - D. ASTM C1178/C1178M - Standard Specification for Coated Glass Mat Water-Resistant Gypsum Backing Panel; 2018.
 - E. TCNA (HB) - Handbook for Ceramic, Glass, and Stone Tile Installation; 2019.

1.04 ADMINISTRATIVE REQUIREMENTS

- A. Preinstallation Meeting: Convene a preinstallation meeting one week before starting work of this section; require attendance by all affected installers. Include other affected Contractors and Subcontractors affected by the Work. Prior to Preinstallation Meeting all required submittals shall be reviewed and approved, and the mockup constructed, reviewed and approved.

1.05 SUBMITTALS

- A. See Section 01 3000 - Administrative Requirements for submittal procedures.
- B. Product Data: Provide manufacturers' data sheets on tile, mortar, grout, and accessories. Include instructions for using grouts and adhesives.
- C. Shop Drawings: Indicate tile layout, patterns, color arrangement, perimeter conditions, junctions with dissimilar materials, control and expansion joints, thresholds, ceramic accessories, and setting details.
- D. Samples: Mount tile and apply grout on two plywood panels, minimum 18 by 18 inches in size illustrating pattern, color variations, and grout joint size variations.
- E. Manufacturer's Certificate: Certify that products meet or exceed specified requirements.
- F. Maintenance Data: Include recommended cleaning methods, cleaning materials, and stain removal methods.
- G. Maintenance Materials: Furnish the following for Owner's use in maintenance of project.
 1. See Section 01 6000 - Product Requirements, for additional provisions.

1.06 QUALITY ASSURANCE

- A. Manufacturer Qualifications: Company specializing in manufacturing the types of products specified in this section, with minimum five years of documented experience.

1.07 MOCK-UPS

- A. See Section 01 4000 - Quality Requirements for general requirements for mock-up.

- B. Construct tile mock-up where indicated on drawings, incorporating all components specified for the location.
 - 1. Minimum size 4'x6', including multiple colors.
 - 2. Approved mock-up may remain as part of work.

1.08 DELIVERY, STORAGE, AND HANDLING

- A. Protect adhesives from freezing or overheating in accordance with manufacturer's instructions.

1.09 FIELD CONDITIONS

- A. Do not install solvent-based products in an unventilated environment.
- B. Maintain ambient and substrate temperature above 50 degrees F and below 100 degrees F during installation and curing of setting materials.

PART 2 PRODUCTS

2.01 TILE

- A. Manufacturers Basis of Design: See Finish Schedule
 - 1. Substitutions: See Section 01 6000 - Product Requirements.

2.02 TRIM AND ACCESSORIES

- A. Ceramic Accessories: Matching finish, same color and finish as adjacent field tile; same manufacturer as tile.
- B. Ceramic Trim: As detailed and in sizes indicated.
 - 1. Applications: As indicated:
 - 2. Manufacturers: Same as for tile.
- C. Non-Ceramic Trim: Satin brass anodized extruded aluminum, style and dimensions to suit application, for setting using tile mortar or adhesive.
 - 1. Applications: As indicated:

2.03 SETTING MATERIALS

2.04 ADHESIVE MATERIALS

- A. Manufacturers:
 - 1. Bonsal American, Inc: www.sakrete.com
 - 2. Bostik Inc: www.bostik-us.com.
 - 3. Mapei Corporation: www.mapei.com.
 - 4. Substitutions: See Section 01 6000 - Product Requirements.
- B. Organic Adhesive: ANSI A136.1, thinset bond type; use Type I in areas subject to prolonged moisture exposure.

2.05 MORTAR MATERIALS

- A. Manufacturers:
 - 1. Bostik, Inc: www.bostik-us.com.
 - 2. Custom Building Products: www.custombuildingproducts.com.
 - 3. Laticrete International, Inc.; www.laticrete.com
 - 4. Mapei Corporation: www.mapei.com. (Owner's decorator prefers this)
 - 5. Substitutions: See Section 01 6000 - Product Requirements.
- B. Mortar Bed Materials: Portland cement, sand, latex additive , and water.
- C. Mortar Bond Coat Materials for Thin-Set Installations:
 - 1. Dry-Set Portland Cement type: ANSI A118.1.
 - 2. Latex-Portland Cement type: ANSI A118.4.

2.06 GROUTS

- A. Manufacturers and Products:

1. ARDEX Engineered Cements ARDEX FL™ Rapid Set, Flexible, Sanded Grout :
www.ardexamericas.com.
2. Bostik Inc: www.bostik-us.com.
3. Custom Building Products; Product Fusion Pro® Single Component® Grout:
www.custombuildingproducts.com.
4. Substitutions: See Section 01 6000 - Product Requirements.

2.07 ACCESSORY MATERIALS

- A. Concrete Floor Slab Anti Fracture and Waterproofing Membrane: Cold-applied, liquid rubber polymer material complying with ANSI A118.12; with or without
 1. Thickness: 20 mils minimum-40 mils, maximum.
 2. Crack Resistance: No failure at 1/8 inch gap, minimum.
 3. Products:
 - a. ARDEX Group© ARDEX 8+9™ :www.ardex.com
- B. Backer Board: Cementitious type complying with ANSI A118.9; high density, glass fiber reinforced, 7/16 inch thick; 2 inch wide coated glass fiber tape for joints and corners.
 1. Product: See Section 09 2116 - Gypsum Board Assemblies .
- C. Backer Board: Coated glass mat type complying with ASTM C1178/C1178M; inorganic fiberglass mat on both surfaces and integral acrylic coating vapor retarder.
 1. Standard Type: Thickness 1/2 inch.
 2. Product: See Section 09 2116 - Gypsum Board Assemblies
- D. Mesh Tape: 2 inch wide self-adhesive fiberglass mesh tape.

PART 3 EXECUTION

3.01 EXAMINATION

- A. Verify that subfloor surfaces are smooth and flat within the tolerances specified for that type of work and are ready to receive tile.
- B. Verify that subfloor surfaces are dust free and free of substances that could impair bonding of setting materials to subfloor surfaces.
- C. Verify that concrete sub-floor surfaces are ready for tile installation by testing for moisture emission rate and alkalinity; obtain instructions if test results are not within limits recommended by tile manufacturer and setting materials manufacturer.
- D. Verify that required floor-mounted utilities are in correct location.

3.02 PREPARATION

- A. Protect surrounding work from damage.
- B. Vacuum clean surfaces and damp clean.
- C. Seal substrate surface cracks with filler. Level existing substrate surfaces to acceptable flatness tolerances.
- D. Install backer board in accordance with ANSI A108.11 and board manufacturer's instructions. Tape joints and corners, cover with skim coat of setting material to a feather edge.
- E. Install cementitious backer board in accordance with ANSI A108.11 and board manufacturer's instructions. Tape joints and corners, cover with skim coat of dry-set mortar to a feather edge.
- F. Install tile backer board in strict accordance with manufacturer's instructions, using galvanized roofing nails or corrosion-resistant bugle head drywall screws. Bed fiberglass self-adhesive tape at all joints and corners with material used to set tiles.

3.03 INSTALLATION - GENERAL

- A. Install tile, thresholds, and stair treads and grout in accordance with applicable requirements of ANSI A108.1a through ANSI A108.20, manufacturer's instructions, and TCNA (HB) recommendations.

- B. Lay tile to pattern indicated. Do not interrupt tile pattern through openings.
- C. Cut and fit tile to penetrations through tile, leaving sealant joint space. Form corners and bases neatly. Align floor joints.
- D. Place tile joints uniform in width, subject to variance in tolerance allowed in tile size. Make grout joints without voids, cracks, excess mortar or excess grout, or too little grout.
- E. Form internal angles square and external angles bullnosed.
- F. Install ceramic accessories rigidly in prepared openings.
- G. Install non-ceramic trim in accordance with manufacturer's instructions.
- H. Install thresholds where indicated.
- I. Sound tile after setting. Replace hollow sounding units.
- J. Keep control and expansion joints free of mortar, grout, and adhesive.
- K. Prior to grouting, allow installation to completely cure; minimum of 48 hours.
- L. Grout tile joints unless otherwise indicated. Use standard grout unless otherwise indicated.
- M. At changes in plane and tile-to-tile control joints, use tile sealant instead of grout, with either bond breaker tape or backer rod as appropriate to prevent three-sided bonding.

3.04 INSTALLATION - FLOORS - THIN-SET METHODS

NOTE: COMBINATION CRACK ISOLATION / WATERPROOFING MEMBRANE IS REQUIRED TO BE INSTALLED UNDER ALL AREAS SCHEDULED TO RECEIVE PORCELAIN, CERAMIC, QUARRY, OR OTHER HARD TILE MATERIAL.

NOTE: AT AREAS REQUIRING THE APPLICATION OF CEMENTITIOUS SELF LEVELING UNDERLAYMENT UNDER HARD TILE FLOORING, THE CRACK ISOLATION / WATERPROOFING MEMBRANE SHALL BE INSTALLED OVER THE UNDERLAYMENT

- A. Over exterior concrete substrates, install in accordance with TCNA (HB) Method F102, with standard grout.
- B. Over interior concrete substrates, install in accordance with TCNA (HB) Method F113, dry-set or latex-Portland cement bond coat, with standard grout, unless otherwise indicated.
- C. Over interior concrete substrates, install in accordance with TCA Handbook Method F113, dry-set or latex-portland cement bond coat, with standard grout, unless otherwise indicated.
 - 1. Use combination Anti-Fracture and Waterproofing membrane under all tile unless other underlayment is indicated.

3.05 INSTALLATION - WALL TILE

- A. Over cementitious backer units on studs, install in accordance with TCNA (HB) Method W244, using membrane at toilet rooms.
- B. Over coated glass mat backer board on studs, install in accordance with TCNA (HB) Method W245.
- C. Over gypsum wallboard on wood or metal studs install in accordance with The Tile Council of North America Handbook Method W243, thin-set with dry-set or latex-portland cement bond coat, unless otherwise indicated.
- D. Over interior concrete and masonry install in accordance with The Tile Council of North America Handbook Method W202, thin-set with dry-set or latex-portland cement bond coat.

3.06 CLEANING

- A. Clean tile and grout surfaces.

3.07 PROTECTION

- A. Do not permit traffic over finished floor surface for 4 days after installation.

3.08 SCHEDULE (SEE DRAWINGS AND FINISH SCHEDULE)
END OF SECTION 09 3000

SECTION 09 6500**RESILIENT FLOORING****PART 1 GENERAL****1.01 SECTION INCLUDES**

- A. Resilient Plank Flooring (LVT).
- B. Resilient base.
- C. Installation accessories.

1.02 RELATED REQUIREMENTS

- A. Section 01 6116 - Volatile Organic Compound (VOC) Content Restrictions.
- B. Section 03 3000 - Cast-in-Place Concrete: Restrictions on curing compounds for concrete slabs and floors to receive adhesive-applied resilient flooring.
- C. Section 09 0561 - Common Work Results for Flooring Preparation: Removal of existing floor coverings, cleaning, and preparation.
- D. Section 26 0526 - Grounding and Bonding for Electrical Systems: Grounding and bonding of static control flooring to building grounding system.
- E. Section 26 0539 - Underfloor Raceways for Electrical Systems: Electrical floor cover plates for installation of resilient flooring specified in this section.

1.03 REFERENCE STANDARDS

- A. ASTM D6329 - Standard Guide for Developing Methodology for Evaluating the Ability of Indoor Materials to Support Microbial Growth Using Static Environmental Chambers; 1998 (Reapproved 2015).
- B. ASTM E492 - Standard Test Method for Laboratory Measurement of Impact Sound Transmission Through Floor-Ceiling Assemblies Using the Tapping Machine; 2009, with Editorial Revision (2016).
- C. ASTM E648 - Standard Test Method for Critical Radiant Flux of Floor-Covering Systems Using a Radiant Heat Energy Source; 2019a, with Editorial Revision (2020).
- D. ASTM F710 - Standard Practice for Preparing Concrete Floors to Receive Resilient Flooring; 2019, with Editorial Revision (2020).
- E. ASTM F1066 - Standard Specification for Vinyl Composition Floor Tile; 2004 (Reapproved 2018).
- F. ASTM F1303 - Standard Specification for Sheet Vinyl Floor Covering with Backing; 2004 (Reapproved 2014).
- G. ASTM F1344 - Standard Specification for Rubber Floor Tile; 2015.
- H. ASTM F1700 - Standard Specification for Solid Vinyl Floor Tile; 2020.
- I. ASTM F1861 - Standard Specification for Resilient Wall Base; 2016.
- J. ASTM F1913 - Standard Specification for Vinyl Sheet Floor Covering Without Backing; 2019.
- K. ASTM F2195 - Standard Specification for Linoleum Floor Tile; 2018.
- L. NFPA 253 - Standard Method of Test for Critical Radiant Flux of Floor Covering Systems Using a Radiant Heat Energy Source; 2019.
- M. RFCI (RWP) - Recommended Work Practices for Removal of Resilient Floor Coverings; 2011.
- N. UL 2824 - GREENGUARD Certification Program Method for Measuring Microbial Resistance From Various Sources Using Static Environmental Chambers; Current Edition, Including All Revisions.

1.04 SUBMITTALS

- A. See Section 01 3000 - Administrative Requirements for submittal procedures.
- B. Product Data: Provide data on specified products, describing physical and performance characteristics; including sizes, patterns and colors available; and installation instructions.

- C. Shop Drawings: Indicate seaming plans and floor patterns.
- D. Selection Samples: Submit manufacturer's complete set of color samples for Architect's initial selection.
- E. Verification Samples: Submit twothree samples, 12 by 12 inches in size illustrating color and pattern for each resilient flooring product specified.
- F. Certification: Prior to installation of flooring, submit written certification by flooring manufacturer and adhesive manufacturer that condition of subfloor is acceptable.
- G. Maintenance Data: Include maintenance procedures, recommended maintenance materials, and suggested schedule for cleaning, stripping, and re-waxing.
- H. Maintenance Materials: Furnish the following for Owner's use in maintenance of project.
 - 1. See Section 01 6000 - Product Requirements, for additional provisions.

1.05 QUALITY ASSURANCE

- A. Manufacturer Qualifications: Company specializing in manufacturing specified flooring with minimum 15 years documented experience.
- B. Installer Qualifications: Company specializing in installing specified flooring with minimum 7.5 years documented experience.
- C. Testing Agency Qualifications: Independent firm specializing in performing concrete slab moisture testing and inspections of the type specified in this section.

1.06 DELIVERY, STORAGE, AND HANDLING

- A. Upon receipt, immediately remove any shrink-wrap and check materials for damage and the correct style, color, quantity and run numbers.
- B. Store all materials off of the floor in an acclimatized, weather-tight space.
- C. Maintain temperature in storage area between 55 degrees F and 90 degrees F.
- D. Protect roll materials from damage by storing on end.
- E. Do not double stack pallets.

1.07 FIELD CONDITIONS

- A. Store materials for not less than 48 hours prior to installation in area of installation at a temperature of 70 degrees F to achieve temperature stability. Thereafter, maintain conditions above 55 degrees F.

1.08 EXTRA MATERIALS

- A. See Section 01 6000 - Product Requirements, for additional provisions.
- B. Provide 100 sq ft of each type resilient flooring, 100 lineal feet of base, and 5 percent of installed stair materials of each type and color specified.

PART 2 PRODUCTS

2.01 MATERIALS - RESILIENT PLANK FLOORING

- A. Luxury Vinyl Plank Resilient Flooring: Solid vinyl with color and pattern throughout thickness.
 - 1. Manufacturer: Basis of Design See Finish Schedule.
 - a. Patcraft®:"Wood Planx Facet" www.patcreaft.com
 - b. Patcraft®:"Metallix Facet " www.patcreaft.com
 - c. Size: 6" x 48" inch or as indicated on finish legend.
 - d. Wear Layer Thickness: 0.020 inch.
 - e. Total Thickness: 0.125 inch.
 - f. Pattern & Color: as scheduled.
 - 2. Minimum Requirements: Comply with ASTM F1700, of Class corresponding to type specified.
 - 3. Critical Radiant Flux (CRF): Minimum 0.45 watt per square centimeter, when tested in accordance with ASTM E 648 or NFPA 253.

4. Mold and Microbial Resistance: Highly resistant when tested in accordance with ASTM D6329; certified in accordance with UL 2824.
 5. VOC Content Limits: As specified in Section 01 6116.
- B. Luxury Vinyl Tile: Homogeneous wear layer bonded to backing, with color and pattern through wear layer thickness:
1. Manufacturers: Basis of Design See Finish Schedule.
 2. Minimum Requirements: Comply with ASTM F2195, Type corresponding to type specified.
 3. Critical Radiant Flux (CRF): Minimum 0.45 watt per square centimeter, when tested in accordance with ASTM E 648 or NFPA 253.
 4. VOC Content Limits: As specified in Section 01 6116.
 5. Backing: Synthetic fabric.
 6. Thickness: 0.125 inch, minimum, excluding backing.
 7. Pattern: As Scheduled.
 8. Color: As indicated on drawings.
 9. Color: as indicated on finish schedule.
 10. Manufacturer: Basis of Design:

2.02 RESILIENT BASE

- A. Resilient Base - Type ____: ASTM F1861, Type TS rubber, vulcanized thermoset; style as scheduled.
1. Manufacturers:
 - a. Roppe Corp; See Finish Schedule: www.roppe.com/#sle.
 2. Critical Radiant Flux (CRF): Minimum 0.45 watt per square centimeter, when tested in accordance with ASTM E 648 or NFPA 253.
 3. Height: 4 inch, or as Scheduled.
 4. Thickness: 0.125 inch.
 5. Finish: Satin.
 6. Length: Roll.
 7. Color: As indicated on drawings.
 8. Accessories: Job formed inside and outside corners- no premolded external corners, internal corners, and end stops.

2.03 ACCESSORIES

- A. Subfloor Filler: White premix latex; type recommended by adhesive material manufacturer.
- B. Primers, Adhesives, and Seam Sealer: Waterproof; types recommended by flooring manufacturer.
- C. Moldings, Transition and Edge Strips: Same material as flooring.
- D. Filler for Coved Base: Plastic.

PART 3 EXECUTION

3.01 EXAMINATION

- A. Verify that surfaces are flat to tolerances acceptable to flooring manufacturer, free of cracks that might telegraph through flooring, clean, dry, and free of curing compounds, surface hardeners, and other chemicals that might interfere with bonding of flooring to substrate.
- B. Verify that sub-floor surfaces are smooth and flat within the tolerances specified for that type of work and are ready to receive resilient flooring.
- C. Verify that wall surfaces are smooth and flat within the tolerances specified for that type of work, are dust-free, and are ready to receive resilient base.
- D. Cementitious Subfloor Surfaces: Verify that substrates are ready for resilient flooring installation by testing for moisture and alkalinity (pH).
 1. Obtain instructions if test results are not within limits recommended by resilient flooring manufacturer and adhesive materials manufacturer.

- E. Verify that sub-floor surfaces are dust-free and free of substances that could impair bonding of adhesive materials to sub-floor surfaces.
- F. Verify that self leveling underlayment surfaces are dry enough and ready for resilient flooring installation by testing for moisture emission rate and alkalinity in accordance with ASTM F710; obtain instructions if test results are not within limits recommended by resilient flooring manufacturer and adhesive materials manufacturer.
- G. Verify that required floor-mounted utilities are in correct location.

3.02 PREPARATION

- A. Prepare floor substrates as recommended by flooring and adhesive manufacturers.
- B. Remove subfloor ridges and bumps. Fill minor low spots, cracks, joints, holes, and other defects with subfloor filler to achieve smooth, flat, hard surface.
- C. Prohibit traffic until filler is fully cured.
- D. Clean substrate.
- E. Apply primer as required to prevent "bleed-through" or interference with adhesion by substances that cannot be removed.

3.03 INSTALLATION - GENERAL

- A. Starting installation constitutes acceptance of subfloor conditions.
- B. Install in accordance with manufacturer's written instructions.

3.04 INSTALLATION - SOUND CONTROL UNDERLAYMENT

- A. Install in accordance with underlayment manufacturer's instructions.

3.05 INSTALLATION :

- A. Resilient Flooring
 1. Install in accordance with manufacturer's instructions.
 2. Mix tile from container to ensure shade variations are consistent when tile is placed, unless otherwise indicated in manufacturer's installation instructions.
 3. Maintain a minimum of 6 inches offset of end joints between adjacent rows.
 4. Spread only enough adhesive to permit installation of materials before initial set.
 5. Set flooring in place, press with heavy roller to attain full adhesion.
 6. Lay flooring with joints and seams parallel to building lines to produce symmetrical pattern.
 7. Install square tile to ashlar pattern. Allow minimum 1/2 full size tile width at room or area perimeter.
 8. Install plank tile with a random offset of at least 6 inches from adjacent rows.
 9. Where floor finishes are different on opposite sides of door, terminate flooring under centerline of door.
- B. Resilient Base
 1. Fit joints tightly and make vertical. Maintain minimum dimension of 48" inches between joints.
 2. Miter internal corners. At external corners, use premolded units. At exposed ends, use premolded units.
 3. Install base on solid backing. Bond tightly to wall and floor surfaces.
 4. Scribe and fit to door frames and other interruptions.

3.06 CLEANING

- A. Remove excess adhesive from floor, base, and wall surfaces without damage.
- B. Clean in accordance with manufacturer's written instructions.

3.07 PROTECTION

- A. Prohibit traffic on resilient flooring for 48 hours after installation.

**3.08 SCHEDULE SEE FINISH LEGEND ON DRAWINGS.
END OF SECTION 09 6500**

SECTION 09 9000**PAINTS & COATINGS****PART 1 GENERAL****1.01 SECTION INCLUDES**

- A. Surface preparation.
- B. Field application of paints, stains, varnishes, and other coatings.
- C. Surfaces to be finished are indicated in this section and on the Drawings.

1.02 RELATED REQUIREMENTS

- A. Section 05 5000 - Metal Fabrications: Shop-primed items.
- B. Section 05 5100 - Metal Stairs: Shop-primed items.

1.03 REFERENCE STANDARDS

- A. 40 CFR 59, Subpart D - National Volatile Organic Compound Emission Standards for Architectural Coatings; U.S. Environmental Protection Agency; current edition.
- B. MPI (APL) - Master Painters Institute Approved Products List; Master Painters and Decorators Association; Current Edition.
- C. MPI (APSM) - Master Painters Institute Architectural Painting Specification Manual; Current Edition.

1.04 SUBMITTALS

- A. Product Data: Provide complete list of all products to be used, with the following information for each:
 - 1. Manufacturer's name, product name and/or catalog number, and general product category (e.g. "alkyd enamel").
 - 2. Cross-reference to specified paint system(s) product is to be used in; include description of each system (copy of relevant MPI Manual page is acceptable).
- B. Samples: Submit three paper "drop" samples, 8-1/2 by 11 inches in size, illustrating range of colors available for each finishing product specified.
 - 1. Where sheen is specified, submit samples in only that sheen.
 - 2. Where sheen is not specified, submit each color in each sheen available.

1.05 QUALITY ASSURANCE

- A. Applicator Qualifications: Company specializing in performing the work of this section with minimum 10 years documented experience.
- B. Maintain one copy of relevant portions of MPI Architectural Painting Specification Manual on project site at all times.
- C. Material Safety Data Sheets: At project site maintain file of MSDS sheets for each product used; become familiar with and follow manufacturer's stated application and safety requirements.

1.06 FIELD CONDITIONS

- A. Do not apply materials when surface and ambient temperatures are outside the temperature ranges required by the paint product manufacturer.
- B. Follow manufacturer's recommended procedures for producing best results, including testing of substrates, moisture in substrates, and humidity and temperature limitations.
- C. Provide lighting level of 80 ft candles measured mid-height at substrate surface.

PART 2 PRODUCTS**2.01 MANUFACTURERS**

- A. Paints and Coatings: Any manufacturer listed in MPI Approved Products List (at www.paintinfo.com) under applicable MPI product reference number, unless otherwise indicated.

- B. Provide all paint and coating products used in any individual system from the same manufacturer; no exceptions.
- C. Provide all paint and coating products from the same manufacturer to the greatest extent possible.
- D. In the event that a single manufacturer cannot provide all specified products, minor exceptions will be permitted provided approval by Architect is obtained using the specified procedures for substitutions.
 - 1. Substitution of MPI-approved products by a different manufacturer is preferred over substitution of unapproved products by the same manufacturer.
 - 2. Substitution of a different system using MPI-approved products by the same manufacturer will be considered.
- E. Paints: Acceptable manufacturers are limited to the following:
 - 1. Duron, Inc: www.duron.com.
 - 2. Glidden Professional: www.gliddenprofessional.com.
 - 3. PPG Architectural Finishes, Inc: www.ppgaf.com.
- F. Substitutions: See Section 01 6000 - Product Requirements.

2.02 MATERIALS - GENERAL

- A. Volatile Organic Compound (VOC) Content:
 - 1. Provide coatings that comply with the most stringent requirements specified in the following:
 - a. 40 CFR 59, Subpart D--National Volatile Organic Compound Emission Standards for Architectural Coatings.
 - 2. Determination of VOC Content: Testing and calculation in accordance with 40 CFR 59, Subpart D (EPA Method 24), exclusive of colorants added to a tint base and water added at project site; or other method acceptable to authorities having jurisdiction.
- B. Paints and Coatings: Provide products listed in Master Painters Institute Approved Product List, current edition available at www.paintinfo.com, for specified MPI Categories, except as otherwise indicated.
 - 1. Provide ready mixed paints and coatings, except field-catalyzed coatings.
 - 2. Provide materials that are compatible with one another and the substrates indicated under conditions of service and application, as demonstrated by manufacturer based on testing and field experience.

2.03 PAINT SYSTEMS

- A. Provide Premium Grade systems (2 top coats) as defined in MPI Architectural Painting Specification Manual, except as otherwise indicated.
- B. Where a specified paint system does not have a Premium Grade, provide Custom Grade system.
- C. Where a specified paint system does not have a Custom Grade, provide Premium Grade system.
- D. Where sheen is not specified or more than one sheen is specified, sheen will be selected later by Architect from the manufacturer's full line.
- E. Provide colors as scheduled on Drawings.

2.04 INTERIOR PAINT SYSTEMS

- A. Concrete Masonry Unit Vertical Surfaces:
 - 1. Applications include but are not limited to walls.
 - 2. INT 3.1A Latex: Latex Primer Sealer MPI #3, Latex MPI #43, 44, 52, 53, 54 or 114.
 - 3. : INT 3.1C High Performance Architectural Latex: Latex Primer Seal MPI #3, HIPAC Latex MPI #138, 139, 140 or 141.

PART 3 EXECUTION

3.01 SCOPE -- SURFACES TO BE FINISHED

- A. Paint all exposed surfaces except where indicated not to be painted or to remain natural; the term "exposed" includes areas visible through permanent and built-in fixtures when they are in place.

- B. Paint the surfaces described in PART 2, indicated on the Drawings, and as follows:
1. If a surface, material, or item is not specifically mentioned, paint in the same manner as similar surfaces, materials, or items, regardless of whether colors are indicated or not.
 2. Paint surfaces behind movable equipment and furnishings the same as similar exposed surfaces.
 3. Paint surfaces to be concealed behind permanently installed fixtures, equipment, and furnishings, using primer only, prior to installation of the permanent item.
 4. Paint back sides of access panels and removable and hinged covers to match exposed surfaces.
 5. Finish top, bottom, and side edges of exterior doors the same as exposed faces.
 6. Paint all insulated and exposed pipes, conduit, boxes, insulated and exposed ducts, hangers, brackets, collars and supports, mechanical equipment, and electrical equipment occurring in finished areas to match background surfaces, unless otherwise indicated.
 7. Paint equipment, piping, conduit, and exposed duct work in utility areas in colors according to the color coding scheme indicated.
 - a. Refer to Section 22 0553 and Section for schedule of color coding of equipment, duct work, piping, and conduit.
 8. Paint all mechanical and electrical equipment, including that which is factory-finished, exposed to weather or to view on the roof and outdoors.
 9. Paint shop-primed mechanical and electrical items occurring in finished areas.
 10. Remove unfinished louvers, grilles, covers, and access panels on mechanical and electrical components and paint separately.
 11. Paint interior surfaces of air ducts and convector and baseboard heating cabinets with flat, nonspecular black paint where visible through registers, grilles, or louvers.
 12. Paint dampers exposed behind louvers, grilles, and convector and baseboard cabinets to match face panels.
 13. Paint both sides and edges of plywood backboards for electrical and telephone equipment before installing equipment.
- C. Do Not Paint or Finish the Following Items:
1. Items fully factory-finished unless specifically noted; factory-primed items are not considered factory-finished.
 2. Items indicated to receive other finish.
 3. Fire rating labels, equipment serial number and capacity labels, and operating parts of equipment.
 4. Polished and brushed stainless steel items.
 5. Acoustical materials.
 6. Concealed piping, ductwork, and conduit.

3.02 EXAMINATION

- A. Verify that surfaces are ready to receive Work as instructed by the product manufacturer.
- B. Examine surfaces scheduled to be finished prior to commencement of work. Report any condition that may potentially affect proper application.
- C. Test shop-applied primer for compatibility with subsequent cover materials; report incompatible primer conditions and submit recommended changes for Architect's approval.
- D. Measure moisture content of surfaces using an electronic moisture meter. Do not apply finishes unless moisture content of surfaces are below the following maximums:
1. Plaster and Gypsum Board: 12 percent.
 2. Masonry, Concrete, and Concrete Unit Masonry: 12 percent.
 3. Interior Wood: 15 percent, measured in accordance with ASTM D4442.
 4. Exterior Wood: 15 percent, measured in accordance with ASTM D4442.
 5. Concrete Floors: 8 percent.
- E. Measure the ph factor of concrete, masonry, and mortar before starting any finishing process, using the method specified in MPI Architectural Painting Manual.

1. Report results in writing to Architect before starting work.
2. If results of test indicates need for remedial action, provide written description of remedial action. If a different primer or paint systems is required, state the total cost of the change. Do not proceed with remedial action or change without receiving written authorization from Architect.

3.03 PREPARATION

- A. Prepare surfaces as specified in MPI Architectural Painting Specification Manual and as follows for the applicable surface and coating; if multiple preparation treatments are specified, use as many as necessary for best results; where the Manual references external standards for preparation (e.g. SSPC standards), prepare as specified in those standards; comply with coating manufacturer's specific preparation methods or treatments, if any.
- B. Coordinate painting work with cleaning and preparation work so that dust and other contaminants do not fall on newly painted, wet surfaces.
- C. Surface Appurtenances: Prior to preparing surfaces or finishing, remove electrical plates, hardware, light fixtures, light fixture trim, escutcheons, machined surfaces, fittings, and similar items already installed that are not to be painted.
 1. If removal is impractical or impossible because of the size or weight of the item, provide surface-applied protection before preparation and finishing.
 2. After completing painting in each space or area, reinstall items removed using workers skilled in the trades involved.
- D. Surfaces: Correct defects and clean surfaces which affect work of this section. Remove or repair existing coatings that exhibit surface defects.
- E. Marks: Seal with shellac those which may bleed through surface finishes.
- F. Impervious Surfaces: Remove mildew by scrubbing with solution of tetra-sodium phosphate and bleach. Rinse with clean water and allow surface to dry.
- G. Concrete, Cement Plaster and Unit Masonry Surfaces to be Painted: Remove dirt, loose mortar, scale, salt or alkali powder, and other foreign matter. Remove oil and grease with a solution of tri-sodium phosphate; rinse well and allow to dry. Remove stains caused by weathering of corroding metals with a solution of sodium metasilicate after thoroughly wetting with water. Allow to dry.
 1. Prepare concrete, concrete masonry block, cement plaster, and mineral-fiber-reinforced cement panel surfaces to be painted. Remove efflorescence, chalk, dust, dirt, grease, oils, and release agents. Roughen as required to remove glaze. If hardeners or sealers have been used to improve curing, use mechanical methods of surface preparation.
 2. Use abrasive blast-cleaning methods if recommended by paint manufacturer.
 3. Determine alkalinity and moisture content of surfaces by performing appropriate tests as specified in MPI Manual. If surfaces are sufficiently alkaline to cause the finish paint to blister and burn, correct this condition before application. Do not paint surfaces where moisture is present.
 4. Etch concrete as specified in MPI Manual.
- H. Gypsum Board Surfaces to be Painted: Fill minor defects with filler compound. Spot prime defects after repair.
- I. Plaster Surfaces to be Painted: Fill hairline cracks, small holes, and imperfections with latex patching plaster. Make smooth and flush with adjacent surfaces. Wash and neutralize high alkali surfaces.
- J. Asphalt, Creosote, or Bituminous Surfaces to be Painted: Remove foreign particles to permit adhesion of finishing materials. Apply latex based sealer or primer.
- K. Insulated Coverings to be Painted: Remove dirt, grease, and oil from canvas and cotton.
- L. Concrete Floors to be Painted: Remove contamination, acid etch, and rinse floors with clear water. Verify required acid-alkali balance is achieved. Allow to dry.

- M. Aluminum Surfaces to be Painted: Remove surface contamination by steam or high pressure water. Remove oxidation with acid etch and solvent washing. Apply etching primer immediately following cleaning.
 - 1. Test coat anodized treatments with primer as recommended by anodized treatment manufacturer; if manufacturer can not be reasonably found, test per industry standards.
- N. Galvanized Surfaces to be Painted: Remove surface contamination and oils and wash with solvent. Apply coat of etching primer.
 - 1. Clean galvanized surfaces with nonpetroleum-based solvents so surface is free of oil and surface contaminants. Remove pretreatment from galvanized sheet metal fabricated from coil stock by mechanical or chemical methods as recommended as best practice by primer manufacturer.
- O. Uncoated Steel and Iron Surfaces to be Painted: Remove grease, mill scale, weld splatter, dirt, and rust. Where heavy coatings of scale are evident, remove by hand wire brushing or sandblasting; clean by washing with solvent. Apply a treatment of phosphoric acid solution, ensuring weld joints, bolts, and nuts are similarly cleaned. Prime paint entire surface; spot prime after repairs.
 - 1. Use solvent or mechanical cleaning methods that comply with the Steel Structures Painting Council's (SSPC) recommendations. Touch up bare areas and shop-applied prime coats that have been damaged. Wire-brush, clean with solvents recommended by paint manufacturer, and touch up with the same primer as the shop coat.
- P. Shop-Primed Steel Surfaces to be Finish Painted: Sand and scrape to remove loose primer and rust. Feather edges to make touch-up patches inconspicuous. Clean surfaces with solvent. Prime bare steel surfaces. Re-prime entire shop-primed item.
- Q. Interior Wood Items to Receive Opaque Finish: Wipe off dust and grit prior to priming. Seal knots, pitch streaks, and sappy sections with sealer. Fill nail holes and cracks after primer has dried; sand between coats. Back prime concealed surfaces before installation.
- R. Interior Wood Items to Receive Transparent Finish: Sand wood to obtain a uniform appearance before immediately starting work. Wipe off dust and grit prior to sealing, seal knots, pitch streaks, and sappy sections with sealer. Fill nail holes and cracks after sealer has dried; sand lightly between coats. Prime concealed surfaces with gloss varnish reduced 25 percent with thinner.
- S. Exterior Wood to Receive Opaque Finish: Remove dust, grit, and foreign matter. Seal knots, pitch streaks, and sappy sections. Fill nail holes with tinted exterior calking compound after prime coat has been applied. Back prime concealed surfaces before installation.
- T. Exterior Wood to Receive Transparent Finish: Remove dust, grit, and foreign matter; seal knots, pitch streaks, and sappy sections with sealer. Fill nail holes with tinted exterior calking compound after sealer has been applied. Prime concealed surfaces.
- U. Wood Doors to be Field-Finished: Seal wood door top and bottom edge surfaces (6) with clear sealer.
- V. Metal Doors to be Painted: Prime metal door top, sides and bottom edge surfaces (6).

3.04 APPLICATION

- A. Apply products in accordance with manufacturer's instructions and as specified or recommended by MPI Manual, using the preparation, products, sheens, textures, and colors as indicated.
 - 1. Provide completed work matching approved samples for color, texture, and coverage.
 - 2. Remove, refinish, or repaint work not complying with requirements.
- B. Do not apply finishes over dirt, rust, scale, grease, moisture, scuffed surfaces, or other conditions detrimental to formation of a durable coating film; do not apply finishes to surfaces that are not dry.
- C. Use applicators and methods best suited for substrate and type of material being applied and according to manufacturer's instructions.
 - 1. Brush Application: Use brushes best suited for the type of material applied; use brush of appropriate size for the surface or item being painted; produce results free of visible brush marks.

2. Roller Application: Use rollers of carpet, velvet back, or high-pile sheep's wool as recommended by manufacturer for material and texture required.
 3. Spray Application: Use airless spray equipment with orifice size as recommended by manufacturer for material and texture required.
 4. Where application method is listed in the MPI Manual for the paint system that application method is required; otherwise any application method recommended by manufacturer for material used and objects to be painted is acceptable.
- D. Minimum Coating Thickness: Apply paint materials no thinner than manufacturer's recommended spreading rate; provide total dry film thickness of entire system as recommended by manufacturer.
1. Number of coats and film thickness required are the same regardless of application method.
 2. If undercoats, stains, or other conditions show through final coat of paint, apply additional coats until paint film is of uniform finish, color, and appearance.
 3. Give special attention to ensure edges, corners, crevices, welds, and exposed fasteners receive dry film thickness equivalent to that of flat surfaces.
- E. Apply finish to completely cover surfaces with uniform appearance without brush marks, runs, sags, laps, ropiness, holidays, spotting, cloudiness, or other surface imperfections.
1. Before applying finish coats, apply a prime coat of material recommended by manufacturer, unless the surface has been prime coated by others; where evidence of suction spots or unsealed areas in first coat appear, recoat primed and sealed surfaces to ensure finish coat with no burn through or other defects due to insufficient sealing.
 2. Apply first coat to surface that has been cleaned, pretreated, or otherwise prepared as soon as practical after preparation and before subsequent surface deterioration.
 3. Do not apply succeeding coats until the previous coat has cured as recommended by manufacturer.
 4. Do not recoat until paint has dried to where it feels firm, does not deform or feel sticky under moderate thumb pressure, and application of another coat will not cause the undercoat to lift or lose adhesion.
 5. If manufacturer's instructions recommend sanding to produce a smooth, even surface, sand between coats.
 6. Before applying next coat vacuum clean surfaces of loose particles. Use tack cloth to remove dust and particles just prior to applying next coat.
 7. Pigmented (Opaque) Finishes: Provide smooth, opaque surface of uniform finish, color, appearance, and coverage.
 8. Stippled Finish: Roll and redistribute paint to even, fine texture; leave no evidence of rolling, such as laps, irregularity in texture, skid marks, or other surface imperfections; back roll final coat to achieve a uniform surface.
- F. Where adjacent sealant is to be painted, do not apply finish coats until sealant is applied.

3.05 FIELD QUALITY CONTROL

- A. See Section 01 4000 - Quality Requirements, for general requirements for field inspection.
- B. Owner will provide field inspection.

3.06 CLEANING AND PROTECTION

- A. Collect waste material which may constitute a fire hazard, place in closed metal containers, and remove daily from site.
- B. At the end of each workday, remove empty cans, rags, rubbish, and other discarded paint materials from site.
- C. Protect other work, whether being painted or not, against damage by painting. Correct damage by cleaning, repairing or replacing, and repainting as approved by Architect.
- D. Provide "Wet Paint" signs to protect newly painted finishes. Remove temporary protective wrappings provided by others to protect their work after completing painting operations.

- E. At completion of construction activities of other trades, touch up and restore damaged or defaced painted surfaces. Comply with procedures specified in MPI Manual.

3.07 SCHEDULE - COLORS (SEE DRAWINGS

END OF SECTION 09 9000

SECTION 10 1400**SIGNAGE****PART 1 GENERAL****1.01 SECTION INCLUDES**

- A. Directories
- B. Installation of Room and Door Signs furnished and installed by the Contractor.
- C. Interior directional and informational signs.

1.02 RELATED REQUIREMENTS

- A. Section 01 1300 - Project Management and Coordination
- B. Section 01 1700 - Execution Requirements.

1.03 REFERENCE STANDARDS

- A. 36 CFR 1191 - Americans with Disabilities Act (ADA) Accessibility Guidelines for Buildings and Facilities; Architectural Barriers Act (ABA) Accessibility Guidelines; current edition.
- B. ADA Standards - Americans with Disabilities Act (ADA) Standards for Accessible Design; 2010.
- C. ICC A117.1 - Accessible and Usable Buildings and Facilities; 2017.
- D. ATBCB ADAAG - Americans with Disabilities Act Accessibility Guidelines; 2002.

1.04 SUBMITTALS

- A. See Section 01 3000 - Administrative Requirements, for submittal procedures.
- B. Product Data: Manufacturer's printed product literature for each type of sign, indicating sign styles, font, foreground and background colors, locations, overall dimensions of each sign.
- C. Signage Schedule: Provide information sufficient to completely define each sign for fabrication, including room number, room name, other text to be applied, sign and letter sizes, fonts, and colors.
 - 1. When room numbers to appear on signs differ from those on drawings, include the drawing room number on schedule.
 - 2. When content of signs is indicated to be determined later, request such information from Owner through Architect at least 2 months prior to start of fabrication; upon request, submit preliminary schedule.
 - 3. Submit for approval by Owner through Architect prior to fabrication.
- D. Samples: Submit two samples of each type of sign, of size similar to that required for project, illustrating sign style, font, and method of attachment.
- E. Selection Samples: Where colors are not specified, submit two sets of color selection charts or chips.
- F. Verification Samples: Submit samples showing colors specified.
- G. Manufacturer's Installation Instructions: Include installation templates and attachment devices.
- H. Maintenance Materials: Furnish the following for Owner's use in maintenance of project.
 - 1. Curved Sign Media Suction Cups: One for each 100 signs; for removing media.

1.05 QUALITY ASSURANCE**1.06 DELIVERY, STORAGE, AND HANDLING**

- A. Package signs as required to prevent damage before installation.
- B. Package room and door signs in sequential order of installation, labeled by floor or building.
- C. Store tape adhesive at normal room temperature.

1.07 FIELD CONDITIONS

- A. Do not install tape adhesive when ambient temperature is lower than recommended by manufacturer.
- B. Maintain this minimum temperature during and after installation of signs.

PART 2 PRODUCTS**2.01 MANUFACTURERS**

- A. Flat Signs:
 - 1. APCO Signs: www.apcosigns.com
 - 2. Best Sign Systems, Inc: www.bestsigns.com/#sle.
 - 3. Mohawk Sign Systems, Inc: www.mohawksign.com/#sle.
 - 4. Seton Identification Products: www.seton.com/aec/#sle.
 - 5. Substitutions: See Section 01 6000 - Product Requirements.

2.02 SIGNAGE APPLICATIONS

- A. Accessibility Compliance: Signs are required to comply with ADA Standards and ICC A117.1 _____, unless otherwise indicated; in the event of conflicting requirements, comply with the most comprehensive and specific requirements.
- B. Room and Door Signs: Provide a sign for every doorway, whether it has a door or not, not including corridors, lobbies, and similar open areas.
 - 1. Sign Type: Flat signs with engraved panel media as specified.
 - 2. Provide "tactile" signage, with letters raised minimum 1/32 inch and Grade II braille.
 - 3. Character Height: 1-1/2 inch, or as required to comply with Campus Standard.
 - 4. Sign Height: 3 inches, or as required to comply with Campus Standard.
 - 5. Office Doors: Identify with room numbers to be determined later, not the numbers indicated on drawings; in addition, provide "window" section for replaceable occupant name.
 - 6. Assembly and Meeting Rooms: Identify with the room names and numbers shown on the drawings; in addition, provide "window" section with sliding "In Use/Vacant" indicator.
 - 7. Service Rooms: Identify with room names and numbers to be determined later, not those indicated on drawings.
 - 8. Rest Rooms: Identify with pictograms, the names "MEN" and "WOMEN", room numbers to be determined later, and braille.
- C. Interior Directional and Informational Signs:
 - 1. Sign Type: Same as room and door signs.
- D. Emergency Evacuation Maps:
 - 1. Allow for one map per elevator lobby.
 - 2. Map content to be provided by Owner.
 - 3. Use clear plastic panel silk-screened on reverse, in brushed aluminum frame, screw-mounted.

2.03 SIGN TYPES

- A. Flat Signs: Signage media without frame.
 - 1. Edges: Square.
 - 2. Corners: Square.
 - 3. Wall Mounting of One-Sided Signs: Tape adhesive.
 - 4. Suspended Mounting: Stainless steel suspension cables, cable clamps, and ceiling fastener suitable for attachment to ceiling construction indicated.
- B. Radius / Curved Signs: One-piece, curved extruded aluminum media holder securing flat, flexible sign media by curved lip on two sides; other two sides closed by end caps; concealed mounting attachment.
 - 1. Sizes: As indicated on drawings.
 - 2. Finish: Natural (clear) anodized.
 - 3. Sign Orientation: Curved in horizontal section.
 - 4. Wall Mounting of One-Sided Signs: Mechanical anchorage, with predrilled holes, and set in clear silicone sealant.
 - 5. Suspended Mounting: Stainless steel suspension cables, cable clamps, and ceiling fastener suitable for attachment to ceiling construction indicated.

- C. Color and Font: Unless otherwise indicated:
 - 1. Character Font: Helvetica, Arial, or other sans serif font.
 - 2. Character Case: Upper case only.
 - 3. Background Color: Clear.
 - 4. Character Color: Contrasting color.

2.04 TACTILE SIGNAGE MEDIA

- A. Engraved Panels: Laminated colored plastic; engraved through face to expose core as background color:
 - 1. Total Thickness: 1/16 inch.

2.05 NON-TACTILE SIGNAGE MEDIA

- A. Silk Screened Plastic Panels: Letters and graphics silk screened onto reverse side of plastic surface:
 - 1. Sign Color: Color as selected.
 - 2. Total Thickness: 1/8 inch.

2.06 ACCESSORIES

- A. Concealed Screws: Stainless steel, galvanized steel, chrome plated, or other non-corroding metal.
- B. Exposed Screws: Stainless steel.
- C. Tape Adhesive: Double sided tape, permanent adhesive.

PART 3 EXECUTION

3.01 EXAMINATION

- A. Verify that substrate surfaces are ready to receive work.

3.02 INSTALLATION

- A. Install in accordance with manufacturer's instructions.
- B. Install neatly, with horizontal edges level.
- C. Locate signs where indicated on attached schedule and as required by ADA Standards:
- D. Protect from damage until Date of Substantial Completion; repair or replace damaged items.

END OF SECTION 10 1400

SECTION 10 2800**TOILET, BATH, AND LAUNDRY ACCESSORIES****PART 1 GENERAL****1.01 SECTION INCLUDES**

- A. Commercial toilet accessories.
- B. Accessories for toilet rooms and utility rooms.
 - 1. (CFCI): Contractor provided and installed.
- C. Utility room accessories.

1.02 RELATED REQUIREMENTS

- A. Section 05 5000 - Metal Fabrications: Concealed supports for accessories, including in wall framing and plates and above ceiling framing.
- B. Section 06 1000 - Rough Carpentry: Material for and placement of concealed blocking.
- C. Section 09 3000 - Tiling: Ceramic washroom accessories.
- D. Section 10 2113.19 - SOLID PLASTIC TOILET PARTITIONS.

1.03 REFERENCE STANDARDS

- A. ASTM A123/A123M - Standard Specification for Zinc (Hot-Dip Galvanized) Coatings on Iron and Steel Products; 2017.
- B. ASTM A269/A269M - Standard Specification for Seamless and Welded Austenitic Stainless Steel Tubing for General Service; 2015a (Reapproved 2019).
- C. ASTM A666 - Standard Specification for Annealed or Cold-Worked Austenitic Stainless Steel Sheet, Strip, Plate, and Flat Bar; 2015.
- D. ASTM B456 - Standard Specification for Electrodeposited Coatings of Copper Plus Nickel Plus Chromium and Nickel Plus Chromium; 2017.
- E. ASTM C1036 - Standard Specification for Flat Glass; 2016.
- F. ASTM C1503 - Standard Specification for Silvered Flat Glass Mirror; 2018.
- G. GSA CID A-A-3002 - Mirrors, Glass; U.S. General Services Administration; 1996.

1.04 ADMINISTRATIVE REQUIREMENTS

- A. Coordinate the work with the placement of internal wall reinforcement, concealed ceiling supports, and reinforcement of toilet partitions to receive anchor attachments.

1.05 SUBMITTALS

- A. See Section 01 3000 - Administrative Requirements, for submittal procedures.
- B. Product Data: Submit data on accessories describing size, finish, details of function, and attachment methods.
- C. Samples: Submit two samples of each accessory, illustrating color and finish.
- D. Manufacturer's Installation Instructions: Indicate special procedures and conditions requiring special attention.

PART 2 PRODUCTS**2.01 MANUFACTURERS**

- A. Basis of Design: See Schedule on Drawings for manufacturer and responsibility.
- B. Commercial Toilet, Shower, and Bath Accessories:
 - 1. Bobrick: www.bobrick.com
 - 2. ASI - American Specialties, Inc: www.americanspecialties.com.
 - 3. Bradley Corporation: www.bradleycorp.com.

4. Substitutions: Section 01 6000 - Product Requirements.

2.02 MATERIALS

- A. Accessories - General: Shop assembled, free of dents and scratches and packaged complete with anchors and fittings, steel anchor plates, adapters, and anchor components for installation.
- B. Keys: Provide three keys for each accessory to Owner; master key all lockable accessories.
- C. Stainless Steel Sheet: ASTM A666, Type 304.
- D. Stainless Steel Tubing: ASTM A269/A269M, Grade TP304 or TP316.
- E. Mirror Glass: Annealed float glass, ASTM C1036 Type I, Class 1, Quality Q2, with silvering, protective and physical characteristics complying with ASTM C1503.
- F. Fasteners, Screws, and Bolts: Hot dip galvanized; tamper-proof; security type.

2.03 FINISHES

- A. Stainless Steel: Satin finish, unless otherwise noted.
- B. Chrome/Nickel Plating: ASTM B456, SC 2, polished finish, unless otherwise noted.
- C. Galvanizing for Items Other than Sheet: Comply with ASTM A123/A123M; galvanize ferrous metal and fastening devices.
- D. Back paint components where contact is made with building finishes to prevent electrolysis.

2.04 COMMERCIAL TOILET ACCESSORIES

- A. Toilet Paper Dispenser: (CFCI).
- B. Paper Towel Dispenser: (CFCI).
- C. Waste Receptacle: (CFCI), Contractor installed, continuously welded bottom pan and .
- D. Soap Dispenser:(CFCI)
- E. Mirrors: Stainless steel framed, 1/4 inch thick annealed float glass; ASTM C1036.
 - 1. Annealed Float Glass: Silvering, protective and physical characteristics in compliance with ASTM C1503.
 - 2. Size: As indicated on Drawings.
 - 3. Backing: Full-mirror sized, minimum 0.03 inch galvanized steel sheet and nonabsorptive filler material.
 - 4. Fixed Tilt Mirrors: Minimum 3 inches tilt from top to bottom.
- F. Grab Bars: Stainless steel, smooth surface.
 - 1. Standard Duty Grab Bars:
 - a. Push/Pull Point Load: 250 pound-force, minimum.
 - b. Dimensions: 1-1/4 inch outside diameter, minimum 0.05 inch wall thickness, exposed flange mounting, 1-1/2 inch clearance between wall and inside of grab bar.
 - c. Length and Configuration: As indicated on drawings.

2.05 UTILITY ROOM ACCESSORIES

- A. Mop and Broom Holder: 0.05 inch thick stainless steel, Type 304, hat-shaped channel.
 - 1. Holders: Three spring-loaded rubber cam holders.
 - 2. Length: 36 inches.
 - 3. Length: Manufacturer's standard length for number of holders.
- B. Combination Utility Shelf/Mop and Broom Holder: 0.05 inch thick stainless steel, Type 304, with 1/2 inch returned edges, 0.06 inch steel wall brackets.
 - 1. Drying rod: Stainless steel, 1/4 inch diameter.
 - 2. Hooks: Two, 0.06 inch stainless steel rag hooks at shelf front.
 - 3. Mop/broom holders: Three spring-loaded rubber cam holders at shelf front.
 - 4. Length: 36 inches.

5. Length: Manufacturer's standard length for number of holders/hooks.

PART 3 EXECUTION

3.01 EXAMINATION

- A. Verify existing conditions before starting work.
- B. Verify exact location of accessories for installation.
- C. Verify that field measurements are as indicated on drawings.
- D. See Section 06100 for installation of blocking, reinforcing plates, and concealed anchors in walls and ceilings.

3.02 PREPARATION

- A. Deliver inserts and rough-in frames to site for timely installation.
- B. Provide templates and rough-in measurements as required.

3.03 INSTALLATION

- A. Install accessories in accordance with manufacturers' instructions in locations indicated on drawings.
- B. Install plumb and level, securely and rigidly anchored to substrate.
- C. Mounting Heights: As required by Accessibility Standards ICC / ANSI A117.1.

3.04 PROTECTION

- A. Protect installed accessories from damage due to subsequent construction operations.

END OF SECTION 10 2800

SECTION 10 4400**FIRE PROTECTION SPECIALTIES****PART 1 GENERAL****1.01 SECTION INCLUDES**

- A. Fire extinguishers.
- B. Fire extinguisher cabinets.
- C. Accessories.

1.02 RELATED REQUIREMENTS

- A. Section 06 1000 - Rough Carpentry: Wood blocking product and execution requirements.
- B. Section 09 9123 - Interior Painting: Field paint finish.
- C. Section 21 1200 - Fire-Suppression Standpipes: Cabinet enclosure for extinguishers.

1.03 REFERENCE STANDARDS

- A. NFPA 10 - Standard for Portable Fire Extinguishers; 2017, with Errata (2018).
- B. UL (DIR) - Online Certifications Directory; Current Edition.

1.04 SUBMITTALS

- A. See Section 01 3000 - Administrative Requirements, for submittal procedures.
- B. Shop Drawings: Indicate locations of cabinets and cabinet physical dimensions.
- C. Manufacturer's Installation Instructions: Indicate special criteria and wall opening coordination requirements.
- D. Manufacturer's Certificate: Certify that products meet or exceed specified requirements.
- E. Maintenance Data: Include test, refill or recharge schedules and re-certification requirements.

1.05 FIELD CONDITIONS

- A. Do not install extinguishers when ambient temperature may cause freezing of extinguisher ingredients.

PART 2 PRODUCTS**2.01 MANUFACTURERS**

- A. Fire Extinguishers:
 - 1. Amerex Corporation: www.amerex-fire.com
 - 2. Kidde, a unit of United Technologies Corp: www.kidde.com/#sle.
 - 3. Pyro-Chem, a Tyco Business: www.pyrochem.com/#sle.
 - 4. Substitutions: See Section 01 6000 - Product Requirements.
- B. Fire Extinguisher Cabinets and Accessories:
 - 1. Amerex Corporation; Product #A 441: www.amerex-fire.com
 - 2. JL Industries, Inc: www.jlindustries.com.
 - 3. Larsen's Manufacturing Co: www.larsensmfg.com.
 - 4. Potter-Roemer: www.potterroemer.com.
 - 5. Substitutions: See Section 01 6000 - Product Requirements.

2.02 FIRE EXTINGUISHERS

- A. Fire Extinguishers - General: Comply with product requirements of NFPA 10 and applicable codes, whichever is more stringent.
- B. Multipurpose Dry Chemical Type Fire Extinguishers: Carbon steel tank, with pressure gauge.
 - 1. Class: A:B:C type.
 - 2. Size: 10 pound.
 - 3. Finish: Baked polyester powder coat, red color.

4. Temperature range: Minus 40 degrees F to ____ degrees F.
- C. Dry Chemical Type Fire Extinguishers: Stainless steel tank, with pressure gage.
 1. Class ABC.
 2. Size 10.
 3. Finish: Baked enamel, Red color.

2.03 FIRE EXTINGUISHER CABINETS

- A. Cabinet Configuration: Semi-recessed type.
 1. Size to accommodate accessories.
 2. Trimless type.
- B. Door: 0.036 inch metal thickness, reinforced for flatness and rigidity with nylon catch. Hinge doors for 180 degree opening with two butt hinges.
- C. Door Glazing: Float glass, clear, 1/8 inch thick, and set in resilient channel glazing gasket.
- D. Cabinet Mounting Hardware: Appropriate to cabinet, with pre-drilled holes for placement of anchors.
- E. Fabrication: Weld, fill, and grind components smooth.
- F. Finish of Cabinet Exterior Trim and Door: No.4 - Brushed stainless steel.
- G. Finish of Cabinet Interior: White colored enamel.

2.04 ACCESSORIES

- A. Extinguisher Brackets: Formed steel, chrome-plated.
- B. Cabinet Signage: Owner's standard flag type wall sign.
- C. Cabinet Graphic: "FIRE EXTINGUISHER"
 1. Red Lettering vertical on glazed panel of cabinet door.

PART 3 EXECUTION

3.01 EXAMINATION

- A. Verify existing conditions before starting work.
- B. Verify rough openings for cabinet are correctly sized and located.

3.02 INSTALLATION

- A. Install in accordance with manufacturer's instructions.
- B. Install cabinets plumb and level in wall openings, dimensioned from finished floor to handle of cabinet door in accordance with ADA ABA Accessibility Guidelines, chapter 308.
- C. Secure rigidly in place.
- D. Place extinguishers in cabinets.

3.03 SCHEDULES SEE LIFE SAFETY PLANS FOR LOCATIONS.

END OF SECTION 10 4400

SECTION 10 5723**CLOSET AND UTILITY SHELVING****PART 1 GENERAL****1.01 SECTION INCLUDES**

- A. Wall mounted wire shelving.
- B. Accessories.

1.02 RELATED REQUIREMENTS

- A. Section 06 1000 - Rough Carpentry: Blocking in walls for attachment of shelving or storage system.
- B. Section 09 2116 - Gypsum Board Assemblies: Blocking in metal stud walls for attachment of standards or mounting rails.

1.03 SUBMITTALS

- A. See Section 01 3000 - Administrative Requirements, for submittal procedures.

1.04 QUALITY ASSURANCE

- A. Manufacturer Qualifications: Company specializing in manufacturing products specified in this section, with not less than three years of documented experience.

1.05 DELIVERY, STORAGE, AND HANDLING

- A. Store products in manufacturer's unopened packaging until ready for installation.
- B. Store products under cover and elevated above grade.
- C. Store flat to prevent warpage and bending.

PART 2 PRODUCTS**2.01 MANUFACTURERS**

- A. Wire Storage Shelving:
 - 1. ClosetMaid Corporation; _____: www.closetmaid.com/#sle.
 - 2. Rubbermaid, Inc; Wire Closets: www.rubbermaidpro.com/#sle.

2.02 SHELVING APPLICATIONS

- A. Shelf Depth: 12 inches, unless otherwise indicated.
- B. Bedroom Closets:
 - 1. Wall-to-wall shelf with free sliding hanger rod.
- C. Coat Closets and Laundry Closets:
 - 1. Wall-to-wall shelf with integral hanger rod.
- D. Linen Closets:
 - 1. Wall-to-wall shelves spaced vertically as shown on the drawings.

2.03 MATERIALS

- A. Wire Shelving: Factory-assembled coated wire mesh shelf assemblies for wall-mounting, with all components and connections required to produce a rigid structure that is free of buckling and warping.
 - 1. Construction: Cold-drawn steel wire with average tensile strength of 100,000 psi resistance welded into uniform mesh units, square, rigid, flat, and free of dents or other distortions, with wires trimmed smooth.
 - 2. Coating: PVC or epoxy, applied after fabrication, covering all surfaces.
 - 3. PVC Coating: 9 to 11 mils thick.
 - 4. Epoxy Coating: Non-toxic epoxy-polyester powder coating baked-on finish, 3 to 5 mils thick.
 - 5. Standard Mesh Shelves: Cross deck wires spaced at 1 inch.
 - 6. Shelf and Rod Units: Integral hanging rod at front edge of shelf.

- B. Mounting Hardware: Provide manufacturer's standard mounting hardware; include support braces, wall brackets, back clips, end clips, poles, and other accessories as required for complete and secure installation; factory finished to match shelving.
- C. Fasteners: As recommended by manufacturer for mounting substrates.

PART 3 EXECUTION

3.01 EXAMINATION

- A. Inspect areas to receive shelving or storage system, to verify that spaces are properly prepared to receive shelf units, and are of dimensions indicated on shop drawings.
- B. Verify appropriate fastening hardware.
- C. Do not begin installation until substrates have been properly prepared.

3.02 PREPARATION

- A. Clean surfaces thoroughly prior to installation.
- B. Prepare surfaces using the methods recommended by the manufacturer for achieving the best result for the substrate under the project conditions.

3.03 INSTALLATION

- A. Install wire shelving in accordance with manufacturer's instructions, with shelf surfaces level.
- B. Cap exposed ends of cut wire shelving.
- C. Install wire shelving back clips, end clips at side walls, and support braces at open ends. Install intermediate support braces as recommended by manufacturer.

3.04 PROTECTION

- A. Protect installed work from damage.
- B. Clean soiled surfaces after installation.
- C. Touch-up, repair, or replace damaged products before Substantial Completion in a manner that eliminates evidence of replacement.

END OF SECTION 10 5723

SECTION 12 2113**HORIZONTAL LOUVER BLINDS****PART 1 GENERAL****1.01 SECTION INCLUDES**

- A. Horizontal slat cordless louver blinds to be provided at all windows.
- B. Operating hardware.

1.02 RELATED REQUIREMENTS

- A. Section 06 1000 - Rough Carpentry: Concealed wood blocking for attachment of headrail brackets.

1.03 SUBMITTALS

- A. See Section 01 3000 - Administrative Requirements, for submittal procedures.
- B. Product Data: Provide data indicating physical and dimensional characteristics.
- C. Samples: Submit two samples, ____ inch long illustrating slat materials and finish, cord type and color.
- D. Manufacturer's Installation Instructions: Indicate special procedures.

1.04 QUALITY ASSURANCE

- A. Manufacturer Qualifications: Company specializing in manufacturing the products specified in this section with minimum three years documented experience.

PART 2 PRODUCTS**2.01 MANUFACTURERS**

- A. Basis of Design Horizontal Louver Blinds:
 - 1. Action Window Coverings, Cordless, 2" Faux Wood
- B. Other Acceptable Manufacturers
 - 1. Levolor; Faux Wood Blinds: www.levolor.com/commercial/#sle.
 - 2. SWFcontract, a division of Spring Window Fashions, LLC.; 2" Faux Wood Blinds (with cordless option): www.swfcontract.com/#sle.
 - 3. Substitutions: See Section 01 6000 - Product Requirements.

2.02 BLINDS

- A. Description: Horizontal slat louvers hung from full-width headrail with full-width bottom rail.
- B. Plastic Slats: Faux Wood, radiused slat corners.
 - 1. Width: 2 inch.
 - 2. Texture: Simulated wood-grain.
- C. Slat Support: Woven polypropylene cord, ladder configuration.
- D. Head Rail: Pre-finished, formed aluminum box, with end caps; internally fitted with hardware, pulleys, and bearings for operation; same depth as width of slats.
- E. Control Wand: Manufacturer's standard; round shape.
 - 1. Non-removable type.
 - 2. Length of window opening height less 3 inch.
 - 3. Color: As selected by Architect.
- F. Headrail Attachment: Wall brackets.
- G. Valance: Matching Slat Material
- H. Accessory Hardware: Type recommended by blind manufacturer.

2.03 FABRICATION

- A. Fabricate blinds to cover window frames completely.

- B. At openings requiring multiple blind units, provide separate blind assemblies with space of 1/2 inch between blinds, located at window mullion centers.

PART 3 EXECUTION

3.01 EXAMINATION

- A. Verify that openings are ready to receive the work.
- B. Ensure structural blocking and supports are correctly placed. See Section 06 1000.

3.02 INSTALLATION

- A. Install blinds in accordance with manufacturer's instructions.
- B. Secure in place with flush countersunk fasteners.

3.03 TOLERANCES

- A. Maximum Variation of Gap at Window Opening Perimeter: 3/16 inch.

3.04 ADJUSTING

- A. Adjust blinds for smooth operation.

3.05 CLEANING

- A. Clean blind surfaces just prior to occupancy.

3.06 SCHEDULE SEE DRAWINGS

END OF SECTION 12 2113

SECTION 12 3530**RESIDENTIAL CASEWORK****PART 1 GENERAL****1.01 SECTION INCLUDES**

- A. Kitchen cabinets.
- B. Vanity cabinets.
- C. Clubhouse Cabinets

1.02 RELATED REQUIREMENTS

- A. Section 06100 - Rough Carpentry for concealed blocking and furring.
- B. Section 06200 - Finish Carpentry for mouldings and trim.
- C. Section 12 3600 - Countertops.

1.03 REFERENCE STANDARDS

- A. BHMA A156.9 - American National Standard for Cabinet Hardware; 2015.
- B. KCMA A161.1 - Performance and Construction Standard for Kitchen and Vanity Cabinets; 2017.

1.04 SUBMITTALS

- A. See Section 01 3000 - Administrative Requirements, for submittal procedures.
- B. Product Data: Provide component dimensions, configurations, construction details, and joint details.
- C. Shop Drawings: Indicate casework locations, elevations, clearances required, rough-in and anchor placement dimensions and tolerances.
- D. Manufacturer's Qualification Statement.
- E. Samples: Submit two door and countertop samples, 12 x 12 inch in size, illustrating color and finish.

1.05 QUALITY ASSURANCE

- A. Manufacturer: Company specializing in manufacturing the type of products specified in this section, with minimum five years of documented experience.

1.06 MOCK-UP

- A. Provide full size mock-up of casework base unit.
- B. Locate where directed.
- C. Mock-up may remain as part of the Work.

PART 2 PRODUCTS**2.01 MANUFACTURERS**

- A. Residential Casework:Basis of Design:
 - 1. Saco Industries Inc.;Product Shaker, Maple with Full Overlay Door, Transparent Finish
 - 2. Republic Industries; www.republicind.com
- B. Other Acceptable Manufacturers
 - 1. Republic Industries; www.republicind.com
 - 2. Kraftmaid Cabinetry, Inc: www.kraftmaid.com/#sle.
 - 3. Leedo Cabinetry; www.Leedo.com
 - 4. Advanta Cabinets; www.advantacabinets.com
 - 5. Legacy Cabinets

2.02 COMPONENTS

- A. Countertops: As specified in Section 12 3600.

2.03 HARDWARE

- A. Door and Drawer Pulls: 6" Tubular Bar Pull, Satin Stainless finish Vertically mounted on doors, Horizontally mounted on drawer fronts. As selected from manufacturer's standard line, 4 inches wide.

2.04 FABRICATION

- A. Shop assemble casework for delivery to site in units easily handled and to permit passage through building openings.
- B. Fabricate corners and joints without gaps.
- C. Fabricate each unit to be rigid and not dependent on adjacent units for rigidity.
- D. Provide cutouts for plumbing fixtures and appliances. Prime paint contact surfaces of cut edges.
- E. When necessary to cut and fit on site, provide materials with ample allowance for cutting. Provide trim for scribing and site cutting.

2.05 FINISHES

- A. Exposed to view surfaces: As selected by Architect from Manufacturer's standard line.

PART 3 EXECUTION

3.01 EXAMINATION

- A. Verify adequacy of support framing.

3.02 INSTALLATION

- A. Install casework, components and accessories in accordance with manufacturer's instructions.
- B. Use anchoring devices to suit conditions and substrate materials encountered.
- C. Set casework items plumb and square, securely anchored to building structure.
- D. Carefully scribe casework abutting other components, with maximum gaps of _____ inch.

3.03 ADJUSTING

- A. Adjust doors, drawers, hardware, and other moving or operating parts to function smoothly.

3.04 CLEANING

- A. Clean casework, countertops, shelves, and hardware.

3.05 PROTECTION

- A. Do not permit finished casework to be exposed to continued construction activity.

3.06 SCHEDULES SEE DRAWINGS

END OF SECTION 12 3530

**SECTION 23 405
PLUMBING IDENTIFICATION**

PART 1 - GENERAL

1.01 SUMMARY

- A. This Section includes the following plumbing identification materials and their installation:
 - 1. Pipe markers.
 - 2. Valve tags.
 - 3. Valve schedules.
 - 4. Equipment labels.
 - 5. Warning signs and labels.

1.02 SUBMITTALS

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

1.03 QUALITY ASSURANCE

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

1.04 COORDINATION

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

PART 2 - PRODUCTS

2.01 PIPING IDENTIFICATION DEVICES

- A. Manufactured Pipe Markers, General: Preprinted, color-coded, with lettering indicating service, and showing direction of flow.
 - 1. Colors: Comply with ASME A13.1, unless otherwise indicated.
 - 2. Lettering: Use piping system terms indicated and abbreviate only as necessary for each application length.
 - 3. Pipes with OD, Including Insulation, Less Than 6 Inches: Full-band pipe markers extending 360 degrees around pipe at each location.

- 4. Pipes with OD, Including Insulation, 6 Inches and Larger: Either full-band or strip-type pipe markers at least three times letter height and of length required for label.
 - 5. Arrows: Integral with piping system service lettering to accommodate both directions; or as separate unit on each pipe marker to indicate direction of flow.
- B. Pre-tensioned Pipe Markers: Pre-coiled semi-rigid plastic formed to cover full circumference of pipe and to attach to pipe without adhesive.
 - C. Self-Adhesive Pipe Markers: Are not allowed

2.02 VALVE TAGS

- A. Valve Tags: Stamped or engraved with 1/4-inch letters for piping system abbreviation and 1/2-inch numbers, with numbering scheme approved by Architect. Provide 5/32-inch hole for fastener.
 - 1. Material: 3/32-inch thick laminated plastic with 2 black surfaces and white inner layer.
 - 2. Valve-Tag Fasteners: Brass wire-link chain, beaded chain or S-hook.

2.03 VALVE SCHEDULES

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

2.04 EQUIPMENT LABELS

- A. Plastic Labels for Equipment:
 - 1. Material and Thickness: Multilayer, multicolor, plastic labels for mechanical engraving, 1/16 inch thick, and having predrilled holes for attachment hardware.
 - 2. Color Coding:

System	Background Color	Letters
Other equipment	Black	White

- 3. Temperatures up to 160 deg F.
 - 4. Minimum Label Size: Length and width vary for required label content, but not less than 2-1/2 by 3/4 inch.
 - 5. Letter shall be a minimum of 1/2" high. Include secondary lettering two-thirds to three-fourths the size of principal lettering.
 - 6. Fasteners: Stainless-steel self-tapping screws.
 - 7. Adhesive: Contact-type permanent adhesive, compatible with label and with substrate.
- B. Label Content: Include equipment's Drawing designation or unique equipment number.

2.05 WARNING SIGNS AND LABELS

- A. Material and Thickness: Multilayer, multicolor, plastic labels for mechanical engraving, 1/16 inch thick, and having predrilled holes for attachment hardware.
- B. Letter Color: White.
- C. Background Color: Yellow.
- D. Maximum Temperature: Able to withstand temperatures up to 160 deg F.
- E. Minimum Label Size: Length and width vary for required label content, but not less than 2-1/2 by 3/4 inch.
- F. Minimum Letter Size: Minimum 1/2 inch for viewing distances up to 72 inches, and proportionately larger lettering for greater viewing distances. Include secondary lettering two-thirds to three-fourths the size of principal lettering.
- G. Fasteners: Stainless-steel self-tapping screws.
- H. Adhesive: Contact-type permanent adhesive, compatible with label and with substrate.
- I. Label Content: Include caution and warning information as indicated elsewhere in the specifications and on the Drawings.

PART 3 - EXECUTION

3.01 APPLICATIONS, GENERAL

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

3.02 PIPING IDENTIFICATION

- A. Install manufactured pipe markers indicating service on each piping system. Install with flow indication arrows showing direction of flow.
 - 1. Pipes with OD, Including Insulation, Less Than 6 Inches: Pre-tensioned pipe markers. Use size to ensure a tight fit.
 - 2. Pipes with OD, Including Insulation, Less Than 6 Inches: Self-adhesive pipe markers. Use color-coded, self-adhesive plastic tape, **[at least 3/4 inch] [1-1/2 inches]** wide, lapped at least 1-1/2 inches at both ends of pipe marker, and covering full circumference of pipe.
 - 3. Pipes with OD, Including Insulation, 6 Inches and Larger: Shaped pipe markers. Use size to match pipe and secure with fasteners.
 - 4. Pipes with OD, Including Insulation, 6 Inches and Larger: Self-adhesive pipe markers. Use color-coded, self-adhesive plastic tape, at least 1-1/2 inches wide, lapped at least 3 inches at both ends of pipe marker, and covering full circumference of pipe.
- B. Locate pipe markers and color bands where piping is exposed or above accessible ceilings in finished spaces; machine rooms; accessible maintenance spaces such as shafts, tunnels, and plenums; and exterior non-concealed locations as follows:
 - 1. Near each valve and control device.
 - 2. Near each branch connection, excluding short takeoffs for fixtures. Where flow pattern is not obvious, mark each pipe at branch.

3. Near penetrations through walls, floors, ceilings, and non-accessible enclosures.
4. At access doors, manholes, and similar access points that permit view of concealed piping.
5. Near major equipment items and other points of origination and termination.
6. Spaced at maximum intervals of 50 feet along each run. Reduce intervals to 25 feet in areas of congested piping and equipment.
7. Label 2 psi gas piping at 6 foot intervals.

3.03 VALVE-TAG INSTALLATION

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

3.04 VALVE-SCHEDULE INSTALLATION

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

END OF SECTION 23 405

**SECTION 22 410
GENERAL PROVISIONS****PART 1 GENERAL**

1.01 SCOPE:

- A. Provisions of this Section apply to all Plumbing and Fire Protection work.
- B. Include the provisions of General, Supplementary and Special Conditions and provisions of the Specifications shall apply to and form a part of this Section.
- C. Provide all labor, materials, equipment, and services necessary for the completion of all work shown or specified, except work specifically specified to be done or furnished under other sections of the Specifications. Include performing all operations in connection with the complete installation in strict accordance with the specification and applicable drawings subject to the terms and conditions of the Contract, for the following system:
 - 1. A system of sanitary waste and vent piping.
 - 2. A system of domestic water piping.
 - 3. A system of fire protection piping.
- D. Give required notices, file drawings obtain and pay for permits, deposits and fees necessary for the installation of the work. Obtain and pay for inspections required by laws, ordinances, rules, regulations or public authority having jurisdiction. Obtain and pay for certificates of such inspections, and file such certificates with Owner.
- E. "Provide" means to furnish and install, complete and ready for operation.

1.02 DRAWINGS:

- A. Drawings are diagrammatic and subject to requirements of Architectural Drawings. Drawings indicate generally the location of components and are not intended to show all fittings or all details of the work. Coordinate with Architectural, Structural, Electrical, HVAC and other Building Drawings.
- B. Follow the Drawings closely, check dimensions with Architectural Drawings and field conditions. DO NOT scale Drawings for location of system components.
- C. Make no changes without Architect's written permission. In case of doubt, obtain Architect's decision before proceeding with work. Failure to follow this instruction shall make the Contractor liable for damage to other work and responsible for removing and repairing defective or mis-located work.
- D. Do not scale Drawings to locate sprinkler heads. Coordinate with lighting, ceiling grids, ceiling diffusers and/or reflected ceiling plans. Install Sprinkler Heads in center of ceiling tiles.

1.03 APPLICABLE CODES AND STANDARDS:

- A. Comply with the current editions of the following Codes and Standards:
 - 1. ANSI/ASHRAE 22 - Code for Building Services Piping.

2. NFPA 70 - National Electrical Code.
3. NFPA 101 – National Life Safety Code.
4. Other Standards as referenced in other Sections of Division 15.
5. Local Building Code (International Building Code if no local Building Code in effect).
6. Local Plumbing Code (International Plumbing Code if no local Plumbing Code is in effect).
7. Local gas code (International Gas Code if no local code is in effect).
8. NFPA 13 - Sprinkler System installation.
9. NFPA 13R - Standard for the Installation of Sprinkler Systems in Low-Rise Residential Occupancies
10. NFPA 14 – Standard for installation of Standpipe and Hose Systems.
11. NFPA 20 – Installation of Stationary Pumps for Fire Protection.
12. NFPA 24 – Installation of Private Fire Service Mains.
13. NFPA 110 - Emergency and standby power.
13. NFPA 72 - National Fire Alarm and Signaling Code.

1.04 QUALIFICATIONS OF SUBCONTRACTOR:

- A. The Plumbing Contractor shall meet the following qualifications:
 1. The Plumbing Contractor must be approved by the Architect.
 2. The Plumbing Contractor shall have been in business as a Plumbing Contractor for at least three (3) years prior to Bid Date. He shall have a current Master's Plumber's Certificate of competency issued by the State of Alabama and the city and county in which work occurs.
 3. The Plumbing Contractor shall have a satisfactory experience record with Plumbing installations of character and scope comparable with this project, and for at least three (3) years prior to the Bid Date and shall have had an established service department capable of providing service inspection or full maintenance contracts.
- B. The Fire Protection Sub-Contractor shall meet the following qualifications:
 1. The Fire Protection Contractor shall be approved by the Architect,
 2. The Fire Protection Contractor shall have been in business as a Fire Protection Contractor for at least three (3) years prior to the Bid date and shall be licensed by the State, County and City in which the work will be performed.
 3. The Fire Protection Contractor shall have a satisfactory experience record with Fire Protection installations of character and scope comparable with this project and shall have completed three (3) such installations in the past three (3) years.

4. The Fire Protection Contractor shall be a Registered Engineer in the State in which the work occurs or be a Nicet Level 3.
5. The Fire Protection Contractor shall be the employer of the NICET Level 3 Designer. The NICET Level 3 designer will oversee installation and provide in closeout documentation.

1.05 CONFLICTS AND INTERFERENCES:

- A. If systems interfere or conflicts, the Architect shall decide which equipment to relocate regardless of which was first installed.

1.06 WORKMANSHIP:

- A. Do all work in a neat and first-class manner. Remove and replace work not done in such manner as directed by the Architect.

1.07 COOPERATION:

- A. Cooperate with all other crafts. Perform work in a timely manner. Do not delay the execution of other work.

1.08 VISITING SITE:

- A. Visit site and become familiar with location and various conditions affecting work. No additional allowance will be granted because of lack of knowledge of such conditions.

2.00 PRODUCTS:

2.01 MATERIALS, SUBSTITUTIONS AND SUBMITTALS:

- A. Unless otherwise noted, provide new, standard, first-grade materials throughout. Equipment and materials furnished shall be fabricated by manufacturers regularly engaged in their production and shall be the standard and current model for which replacement parts are available. Equipment shall be substantially the same equipment of a given manufacturer which has been in successful commercial use and operation for at least three (3) years.
- B. Where materials or products are specified by manufacturer's name, brand, trade name, or catalog reference, such named materials or products shall be the basis of the Bid, without substitution, and shall be furnished under the Contract unless requests for substitutions are approved as noted below. Where two or more brands are named the choice of these shall be optional with the Contractor.
- C. Substitutions will be considered only if written request for approval has been received by the Architect TEN (10) DAYS prior to the date established for receipt of Proposals. Each request shall include the name of the material or equipment for which substitution is proposed and a complete description of the proposed substitute including drawings, cuts, performance and test data, samples and any other information necessary for evaluation. A statement setting forth any changes in other materials, equipment or other Work that incorporation of the substitute may require shall be included. The burden of proof of the merit of the proposed substitute is upon the proposer. The Architect's decision of approval or disapproval of a proposed substitution is final.
- D. If the Architect approves any proposed substitution prior to receipt of Proposals, approval will be set forth in an Addendum. DO NOT rely upon approvals made in any other manner.
- E. No substitutions will be considered after the Contract has been executed, except as described in the

General Conditions.

- F. Submittal data and shop drawings, shall be submitted at one time, partial submittals will not be considered. Within 30 days of execution of Contract and before ordering materials and equipment, submit to Architect and obtain his approval of a detailed list showing each item which is to be furnished by make, trade name, catalog number, or the like; together with manufacturer's specifications, certified prints, and other data sufficient for making comparisons with items specified. When approved, such schedule shall be of equal force with these specifications in that no variation there from shall be allowed except with Architect's written approval. Number of Shop Drawings and procedure shall be as directed by the Architect.
- G. All pressure vessels shall be constructed and tested in accordance with applicable ASME Codes and shall bear ASME stamps. Certificates of inspection and approval shall be submitted to Architect.
- H. Similar items of equipment shall be the product of the same Manufacturer.
- I. See section, "ALTERNATES" in other sections of the Specifications and Bid accordingly.

2.02 SHOP DRAWINGS:

- A. Before starting work, submit and obtain approval of the following:
 - 1. Equipment piping.
 - 2. Plumbing Equipment, Products and Fixtures.
- B. Thirty (30) days before starting work, submit Fire Protection Shop Drawings bearing the Seals of the Owner's underwriters and all governmental agencies having jurisdiction. Shop Drawings will not be considered without these seals. Complete shop drawings are required to be submitted at one (1) time.
 - 1. Piping routing showing sizes, dimensions, elevations, and head locations (coordinate with reflected ceiling plan). Provide minimum six (6) sets of blue line drawings.
 - 2. Provide a sprinkler head layout on a reflected ceiling plan. Indicate on plan all lights, HVAC ceiling air devices, smoke detectors, exit lights and any other ceiling attachments. Adjust locations of heads after Architectural review.

2.03 RECORD DRAWINGS:

- A. When work starts obtain from Architect two (2) complete sets of white prints of the **Plumbing**. All corrections, variations, and deviations, including those required by change orders, if any, must be recorded in colored ink or colored pencil at the end of each working day on these drawings. The marked prints shall be available at all times for the Architect's inspection.
- B. Prior to examining the request for final payment or making any response thereto, the Architect shall receive from the Contractor one (1) complete set of the white prints, marked as stated above, indicating the actual completed installation of the work included under this Contract.
- C. The Architect will forward the marked white prints to the Consulting Engineers for review. They will then be returned by the Architect to the Contractor for use in preparing record drawings.
- D. When work is completed Contractor shall purchase from the Architect (At Architects' printing cost) one (1) set of reproducible electronic files and prints of Plumbing Drawings for use in preparing record drawings. Contractor shall transfer the information from the marked white prints to the dwg record drawings, removing all superseded data in order to show the actual completed conditions.

1. Accurately show location, size and elevation of new exterior piping work and its relationship to any existing piping and utilities, obstructions, etc., contiguous to the area of work.
2. Block out areas modified by change-order and identify them by change-order number.

2.04 ELECTRICAL EQUIPMENT:

- A. Provide electrical equipment compatible with the current shown on electrical drawings. Verify current characteristics before ordering equipment.
- B. Should the Contractor with the Architect's/Engineer's approval make changes in electrical equipment from those shown on the Electrical Drawings, he shall be responsible for the coordination and cost of required changes.
- C. Provide factory installed fuses in all equipment requiring fusing for branch circuit protection.
- D. Verify electrical characteristics of all equipment and voltages available with Electrical Section prior to ordering any electrical equipment.

2.05 SLEEVES:

- A. Refer to the Architectural Life Safety Drawings for wall ratings and close all openings to match rating of wall.
- B. Submit details of all pipe penetrations thru rated walls indicating wall construction, penetrating material and method of closing penetration including materials and listing of detail.
- C. All Penetrations thru walls are to be closed. If the wall is not rated, sheet rock joint compound may be used to close space around piping. For walls with ratings opening shall be closed with a U.L. Listed rating system compatible with wall rating. Insulation is to be continuous thru all openings.
- D. For pipe through floors inside rated chases or through non-fire-rated walls: 20 gauge galvanized steel sleeve 1/2" larger than pipe or pipe covering. Pipe insulation to be continuous thru sleeve. Seal opening between sleeve and pipe or pipe covering
- E. For uninsulated pipe through 2 hour fire rated walls, partitions or floors outside chases: Hilti FS605 with sleeve, U.L. Listing #WL1056.
- F. For insulated pipe passing through fire rated partitions or walls or floors outside chases: Hilti #FS611A with no sleeve, U.L. Listing #WL5029. Insulation: 1" thick fiberglass continuous thru wall.
- G. For pipe passing thru concrete floor, concrete walls, and concrete block walls:
 1. Uninsulated Schedule 40 steel and copper: Hilti #FS605 with sleeve, U.L. #CAT1155.
 2. Insulated Schedule 40 steel and copper: Hilti #FS611A, U.L. #CAT5045.
- H. For 4" and smaller acid waste or PVC pipe passing thru 3 hour concrete floor, wall or concrete block wall - Hilti #FS611A with collar, UL System #CAJ095.
- I. For 2" and smaller acid waste or Schedule 40 PVC pipe penetrating a 1H12 concrete floor or wall - Hilti #FS611A sealant, UL #CAT2062 or UL #CAJ2066.

- J. Under this Section, the Contractor shall be responsible for closing and making fire safe all openings exposed during construction (both new and existing) in the floor and deck above. Closing of opening shall be compatible with rating and shall not compromise the rating of the wall or floor being sealed.
- K. Set sleeves before concrete is poured or masonry is erected. In existing construction, grout sleeves firmly in place.
- L. In Mechanical Rooms extend sleeves 1-1/2" above finish floor and waterproof.
- M. Where exposed pipes pass through walls and partitions in finished or exposed spaces, provide chrome plated F & C plates or escutcheons. Seal wall penetration and case work penetration with silicone prior to installing escutcheon.
- N. All wall floor penetrations shall be closed in a neat manner. The method used to the close penetrations shall be compatible with the rating of the wall and shall in no way compromise the integrity of the partition or floor.

2.06 ACCESS DOORS:

- A. Provide access doors for valves, and other items requiring maintenance located above hard ceilings or behind partitions or walls. Doors in fire rated walls and ceilings: UL labeled with fire rating equal to fire rating of wall or ceiling. Provide door styles, sizes and colors as specified under the Architectural section.
- B. Mark lay-in ceilings with paper brads at valve locations and maintenance access points. Bend ends of brads over above ceiling tile.

3.00 EXECUTION:

3.01 PROTECTION OF EQUIPMENT:

- A. During construction all fixtures and equipment shall be protected from damage caused by weather, masonry, plaster, paint and job accidents.
- B. When installation is complete, clean equipment and make ready for painting. Adjust all flush valves.

3.02 INSTALLATION OF FIXTURES AND EQUIPMENT:

- A. Install fixtures and equipment to provide normal service access to all components.
- B. Provide sufficient space for removing components, install fixtures and equipment to provide such clearance.
- C. Install fixtures and equipment in accordance with manufacturer's instructions. If manufacture's instructions conflict with contract documents, obtain Architect's decision before proceeding.
- D. All fixtures and equipment shall be firmly fastened in place:
 - 1. All wall hung fixtures shall be installed on a floor mounted fixture support with anchoring bolts in all holes of each leg. Bolts shall be sized as per manufacturer's recommendation.

3.03 CUTTING AND PATCHING:

- A. Set sleeves and inserts and lay-out and form openings in walls, beams, girders and structural floors in this Section.

- B. Cut, patch and repair as required to accomplish work and finish to match adjacent work. Architect's approval required before cutting any part where strength or appearance of finished work is involved.
- C. Cutting, patching and repairing of walls, floors, etc., where noted in paragraph "A" above, have been located or sized incorrectly are included in this Section.

3.04 INCIDENTAL WORK:

- A. All power wiring is included in Electrical Section.
- B. Permanent drain and relief connections for **Plumbing Equipment** to nearest floor drain or to grade are included in this Section whether shown or not.
- C. Items obviously omitted from drawings and/or specifications shall be called to attention of the Architect prior to submitting Bid, after award of Contract any changes or rearrangements necessary to complete Contract shall be at no additional cost to Owner.

3.05 FLASHING:

- A. Vent Pipe and Roof Drain Flashing: Specified in "Architectural Roofing Section".
- B. Coordinate all roofing penetrations with Roofing Section.

3.06 EXCAVATION AND BACKFILLING:

- A. Include all excavation and backfilling required to bring the work to line and grade shown, including excavation of rock and all other materials which may be encountered.
- B. Excavate trenches wide enough for proper installation of work. Grade trench bottoms evenly. Provide bell holes as necessary to insure uniform bearing for pipes. Excavate minimum 6" below pipe. Refill cuts below required pipe grade with sand or compacted gravel. Support pipe continuously along its entire length. Do not use piers to support piping.
- C. Backfill after inspection by Architect and authorities having jurisdiction. Backfill compacted areas with "Engineered Fill", sand or fine gravel in accordance with requirements of "Sitework". Backfill paved areas with sand or fine gravel compacted to meet requirements of Paving Section. Backfill shall be free of rock, wood, steel, brick, etc. Do not disturb pipe. Restore or repair pavements and the like after backfilling, to meet the requirements of the authority having jurisdiction.

3.07 PAINTING:

- A. Refinish equipment damaged during construction to new condition.
- B. Paint all non-potable water pipe and insulation with two (2) coats of bright yellow paint in compliance with the Local Plumbing Code and these specifications. Paint piping prior to installing insulation. Paint type to be equal to Paint Specified in Painting Section of the Specifications.
- C. Other painting is specified in "PAINTING SECTION, Finishes Division".

3.08 PIPE IDENTIFICATIONS:

- A. Identify all piping exposed to view or accessible through removable ceilings or access panels with plastic snap-on pipe line markers. Color code markers in accordance with ANSI A13.1. Show pipe contents and

direction of flow. Markers on lines 8" OD and smaller shall be taped in place; on lines over 8" OD secure with spring clips.

- B. Submit samples of all nameplates, tags, chains and etc., for approval.
- C. Protect all factory identification tags, nameplates, model and serial numbers, stenciling, etc., during construction and replace if damaged.
- D. Label Spacing and Extent:
 - 1. On straight run of pipes; Above suspended ceilings space labels approximately 10 feet on center; elsewhere, 20 feet on center.
 - 2. Wherever a pipe enters or leaves a room or building.
 - 3. At change of direction.
 - 4. At main valves and control valves (not equipment valves).
 - 5. On risers, just above and below floors.

3.09 VALVE TAGS:

- A. 2" X 3" laminated plastic with 1/2" numbers engraved at top, leaving space for further engraving by others. Secure tags with chains to valve yoke or stem, not handles.
- B. Valve tags colors:
 - 1. Plumbing: Red tags with white numbers.
- C. Valve tag locations: At all valves on mains, risers and branches.
- D. Valve tag numbers: Starting with Number 1, number tags in sequence from the lowest point to the highest point in the building. In existing building extend existing sequences.
- E. Starting with Number 1, number valve tags on this floor extending existing sequence. If there are no valve tags on existing valve, provide tags for all existing valves and new valves beginning floor sequence with Number 1.

3.10 VALVE CHARTS:

- A. In all mechanical rooms, provide charts showing number and locations of all valves, type of service, etc. Frame with aluminum, under glass.
- B. In existing buildings include existing valves in the charts of new valves.

3.11 WARRANTY AND INSTRUCTIONS:

- A. See General Conditions - One-Year Warranty.
- B. Contractor shall and hereby does warrant all materials, workmanship and equipment furnished and installed by him to be free from defects for a period of one (1) year after date of substantial completion of the Contract. Should any defects in materials, workmanship, or equipment be made know to Contractor within the one (1) year warranty period, Contractor shall replace such materials, workmanship, or equipment

without charge.

- C. After completion of the work, Contractor shall operate the equipment which he installs for a period of ten (10) working days, as a test of satisfactory operating conditions. During this time, Contractor shall instruct the Owner's operating personnel in the correct operation of the equipment. Furnish necessary oral and written operating instructions to the Owner's representative.
- D. Provide three (3) sets of manufacturer's operating and maintenance manuals and parts lists including nearest manufacturer's sales and service representative by name, address and phone for all equipment and materials furnished. Provide a maintenance schedule listing routine maintenance operations and suggested frequency thereof. Include all warranty dates on equipment and guarantees. Include names, address and phone of any subcontractor and work performed. Bind above items in loose leaf three (3) ring binders with tab for each class of equipment.
- E. During the period of tests, adjust all controls, regulators, etc., to comply with these Specifications.
- F. Make available to the Owner, without additional cost, service and adjustment of the equipment for the guarantee period.

3.12 PROJECT CLOSE-OUT DOCUMENTS:

- A. Prior to the issuance of a certificate for final payment, submit to Architect and obtain his approval of the following:
 - 1. Record drawings – Plumbing & Fire Protection (reproducible). Electronic drawings dwg format and pdf format.
 - 2. Equipment and Fixture Submittal Data: List of manufacturers representative including name, address and telephone number that supplied requirement (3).
 - 3. Equipment operating and maintenance manuals including: Spare parts required (3).
 - 4. Maintenance schedule (3).
 - 5. Equipment warranty dates and guarantees (3).
 - 6. List of Owner's Personnel who have received maintenance instructions.
 - 7. Record of inspections indicating what system was tested, type of tests, date of tests and those parties witnessing tests.
 - 8. Valve Tag Chart.
 - 9. Current flow test.

SECTION 22 420**TESTING, CLEANING, AND ADJUSTING (TCA)****PART 1 GENERAL****1.01 SCOPE**

- A. Provisions of this section apply to all Plumbing work.
- B. Include Section 22410, "GENERAL PROVISIONS - PLUMBING AND FIRE PROTECTION", with this Section.
- C. All tests shall be witnessed by the Architect in addition to authorities having jurisdiction. A minimum of 48-hour notice is required prior to performance of test.

PART 2 PRODUCTS**2.01 NOT APPLICABLE****PART 3 PRODUCTS****3.01 GENERAL REQUIREMENTS**

- A. After system have been installed, Test, Balance and Adjust System for proper operation, flow rates, pressures and temperatures. Correct any noise and/or vibration conditions.
- B. Perform all tests as required by local codes. Contractor shall furnish testing equipment. Keep a record of all tests indicating dates of tests, those persons witnessing tests and results of tests.
- C. Provide with the Close-Out Documents a Testing Record.
- D. If local Codes are more stringent, local Codes shall govern.

3.02 SANITARY AND STORM SYSTEMS

- A. Test piping by stopping lower outlets and filling with water to 10' hydrostatic head. Stop leaks and repeat test until watertight. All joints shall be exposed throughout test.
- B. Provide "Ball Test" on all piping 3" and larger with ball 1/2" smaller than pipe diameter.
- C. Provide visual inspection of all building drain piping below grade. Visual inspection shall be by means of a video camera routed through the drain system. Where the drain piping is connected to existing drain piping, the visual inspection shall include the existing drain piping from the point of connection, downstream to the point of connection to the public utility. A video tape and written report, noting any defects, on the findings of the visual inspection shall be provided to the owner with the close-out documents. The Plumbing Contractor shall provide personnel and equipment required for the visual inspection.

3.03 DOMESTIC WATER PIPING:

- A. On completion of roughing-in, cap all outlets, make connections with house supply line, and put under full water pressure. Test by applying additional pressure (by temporary pump or compressed air connection) to total hydrostatic pressure 1-1/2 times street pressure but not less than 150 psig for not less than 4 hours.
- B. Immediately and completely stop all leaks and retest until system is watertight. After testing, leave general pressure on until ready to install fixture (except when necessary to drain to avoid freezing during construction). After completion of all tests, repairs and installation of fixtures, flush all domestic hot and cold-water piping with water to remove all sediment scale and until water runs clear, then disinfect.
- C. Disinfect piping with hypochlorite solution of chlorine or compressed chlorine gas applied through on approved chlorinator. Operate all valves and faucets several times to insure the chlorine reaches all parts of the system. Feed water and chlorination agent into the system at rates that will provide a residual chlorine content of not less than 50 ppm after a retention period of 6 hours and 10 ppm after a retention period of 24 hours. Upon completion of treatment, flush treated water from each system until the water supply is satisfactory to the public health authority having jurisdiction. Provide Architect a certificate of compliance from the local Health Department.
- D. Clean air aerators, hose sprays, flush valves, etc. and adjust to proper flow rates.

3.04 FIRE PROTECTION PIPING TEST:

- A. Test in accordance with NFPA Pamphlets 13 and 20. Architects, Owner's, Underwriters and local Fire Marshall shall witness test. Provide certificate of inspection to the Architect/Engineer including the name of those witnessing the test.
- B. On completion of roughing-in and before connection to existing piping, cap all outlets, make connections with house supply line, and put under full water pressure. Test by applying additional pressure, by temporary pump or compressed air connection, to total hydrostatic pressure 1 1/2 times street pressure, but not less than 200 psig for a period of not less than four (4) hours. Immediately and completely stop all leaks. Retest when system is watertight.
- C. After testing, leave general pressure on until ready to install sprinkler heads and fire department valves, etc. except when necessary to drain to avoid freezing during construction.

3.06 COMPLETION OF TEST:

- A. Upon completion of all testing, Contractor shall provide to the Architect copies of test results and include a listing of all personnel witness to the tests.

END OF SECTION

SECTION 22 450**MATERIALS AND METHODS****PART 1 GENERAL****1.01 SCOPE**

- A. Include Section 22410, "GENERAL PROVISIONS - PLUMBING", with this Section.

PART 2 PRODUCTS**2.01 MATERIALS:**

- A. All pipe, fittings and valves shall be manufactured in the United States of America.
- B. Pipe and fittings to be the same manufacturer.

2.02 SANITARY - WASTE AND VENT PIPING:

- A. Vent piping smaller than 3" galvanized steel or cast iron. Waste piping 2" or smaller from fixture to stack; galvanized steel, cast iron. Other waste and vent piping within building cast iron.
- B. Cast iron soil pipe: Cast iron non-hub pipe and fittings. CISPI Standard 301 shall be used below grade in kitchens where hot water will be discharged into the waste system. Cast iron piping shall be installed in all plenum areas.
- C. Galvanized steel pipe: Schedule 40, ASTM A-12, with 150 lb., cast iron screwed drainage pattern fittings ASTM A-126.
- D. PVC plastic pipe: PVC-DWV, ASTM D-2665. Transition to cast iron shall be made maximum of 6" above finish floor slab. "Foam Core" piping is not acceptable.
- E. Joints for PVC plastic pipe: Solvent welded, ASTM B-2564
- F. Joints for hubless cast iron pipe and fittings: Hubless pipe and fittings shall be jointed by a heavy-duty coupling. Approved manufacturers: Husky SD 4000, Clamp All 125 or MG Couplings.
- G. Joints in galvanized pipe: Screwed with Teflon tape applied in male threads.
- H. Install vent stacks through roof. Terminate 12" above finish roof. Flashing is specified under Roofing Section.
- I. Connect to existing sanitary as shown on the drawings. Contractor to confirm exact size, location, invert, and direction of flow of existing piping prior to installing any new piping.

2.03 DOMESTIC WATER PIPING:

- A. Domestic Water Piping: Base Bid: Plastic piping, PEX-A equal to Uponor. Alternate: Copper tube.
- B. Base Bid: Plastic piping, PEX-A equal to Uponor.
- C. Joints on plastic piping PEX-A: Cold expansion joints. Fittings and piping shall be same manufacturer.
- D. Alternate: Copper Tube: ASTM C-88, copper water tube, Type "L" hard temper inside building, Type "K" outside building and below slab on grade. Fittings, cast brass or wrought copper water tube fittings, ANSI B-16.18 or B-16.22.
- E. Joints on copper tube:
 - 1. Inside Building: Properly cleaned fluxed and soldered as recommended by manufacturer, using 95-5 solder and
 - 2. 100% lead free flux.
 - 3. Outside Building and below slab on grade: "Sil-Fos".
- F. Provide temporary construction water at site as required.
- G. Connect to existing water piping as shown on the drawings. Patch insulation at point of new connection. Contractor to confirm exact size and location of existing piping prior to installing any new piping.
- H. All water piping installed below slab on grade to be type "K" soft copper bent up on both ends with no joints below slab.
- I. Provide sleeve piping support in wall at fixtures.

2.04 VALVES:

- A. Domestic Water Piping Valves:
 1. Ball Valves: All bronze, 150 psig WP, chrome plated bar stock ball, full port Teflon seats, stem packing seal and thrust washer, Watts B-6080 or B-6081, Apollo 20-100, Red White 5044F or 5094F, Kitz 56 or 57. Provide valve handle extension to (minimum 1") clear insulation.
 2. Check valves 2" and smaller: All bronze, 125 psig WP, bronze disc, swing check, Stockham B-309, Crane 1342, Nibco S-413-B, Milwaukee 1509, Red White 237, Kitz 14.
 3. Check valves 2-1/2" and larger: Iron body, bronze trim, switch check, 125 psig WP, Stockham G-931, Crane 373, Nibco F-918-B, Milwaukee F2974, Red White 435, Kitz 78.
- B. Water pressure reducing valves: Watts, Wilkins, or Cash Acme, complete with inlet strainer, unions, inlet and outlet pressure gages and shut-off valve up stream of strainer.

2.06 PIPE HANGERS:

- A. General: Pipe hangers, Grinnell, PHD, Michigan Hanger, or Elcen. Grinnell figure numbers are given for reference. Provide copper clad hangers on bare copper lines.
- B. Pipe hangers for lines 3" and smaller, adjustable wrought ring hangers, Grinnell Fig. 97 or wrought clevis hangers, Grinnell Fig. 260.
- C. Pipe hangers for lines 4" and larger, adjustable wrought clevis hangers, Grinnell Fig. 260.
- D. Parallel piping graded in same direction may be grouped on trapezes. Trapezes for line 4" and smaller, Unistrut P2000 channel, or equal, with rods sized as specified below for largest pipe on trapeze. Guide lines on (but not anchor to) trapezes using Unistrut Series P1100 clamps. Trapezes shall not exceed 3' in length. Space lines to allow at least 3" clear between adjacent pipe or pipe covering and between pipes or pipe covering and rods. Space trapezes as specified for pipe hangers based upon smallest size of pipe on trapeze.
- E. Provide riser clamps on pipe risers on each floor. Clamps in contact with copper or plastic pipe, plastic coated.
- F. Beam Clamps: Grinnell Fig. 229.
- G. Inserts for hangers in concrete structures: Underwriter's listed cast iron inserts. Grinnell Fig. 282. For fasteners in existing concrete structures use drilled in expansion anchors with load rating at least 150% of pipe hanger rating (power driven anchors are not acceptable).
- H. Size rods for pipe hangers not smaller than the following: 3/8" rods for pipe up to 2", 1/2" for 2-1/2" and 3" pipe, 5/8" rods for 4" and 5" pipe, 3/4" rods for 6" pipe, and 7/8" rods for 8" and 10" and 12" pipe, 1" rods for 14" and 16" pipe and 1-1/8" rods for 18" pipe.
- I. Space pipe hangers at maximum: 5' intervals for cast iron pipe with additional hanger at each fittings. Pipe hanger spacing for screwed, solder joint and welded piping: 1/2", 6 ft.; 3/4" to 1-1/4", 8 ft.; 1-1/2" to 2-1/2", 10 ft.; 3", 12 ft.; 4" to 6", 14 ft.; 8" and over, 16 ft. Polypropylene and PVC plastic pipe 4 ft. horizontally maximum or as directed by manufacturer if closer, and 10 ft. vertically. Install additional hangers at change of direction and valve clusters.
- J. Install pipe hangers on insulated pipe over pipe covering. Provide sheet metal saddle under hanger length to be 1-1/2 times the pipe diameter, minimum 12" long. On sanitary and storm piping requiring insulation, hanger may be installed directly on pipe and insulation installed over hanger.

PART 3 EXECUTION**3.01 PIPE INSTALLATION:**

- A. All piping shall be securely anchored in place to the Building Structure.
- B. Cut pipe square and ream full size after cutting. Clean pipe. Make threaded joints with Teflon tape. Do not spring pipe into place.
- C. Provide welding material and labor in accordance with the welding procedures of the Heating, Piping, and Air Conditioning Contractor's National Association or other approved procedure conforming to the requirements of ANSI B-31.9 "Building Service Piping". Employ only welders fully qualified in the above specified procedure and currently certified by recognized testing authority. Use either electric arc or oxyacetylene welding. Provide full perimeter welds at both face end and collar end of each slip-on flange.
- D. Install piping to allow for expansion. Make connections to all equipment to eliminate undue strains in piping and equipment. Furnish necessary fittings and bends to avoid spring of pipes during assembly.
- E. Install chrome plated floor and ceiling plates on pipe passing through finished surfaces in finished spaces.

- F. Make pipe size reductions using reducing fittings. Bushings are prohibited.
- G. Install 3/4" ball or gate valve drains with hose adapters at low points of water piping and at bases of all risers or where shown provide large drains.
- H. Make connections to equipment using screwed unions in sizes 2" and smaller and flanged unions in sizes 2-1/2" and larger. Install unions in all piping connections to each piece of equipment.
- I. Wherever ferrous pipes or tanks and copper tubing connect, provide dielectric insulation unions or couplings, equal to EPCO.
- J. Run piping concealed, except where specifically shown or specified exposed. Plumb all vertical lines and run mains parallel to building walls unless specifically shown otherwise.
- K. Lay underground pressure piping so top of pipe is at least 18" below finished grade. Provide deeper bury if required by local regulations. Support all underground piping solidly along body of pipe. Strongly suspend other piping from building construction.
- L. Run no piping or tubing in direct contact with slag fill. Where necessary to pass through slag, protect piping with not less than two (2) wrappings of polyvinyl chloride tape or equivalent protection approved by Architect.
- M. Install shock arrestors as manufactured by J. R. Smith, Josam, Zurn or Wade as required by the IPC Plumbing Code and where indicated on drawings. Size in accordance with manufacturer requirements.

3.02 INSTALLATION OF VALVES:

- A. Provide shut-off valves where shown and detailed on Drawings. Locate valves to isolate each item to facilitate maintenance and/or removal.
- B. Locate valves in piping connections to water heaters, etc., so heads and tube bundles can be removed without disconnecting equipment or piping other than union or flange connections immediately adjacent to heat exchangers.
- C. Provide sweat to screw adapters where required.
- D. In Buildings with water pressure exceeding 80 psig, provide and install a water pressure reducing valve(s) immediately upon entering building or as shown on Drawings. The P.R.V. shall be line size and have an integral strainer or separate WYE strainer up stream of P.R.V. Provide a ball or gate valve immediately upstream of P.R.V. and strainer.

SECTION 22 451**GENERAL FIRE PROTECTION REQUIREMENTS****PART 1 GENERAL****1.01 RELATED DOCUMENTS**

- A. Division 1 – Section “ALTERNATES”: Coordinate related Division 22 work and modify surrounding work to integrate the Work of each Alternate.

1.02 SUMMARY

- A. Description of General Fire Protection Requirements. Applies to all Division 22, Section 22450's (Fire Protection).

1.03 DEFINITIONS

- A. "Provide" means to furnish and install, complete and ready for operation.

1.04 REFERENCES

- A. ASME: American Society for Mechanical Engineers.
- B. ASTM: American Society of Testing and Materials.
- C. AWWA: American Water Work Association.
- D. FM: Factory Mutual.
- E. NEMA: National Electrical Manufacturer's Association.
- F. NFPA: National Fire Protection Association.
- G. MSS: Manufacturer's Standardization Society of the Valve and Fitting Industry.
- H. UL: Underwriters Laboratories, Inc.

1.05 REGULATORY REQUIREMENTS

- A. Comply with current edition, unless otherwise noted, of the following codes and standards.
 - 1. ANSI B31.9 - Building Services Piping.
 - 2. ADA - American's with Disabilities Act.
 - 3. NFPA 13 – Installation of Sprinkler System.
 - 4. NFPA 13R - Standard for the Installation of Sprinkler Systems in Low-Rise Residential Occupancies
 - 5. NFPA 70 - National Electrical Code.
 - 6. NFPA 101 - Life Safety Code.
 - 7. IBC - International Building Code with Fire, Mechanical, Plumbing and Gas Codes; 2021 Edition.
- B. Permits, Licenses, Inspections and Fees.
 - 1. Obtain and pay for all permits, licenses, inspections and fees, and comply with all rules, laws and ordinances pertaining to the Contractor's portion of the Work.
 - 2. Obtain and pay for certificates of required inspections, and file certificates with Owner.

1.06 PRODUCT REQUIREMENTS

- A. Provide new standard, materials throughout.
- B. Multiple items of similar equipment shall be the product of the same manufacturer.
- C. Substitutions:
 - 1. Comply with the provisions of Division 1, Section “Product Requirements” and the following:
 - 2. When several manufacturers are named in the specifications, the corresponding products and models made by the specified manufacturers will be accepted and Contractor may base his bid on any one of those products. However, if the Contractor's bid is based on products other than the scheduled or specified **basis of design**, it shall be understood that there will be no extra cost involved whatsoever, and the effect on other trades has been included in the Contractor's proposal. Coordination with other trades for substituted equipment or use of products other than the named basis of design shall be the responsibility of the Contractor furnishing the equipment.

3. The basis of design manufacturer's equipment has been used to determine space requirements. Should another approved manufacturer's equipment be used in preparing proposals, Contractor shall be responsible for determining that said equipment will fit space allocated. Submission of shop drawings or product data on such equipment shall be considered as indicating that the Contractor has reviewed the space requirements and the submitted equipment will fit the space allocated with due consideration given to access required for maintenance and code purposes.
4. The basis of design manufacturer's equipment and scheduled Fire Protection equipment electrical requirements have been used to coordinate the electrical requirements of the plumbing equipment with the electrical systems serving that equipment.
 - a. Contractor shall coordinate the electrical requirements of the equipment actually furnished on this project and provide the electrical systems required by that equipment at no additional cost to the Owner.
 - b. Equipment of higher or lower electrical characteristics may be furnished provided such proposed equipment is approved in writing and connecting electrical services, circuit breakers, and conduit sizes are appropriately modified at no additional cost to the Owner.
 - c. Prior to approval of submittals of Fire Protection equipment with electrical requirements that are greater or lower than those shown on the Drawings, Contractor shall submit letter verifying that required changes to the electrical system, serving the specific piece of equipment in question, have been coordinated with the electrical contractor. Letter to be included with the associated equipment submittal, addressed to the Architect with a copy to the electrical engineer.
5. Each bidder may submit to the Architect a list of any substitutes which he proposes to use in lieu of the equipment or material named in the specifications with a request for the approval of proposed substitutes. To be considered, such requests must be delivered to the office of the Architect not later than 10 days prior to bid due date. The submittal shall include the following:
 - a. Specific equipment or material proposed for substitution giving manufacturer, catalog and model number.
 - b. All performance and dimensional data necessary for comparison of the proposed substitute with the equipment or material specified.
 - c. A statement setting forth any changes in other materials, equipment or other Work that incorporation of the substitute may require.
6. The burden of proof of the merit of the proposed substitute is upon the proposer. The Architect's decision of approval or disapproval of a proposed substitution is final.

1.07 SUBMITTALS

- A. Submit under provisions of Division 1, Section "Submittal Procedures" and the following:
- B. Product Data: Submit to the Architect and obtain his approval of a complete list of materials and equipment which are to be provided under the 22450 Sections of Division 22.
 1. List shall be complete with manufacturer's names, catalog number, dimensions, specifications, rating data and options utilized. Capacities shall be in the terms specified.
 2. Call attention to deviations from specified items as to operation and physical dimensions.
 3. Performance curves for pumps shall be included.
 4. Final equipment orders shall not be placed until submittals have been returned marked "No Exceptions Noted" or "Make Corrections Noted".
 5. Bind all equipment submittals and provide index tab for each type of equipment. Submit all at one time. Reserve two sets for project close-out documents.
- C. Shop Drawings: Before starting work, submit and obtain approval from Architect of detailed

drawings of the following, fully dimensioned and drawn to 1/8" to 1'-0" scale. Submit six (6) prints of each drawing. Engineer will return five (5) of the prints with comments noted. Failure to submit shop drawings will make the Contractor responsible for changes required to facilitate installation.

1. Fire Protection Systems. See Division 22, Section "Fire Protection System."
2. For multi-story buildings, submit detailed floor penetration sleeve layout drawings. See Division 22, Section "Plumbing Basic Materials and Methods," Article "Informational Submittals."

1.08 COORDINATION DRAWINGS

- A. General:
 1. Within 60 days of Notice to Proceed provide Coordination Drawings for the following areas of the building:
 - a. Auditorium (Include all Rigging)
 2. Do not base Coordination Drawings on reproduction of Contract Documents or standard printed data.
 3. Submitted Coordination Drawings are for information only and typically will not be returned to the Contractor. Architect will not take any action, but may define coordination conflicts or problems and inform the Contractor of such conflicts or problems.
- B. Content:
 1. Project specific information, drawn accurately to scale.
 2. Show sequencing and spatial relationship of separate units of work that must function in a restricted manner to fit in the space provided, or function as indicated.
 3. Indicate dimensions shown on Contract Drawings and make specific note of dimensions that appear to be in conflict with submitted equipment and minimum clearance requirements. Provide alternate sketches to Architect for resolution of such conflicts. Minor dimension changes and difficult installations will not be considered changes to the Contract.
- C. Format:
 1. Coordination shop drawings shall be drawn to a scale of not smaller than $\frac{1}{4}'' = 1'-0''$.
 2. Provide drawings on electronic media in AutoCad .dwg format.
 3. Provide layering system separate from wall outline and unique to each discipline.
 4. In addition to plan view, provide sections as required to clarify congested situations and verify vertical clearances.
 5. Base drawings and building sections in .dwg format will be provided by Architect.
- D. Fire Protection Shop Drawings: Fire Protection subcontractor shall add all fire protection equipment, piping, sprinkler heads and other elements to database.
 1. Upon completion of Fire Protection shop drawings, transmit electronic database to Electrical subcontractor.
- E. General Contractor's Final Coordination: General Contractor shall thoroughly review shop drawings, adding additional building elements where appropriate, and shall resolve conflicts, coordinating with the Architect, and the various subcontractors.
- F. Submit Coordination Shop Drawings: Upon completion of final coordination, General Contractor shall approve coordination shop drawings and transmit 3 sets of hard copies and electronic files on CD's to Architect.
- G. The Architect will not process fire protection shop drawings until such time as the coordination drawings have been sufficiently completed and conflicts resolved.

1.09 QUALITY ASSURANCE

- A. Installer's Qualifications: Firm experienced in installation of systems similar in size and complexity to those required for this project, plus the following:

- B. Acceptable to, or licensed by, manufacturer.
- C. Not less than 3 years experience with systems.
- D. Successfully completed not less than 5 comparable scale projects using systems similar to those for this project.
- E. Professional Engineer licensed in the State in which the work occurs; or NICET Level 3 and licensed by the State Fire Marshall in the State in which the work occurs. NICET Level 3 designer must be an employee of the Fire Protection Contractor. NICET Level 3 designer must oversee installation of shop drawings.

1.10 SUMMARY OF WORK

- A. Scope: Provide all labor, materials, equipment and services necessary for the completion of all fire protection work shown or specified, except work specified to be done or furnished by others, complete and ready for operation.

1.11 DRAWING INTERPRETATION AND COORDINATION

- A. Drawings are intended to show size, capacity, approximate location, direction and general relationship of one phase to another, but not exact detail or arrangement.
- B. Do not scale drawings for location of system components. Check all measurements, location of pipe, ducts, and equipment with the detail architectural, structural, and electrical drawings and conditions existing in the field and lay out work so as to fit in with ceiling grids, lighting and other parts.
- C. Make minor adjustments in the field as required to provide the optimum result to facilitate ease of service, efficient operation and best appearance.
- D. Where doubt arises as to the meaning of the Drawings and Specifications, obtain the Architect's written decision before proceeding with parts affected; otherwise assume liability for damage to other work and for making necessary corrections to work in question.
- E. Refer to Architectural Drawings for all dimensions and location of lights, ceiling diffusers and sprinkler heads.

1.12 PROJECT/SITE CONDITIONS

- A. Visiting Site: Visit site and become familiar with location and various conditions affecting work. No additional allowance will be granted because of lack of knowledge of such conditions.
- B. Determine sizes and locations, and inverts of existing and new utilities near site.
- C. Cause as little interference or interruption of existing utilities and services as possible. Schedule work which will cause interference or interruption in advance with Owner, authorities having jurisdiction, and all affected trades.

1.13 SUBMITTALS FOR PROJECT CLOSEOUT

- A. Submit under provisions of Division 1 Sections - "Closeout Procedures" and "Project Record Documents" and the following.
- B. Record Drawings:
 - 1. Keep accurate record of corrections, variations, and deviations, including those required by change orders to the Fire Protection drawings.
 - 2. Accurately show location, size and elevation of new exterior work dimensioned from permanent structure.
 - 3. Record changes daily on a set of prints kept at the job site.
 - 4. Submit prints marked as noted above to Architect for review prior to request for final payment.
 - 5. Marked prints will be returned to Contractor for use in preparing Record Drawings.
 - 6. The Fire Protection Contractor shall use marked up drawing showing as-built conditions provided by Contractor to prepare Record Drawings. Asbuilt drawings shall be incorporated on electronic files.
- C. Prior to the issuance of a certificate for final payment, submit to Architect and obtain his approval of the following:
 - 1. Record drawings – fire protection piping/shop drawings, bond and electronic files in

- AutoCAD *.dwg & PDF format.
- 2. Equipment Submittal Data (2).
- 3. Equipment operating and maintenance manuals (2).
- 4. Equipment warranty dates and guarantees (2).
- 5. List of Owner's Personnel who have received operating and maintenance instructions.
- 6. Install valve charts and valve location plans in main mechanical room. (See Division 22, Section "Plumbing Identification.")
- 7. Submit factory start-up/field reports for:
 - a. Pressure Reducing Valve
- D. Contractor's Material and Test Certificate for above ground piping.
- E. Contractor's Material and Test Certificate for underground piping.

END OF SECTION

SECTION 22453**BASIC FIRE PROTECTION MATERIALS AND METHODS****PART 1 GENERAL****1.01 SUMMARY**

- A. Description of common piping, equipment, materials and installation for Fire Protection systems.
- B. This Section includes the following:
 - 1. Piping materials and installation instructions common to most Fire Protection piping systems.
 - 2. Sleeves.
 - 3. Concrete.
 - 4. Grout.
 - 5. Escutcheons.
 - 6. Access doors - Building.
 - 7. Flashing
 - 8. Workmanship.
 - 9. Cutting and patching.
 - 10. Excavation, trenching and backfilling.
 - 11. Piping systems installation - Common Requirements.
 - 12. Equipment installation - Common Requirements.
 - 13. Painting and finishing.
 - 14. Concrete bases.
 - 15. Supports and anchorages.
 - 16. Protection and cleaning of equipment and materials.

1.02 DEFINITIONS

- A. Finished Spaces: Spaces other than mechanical and electrical equipment rooms, furred spaces, pipe and duct chases, unheated spaces immediately below roof, spaces above ceilings, unexcavated spaces, crawlspaces, and tunnels.
- B. Exposed, Interior Installations: Exposed to view indoors. Examples include finished occupied spaces and mechanical equipment rooms.
- C. Exposed, Exterior Installations: Exposed to view outdoors or subject to outdoor ambient temperatures and weather conditions. Examples include rooftop locations.
- D. Concealed, Interior Installations: Concealed from view and protected from physical contact by building occupants. Examples include above ceilings and chases.
- E. Concealed, Exterior Installations: Concealed from view and protected from weather conditions and physical contact by building occupants but subject to outdoor ambient temperatures. Examples include installations within unheated shelters.

1.03 SUBMITTALS

- A. Product Data: For the following:
 - 1. Transition fittings.
 - 2. Escutcheons.
 - 3. Access doors - building.

1.04 INFORMATIONAL SUBMITTALS

- A. Shop Drawings: For multi-story buildings, submit detailed drawings of the floor penetration sleeve sizes and locations, including the following information:
 - 1. Fully dimensioned off column lines with location respective to adjacent walls shown.
 - 2. Sleeve size.
 - 3. Pipe size.
 - 4. Pipe service.

1.05 DELIVERY, STORAGE, AND HANDLING

- A. Deliver pipes and tubes with factory-applied end caps. Maintain end caps through shipping, storage, and handling to prevent pipe end damage and to prevent entrance of dirt, debris, and moisture. If pipes do not ship with end caps, cover ends of pipe stored on site with 6 mil plastic.
- B. Store plastic pipes protected from direct sunlight. Support to prevent sagging and bending.

1.06 COORDINATION

- A. Arrange for pipe spaces, chases, slots, and openings in building structure during progress of construction, to allow for Plumbing installations.
- B. Coordinate installation of required supporting devices and set sleeves and inserts in poured-in-place concrete and other structural components as they are constructed.
- C. Coordinate installation of building access doors for fire protection items requiring access that are concealed behind finished surfaces.
- D. Electrical Characteristics for Fire Protection Equipment:
 - 1. Coordinate electrical system installation to match requirements of equipment actually furnished on this project.
 - 2. Include a letter with the respective equipment submittal from the electrical contractor and approved by electrical design consultant, detailing changes to the electrical system required to accommodate changes in the power distribution system to accommodate Fire Protection equipment that has different electrical power requirements from that equipment used as basis of design, or power provisions, as shown on the electrical drawings.

PART 2 - PRODUCTS**2.01 MANUFACTURERS**

- A. In other Part 2 articles where subparagraph titles below introduce lists, the following requirements apply for product selection:
 - 1. Manufacturers: Subject to compliance with requirements. Provide products by one of the following:

2.02 PIPE, TUBE AND FITTINGS

- A. Refer to individual Division 22 Fire Protection Piping Sections for pipe, tube, and fitting materials and joining methods.
- B. Pipe Threads: ASME B1.20.1 for factory-threaded pipe and pipe fittings.
- C. All piping and fittings prior to PRV shall be rated for 250psi.

2.03 JOINING MATERIALS

- A. Refer to individual Division 22 Fire Protection Piping Sections for special joining materials not listed below.
- B. Flange Bolts and Nuts: ASME B18.2.1, carbon steel, unless otherwise indicated.
- C. Solder Filler Metals: ASTM B 32, lead-free alloys. Include water-flushable flux according to ASTM B 813.
- D. Brazing Filler Metals: AWS A5.8, BCuP Series, copper-phosphorus alloys for general-duty brazing, unless otherwise indicated.

Retain first two subparagraphs below is required for LEED-NC, LEED-CI, or LEED-CS Credit IEQ 4.1. VOC limit is that for CPVC solvent cements.

2.04 SLEEVES

- A. Galvanized-Steel Sheet: 20 gauge minimum thickness; round tube closed with longitudinal joint.
- B. Steel Pipe: ASTM A 53, Type E, Grade B, Schedule 40, galvanized, plain ends.
- C. Firestopping Sealant: See Division 7 Sections “Through-Penetration Firestop Systems” and “Fire Resistive Joint Systems” for firestopping sealant requirements.
- D. Stuffing Insulation: Glass fiber type, non-combustible.

2.05 CONCRETE

- A. Nominal weight concrete (145 PCF) using Type I Portland Cement, 1-inch maximum size coarse aggregate to provide a minimum 28 day compressive strength of 3000 psi.

2.06 GROUT

- A. Description: ASTM C 1107, Grade B, non-shrink and nonmetallic, dry hydraulic-cement grout.
 - 1. Characteristics: Post-hardening, volume-adjusting, non-staining, noncorrosive, nongaseous, and recommended for interior and exterior applications.
 - 2. Design Mix: 5000-psi 28-day compressive strength.
 - 3. Packaging: Premixed and factory packaged.

2.07 ESCUTCHEONS

- A. Description: Manufactured wall and ceiling escutcheons and floor plates, with an ID to closely fit around pipe, tube, and insulation of insulated piping and an OD that completely covers opening.
 - 1. Finish: Polished chrome-plated.

2.08 ACCESS DOORS – BUILDING

- A. Manufacturers:
 - 1. Bilco.
 - 2. Milcor.
 - 3. Nystrom.
- B. Construction:
 - 1. Door: 14-gauge, cold rolled steel.
 - 2. Frame: 16-gauge, cold rolled steel of configuration to suit material application.
 - 3. Hinge: Concealed spring hinge.
 - 4. Latch: Screwdriver cam latch.
 - 5. Finish: Phosphate dipped and prime coated.
 - 6. UL labeled when in fire-rated construction with rating to match construction.
 - 7. Stainless steel (Type 304) shall be used in ceramic tile or glazed structural tile.
- C. Size: 18 inch x 18 inch minimum, as indicated on drawings, or as required to allow inspection, service, and removal of concealed items.

2.09 FLASHING

- A. Flexible Flashing: 47 mil thick sheet butyl compatible with roofing.
- B. Lead Flashing: Waterproofing, 5 lb/SF sheet lead.

- C. Pitch Cups: 20 gauge galvanized steel, minimum 8 inches deep, bases mitered and soldered and extending at least 4 inches horizontally.

PART 3 - EXECUTION

3.01 WORKMANSHIP

- A. First class and in accordance with best practice. Work to be orderly, neat, workman-like in appearance and performed by skilled craftsman.
- B. Poor or improper workmanship shall be removed and replaced as directed by the Architect without additional cost to the Owner or design professionals.

3.02 CUTTING AND PATCHING

- A. Comply with the requirements of other Divisions for the cutting and patching required to accommodate the installation of Fire Protection work. Repair and finish to match surrounding.
- B. Architect's approval required before cutting any part where strength, or appearance of finished work is involved.
- C. Openings are to be laid out and built-in, set sleeves and inserts and furnish detailed layout drawings to other trades in advance of their work.
- D. Core drill or saw cut openings in existing masonry construction.

3.03 EXCAVATION, TRENCHING AND BACKFILLING

- A. Provide trenching, excavation, backfilling necessary for performance of work, including excavation of rock and all other materials which may be encountered.
- B. Grade bottom of trenches evenly and excavate bell holes to insure uniform bearing for the full pipe length. Excavate minimum 6 inches below pipe. Refill cuts below grade with sand.
- C. Backfill after inspection by Architect and authorities having jurisdiction. Backfill compacted areas (engineered fill) with sand or fine gravel in accordance with requirements in Division 2. Section "Earthwork" no less than 95% compactancy. Backfill paved areas with sand or fine gravel compacted to meet requirements of Paving Section. Backfill shall be free of rock, wood, steel, brick, etc. Do not disturb pipe.
- D. Refer to Division 22, Fire Protection Piping Sections for specific bedding and backfill requirements.
- E. Restore existing pavement, curbs, sidewalks, sodding, bushes, etc., matching surroundings.
- F. Restore all pavement cuts to meet the requirements of the cuts of the local authority.

3.04 PIPING SYSTEMS INSTALLATION - COMMON REQUIREMENTS

- A. Install piping according to the following requirements and Division 22 Fire Protection Piping Sections specifying piping systems.
- B. Drawings, schematics, and diagrams indicate general location and arrangement of piping systems. Install piping as indicated unless deviations to layout are approved on Shop Drawings.
- C. Install piping in concealed locations, unless otherwise indicated and except in equipment rooms and service areas and stairwells.

- D. Install piping indicated to be exposed and in service areas at right angles or parallel to building walls. Diagonal runs are prohibited unless specifically indicated otherwise.
- E. Install piping above accessible ceilings to allow sufficient space for ceiling panel removal.
- F. Install piping to permit valve servicing.
- G. Install piping at indicated slopes.
- H. Install piping free of sags and bends.
- I. Install fittings for changes in direction and branch connections. No mitering or notching for fittings permitted.
- J. Select system components with pressure rating equal to or greater than system operating pressure.
- K. Install escutcheons where exposed piping penetrates walls, ceilings, and floors in finished spaces.

3.05 SLEEVES

- A. Sleeves are not required for core-drilled holes.
 - 1. In mechanical room floors and other potentially wet areas, provide 1-1/2 inch angle ring or square set in silicone adhesive around penetration.
- B. Install sleeves for pipes passing through concrete and masonry walls, gypsum-board partitions, and concrete floor and roof slabs.
 - 1. Cut sleeves to length so that sleeve extends out ½ inch from both surfaces.
 - a. Exception: Extend sleeves installed in floors of mechanical equipment areas, or other potentially wet areas, 1-1/2 inches above finished floor level. Caulk space outside of sleeves water tight.
 - 2. Install sleeves in new walls and slabs as new walls and slabs are constructed.
 - 3. Use the following sleeve materials:
 - a. Sleeves for Piping Through Concrete Beams, Concrete Walls, Footings, and Potentially Wet Floors: Steel pipe.
 - b. Sleeves for Piping through Masonry Walls and Gypsum Board Partitions: Steel sheet sleeves 1/2 inch larger than pipe or pipe covering.
 - 4. Where piping penetrates non-rated equipment room wall, floors or roofs outside of a shaft, close off space between pipe or duct and adjacent work with stuffing insulation and caulk air tight.
 - 5. Above ground, non-rated, exterior wall penetrations: Seal annular space between sleeve and pipe or pipe insulation, using joint sealants appropriate for size, depth, and location of joint. Refer to Division 7 Section "Joint Sealants" for materials and installation.
 - 6. Provide for continuous insulation wrapping thru sleeve.
 - 7. Seal space around the outside of sleeves with grout at masonry walls and floors and dry wall mud at gypsum board partitions.
- C. Fire-Rated Penetrations: Where pipes pass through fire-rated and fire-resistive floors, walls, and partitions, install appropriately rated sleeves and firestopping sealant. Firestopping materials and installation methods are specified in Division 7 Sections "Through Penetration Firestop Systems" and "Fire Resistive Joint Systems".

3.06 PIPING JOINT CONSTRUCTION

- A. Join pipe and fittings according to the following requirements and Division 22 Fire Protection Piping Sections specifying piping systems.
- B. Remove scale, slag, dirt, and debris from inside and outside of pipe and fittings before assembly.

- C. Threaded Joints: Thread pipe with tapered pipe threads according to ASME B1.20.1. Cut threads full and clean using sharp dies. Ream threaded pipe ends to remove burrs and restore full ID. Join pipe fittings and valves as follows:
 - 1. Apply appropriate tape or thread compound to external pipe threads unless dry seal threading is specified.
- D. Flanged Joints:
 - 1. 125 Pound Cast Iron Flange (Plain Face): Mating flange shall have raised face, if any, removed to avoid overstressing the cast iron flange.
 - 2. Select appropriate gasket material, size, type, and thickness for service application. Install gasket concentrically positioned. Use suitable lubricants on bolt threads.

3.07 PIPE CLEANING

- A. Keep pipe clean and free of dirt. Keep caps on ends of pipe when it is stored on site and reinstall caps on ends of installed piping at the end of each day.

3.08 EQUIPMENT INSTALLATION - COMMON REQUIREMENTS

- A. Install equipment to allow maximum possible headroom unless specific mounting heights are indicated.
- B. Install equipment level and plumb, parallel and perpendicular to other building systems and components in exposed interior spaces, unless otherwise indicated.
- C. Install equipment to facilitate service, maintenance, and repair or replacement of components. Connect equipment for ease of disconnecting, with minimum interference to other installations.
- D. Install equipment in accordance with manufacturer's instructions. If manufacturer's instructions conflict with Contract Documents, obtain Architect's decision before proceeding.
- E. Install equipment to allow right of way for piping installed at a required slope.
- F. All equipment shall be firmly fastened in place:
 - 1. Pad mounted equipment shall be secured to pads using poured in place anchor bolts or cinch anchors.
 - 2. Vibration isolators shall be secured to floors or pads and equipment shall be bolted to the isolators.

3.09 PAINTING AND FINISHING

- A. Except as specified below or noted on the Drawing, requirements for painting of Fire Protection systems, equipment, and components are specified in Division 9 Sections "Interior Painting" and "Exterior Painting."
- B. Damage and Touchup: Repair marred and damaged factory-painted finishes with materials and procedures to match original factory finish.
- C. Painting of fire piping:
 - 1. The following piping within boiler and chiller room shall be painted in its entirety under Division 9: Painting. Color codes are listed here for information only.
 - a. Fire Protection Piping: Red Metaltex B47R3.
 - 2. Should there be a conflict of colors in existing installations, contact the Architect.

3.010 CONCRETE BASES

- A. Provide concrete foundations with nominal dimensions conforming to the following schedule for floor-mounted equipment:

<u>Equipment</u>	<u>Foundation</u>
Equipment and piping stands and supports	4" high pad
Equipment located in equipment rooms, not listed above	4" high pad or as indicated on the Drawings
- B. Concrete bases shall be continuous and shall have beveled edges and smooth float finish. Concrete bases shall be reinforced with No. 3 bars a maximum of 12" on center each way, and held in place with dowel rods at each corner anchored in the slab. Dowel rods shall not penetrate through the slab.

- C. Roughen and clean exposed slabs before pouring foundations. Apply bonding agent to surfaces in contact.
- D. Concrete pads shall extend a minimum of 4" beyond the equipment footprint in all directions, including appurtenances, vibration isolators, base elbow supports, and motors.
- E. Equipment attached directly to foundations or inertia bases; bases provided with grout holes; and bases consisting of a structural frame shall have voids filled with grout after attachment to foundation.
- F. Fill voids between baseplates and foundations, and level equipment, with grout.

3.011 ERECTION OF METAL SUPPORTS AND ANCHORAGES

- A. Refer to Division 5 Section "Metal Fabrications" requirements.
- B. Cut, fit, and place miscellaneous metal supports accurately in location, alignment, and elevation to support and anchor plumbing and fire protection materials and equipment.
- C. Field Welding: Comply with AWS D1.1.

3.012 GROUTING

- A. Mix and install grout for Fire Protection equipment base bearing surfaces, pump and other equipment base plates, and anchors.
- B. Clean surfaces that will come into contact with grout.
- C. Provide forms as required for placement of grout.
- D. Avoid air entrapment during placement of grout.
- E. Place grout, completely filling equipment bases.
- F. Place grout on concrete bases and provide smooth bearing surface for equipment.
- G. Place grout around anchors.
- H. Cure placed grout.

3.013 ACCESS DOORS – BUILDING

- A. Provide access doors in wall and inaccessible ceilings to allow access to service and maintain concealed Plumbing equipment, valves, etc.
- B. Coordinate installation of access doors with Divisions responsible for Building System in which panels are being installed.

3.014 PROTECTION AND CLEANING OF EQUIPMENT, FIXTURES, AND MATERIALS

- A. Equipment and materials shall be carefully handled, properly stored, and protected from weather, dust-producing procedures, or damage during construction.
- B. At completion of all work, thoroughly clean exposed materials (pipe, etc.) and equipment and make ready for painting.

END SECTION 22453

SECTION 22455**FIRE PROTECTION SYSTEM****PART 1 GENERAL****1.01 SECTION INCLUDES**

- A. Pipe, Fittings, Valves for:
 - 1. Wet sprinkler system.

- B. System design and installation. Base system design hydraulic calculations using the area/density method on the following criteria and in accordance with NFPA 13R latest edition.
 - 1. Sprinkler Protection:
 - a. Offices, gymnasiums, classrooms, lobbies, waiting areas, educational areas, dining areas, and corridors: Light hazard, 0.10 gpm/sq. ft. over the hydraulically most remote 1500 sq. ft.
 - b. Kitchen, Mechanical Equipment Rooms, Transformer Rooms, Electrical Switchgear Rooms, Electric Closets, Elevator Shafts, Elevator Machine Rooms, Refrigeration Service Rooms, and storage between 100 and 250 sq. ft.: Ordinary Hazard, Group 1, 0.15 gpm/sq. ft. over the hydraulically most remote 1500 sq. ft.
 - c. Utility and Maintenance rooms, laundry, laboratory and storage rooms, storage rooms over 250 sq. ft., loading docks, energy centers areas: Ordinary Group 2, 0.20 gpm/sq. ft. over the hydraulically most remote 1500 sq. ft.
 - d. Provide sprinklers in accessible shafts per NFPA 13R latest edition.
 - 2. Add water allowance of 250 gpm for inside and outside hose streams to the sprinkler requirements at the connection to the distribution main.
 - 3. Hydraulic Calculations: The calculated demand including hose stream requirements shall fall no less than 10 percent below the available supply curve.
 - 4. Comply with IBC (2021 Edition), NFPA 13R (2021 Edition), NFPA 30, Flammable and Combustible Liquid Code, NFPA 45, Standard on Fire Protection for Laboratory Using Chemicals, NFPA 54, National Fuel Gas Code, NFPA 58, Liquefied Petroleum Gas Code, NFPA 70, National Electric Code, NFPA 72, National Alarm and Signaling Code, and NFPA 101, Life Safety Code (2021 Edition).

1.02 RELATED SECTIONS

- A. Section 22405 – Plumbing Identification.
- B. Section 22451 – General Fire Protection Requirements.
- C. Section 22453 – Basic Fire Protection Materials and Methods.

1.03 SYSTEM

- A. A wet sprinkler system providing coverage for the entire building.

1.04 SUBMITTALS FOR REVIEW

- A. Submit under provisions of Division 1, Section “Submittal Procedures” and the following:
- B. Product Data: Submit to the Architect and obtain his approval of a complete list of materials and equipment which are to be furnished under Division 22.
 - 1. List shall be complete with manufacturer’s names, catalog number, dimensions, specifications, rating data and options utilized. Capacities shall be in the terms specified.
 - 2. Call attention to deviations from specified items as to operation and physical dimensions.

3. Performance curves for equipment such as pumps shall be included.
 4. Final equipment orders shall not be placed until submittals have been returned marked “No Exceptions Noted” or “Make Corrections Noted”.
 5. Bind all equipment submittals and provide index tab for each type of equipment. Submit all at one time. Reserve two sets for project close-out documents.
- C. Shop Drawings:
1. A reflected ceiling plan indicating locations of sprinkler heads, lights, HVAC devices, smoke detectors, exit lights and any additional items attached to ceiling. In lift out ceilings, sprinkler heads are to be centered in ceiling tiles. In hard ceilings, sprinkler heads to follow the general arrangement of the ceiling. After review by the Architect, revise layout as required.
 2. Prepare a working pipe shop drawing based on hydraulic calculations. The piping shop drawing shall indicate routing and configuration of piping, size of pipe, piping support, elevation of piping and coordination of piping with ductwork. Shop drawings shall include low point drain downs.
 3. Hydraulic calculations are to be prepared utilizing a current water flow test (maximum 90 days old). If current flow test is not available, obtain a current flow test and pay for all fees required.
 4. If water flow information is not available due to new main extension or other construction which prohibits the availability of flow information at the start of construction, the contractor shall estimate probable flow information based on information available. Once permanent water is available at the site, the Contractor shall perform a flow test, incorporate the information into the calculation and make any modifications to the system as may be required.
 5. When drawings and hydraulic calculations are submitted to the Engineer for review, they shall bear the seals of review and approval of the Architect, General Contractor, the Owners Insurance Underwriter, and the Nicet Level 3 Designer. The Nicet registered designer shall be an employee of the Fire Protection Installing Contractor and shall oversee installation of Project. Nicet registration seal shall be included on shop drawings.
 6. Contractor to provide to the State reviewing Agency a set of shop drawings reviewed and approved by Engineer of Record as required by the State of Alabama.
 7. The Contractor shall incorporate all comments for approval by local Fire Marshall’s Office and any State of Alabama Reviewing Agency. Contractor shall provide signed, and approved set of plans to Engineer upon approval by state and local authorities.
 8. Each system calculations, components and alarming to be on shop drawings.

1.05 SYSTEM INSTALLATION AND INSPECTION

- A. Required Inspections:
1. All underground and above ground fire line piping must be inspected by owner’s representative prior to being covered or concealed.
- B. Fire Stopping:
1. All fire stopping of any and all fire rated assemblies must be inspected and approved by a State Inspector prior to the work being concealed.
- C. Hydrostatic Testing Requirements:
1. The required hydrostatic testing of the underground and above ground fire line piping must be witnessed and approved by City Inspector prior to being covered or concealed.
- D. Underground Fire Line Pipe Flush Test Requirements:
1. The required flush test of the underground fire line piping must be witnessed by an Owners representative prior to being connected to the above ground piping or riser.
- E. Acceptance Inspections & Testing:

1. Allow fire protection and life safety systems installation and acceptance test must be inspected, test, witnessed and approved by an AHJ and Owner’s representative.
- F. Plans Review & Approval:
1. All fire protection and life safety system drawings and specifications must be reviewed by this office to ensure code compliance prior to start of any work.

1.06 REGULATORY REQUIREMENTS

- A. Materials: Conform to UL and FM Global Requirements and Standards.
- B. Sprinkler System: Conform to NFPA 13R, State of Alabama Fire Marshall Requirements, Local Fire Requirements and Alabama State Building Commission Requirements.
- C. Private Service Mains: Conform to NFPA 24.
- D. NFPA 25, Inspections, Testing and Maintenance of Water-Based Fire Protection Systems.
- E. NFPA 72, Standard for the Installation, Maintenance and Use of Protective Signaling Systems.
- F. NFPA 72E, Standard on Automatic Fire Detectors.
- G. Applicable Building Codes.
- H. Welding Materials and Procedures: Conform to ASME Code.
- I. Valves: Bear UL, FM label or marking. Provide manufacturer’s name and pressure rating marked on valve body.
- J. Products Requiring Electrical Connection: Listed and classified as suitable for the purpose specified and indicated.

1.07 EXTRA MATERIALS

- A. Provide extra sprinklers under provisions of NFPA 13R, State and Local requirements.
- B. Provide suitable wrenches for each sprinkler type.
- C. Provide metal storage cabinet in location designated. (Designate location).

PART 2 - PRODUCTS

2.01 WET SPRINKLER SYSTEM

- A. Wet System - Above Ground Piping:
BlazeMaster CPVC pipe and fittings are extruded/molded from Lubrizol CPVC compounds. The pipe compound meets cell class 23547 and the fitting compound meets cell class 24447 as defined by ASTM D1784. Both the pipe and the fitting compounds are certified by NSF International for use with potable water. As manufactured by Tyco Fire Protection Products, The Viking Corporation, Georg Fischer Harvel LLC., Nibco Inc. and IPEX Inc.

Joints on CPVC piping: All socket type joints shall be assembled employing solvent cements that meet or exceed the requirements of ASTM F493. The standard practice for safe handling of solvent cements shall be in accordance with ASTM F402. Solvent cement shall be certified by NSF

International for use with potable water, and approved by the BlazeMaster pipe and fittings manufacturers.

All piping and fittings prior to PRV shall be rated for 250psi.

Connect to existing piping as required.

B. Sprinklers:

1. Sprinklers to be UL approved glass bulb quick response type.
2. All sprinkler heads to be rated for 175°F, unless otherwise noted on drawings.
3. Suspended Ceiling (Lay-in and Gypsum):
 - a. Manufacturers:
 - 1) Viking Model M.
 - 2) Tyco, Reliable, Victaulic.
 - b. Type: Quick response concealed pendant type with painted cover plate.
 - c. Cover Plate: White. Unless indicated otherwise. Provide color chart to Architect for color selection.
 - d. Finish: Sprinkler Head – chrome plated.
 - e. Fusible Link: Glass bulb type temperature rated for specific area hazard.
4. Exposed Area Type:
 - a. Manufacturers:
 - 1) Viking Model M.
 - 2) Tyco, Reliable, Victaulic.
 - b. Type: Quick response upright type with guard.
 - c. Finish: Brass or chrome plated.
 - d. Fusible Link: Glass bulb type temperature rated for specific area hazard.
 - e. Guards: Finish to match sprinkler finish.
5. Sidewall Type:
 - a. Manufacturers:
 - 1) Viking Model M.
 - 2) Tyco, Reliable, Victaulic.
 - b. Type: Quick response recessed sidewall type.
 - c. Finish: Chrome plated.
 - d. Escutcheon Plate Finish: Chrome plated in color.
 - e. Fusible Link: Glass bulb type temperature rated for specific area hazard.
6. Dry Pendent Sprinklers (Cooler/Freezer and all areas subject to temperature below 40 deg F.):
 - a. Manufacturers:
 - 1) Viking Model M.
 - 2) Tyco, Reliable, Victaulic.
 - b. Type: Quick response recessed sidewall type with matching push on escutcheon plate.
 - c. Escutcheon Plate Finish: Chrome plated.
 - d. Fusible Link: Glass bulb type temperature rated for specific area hazard.

C. Pipe Hangers and Supports:

1. Conform to NFPA 13R.
2. Hangers for Pipe Sizes ½ to 1-1/2 inch: Carbon steel, adjustable swivel, split ring.
3. Hangers for Pipe Sizes 2 Inches and Over: Carbon steel, adjustable, clevis.
4. Multiple or Trapeze Hangers: Steel channels with welded spacers and hanger rods.
5. Wall Support for Pipe Sizes to 3 Inches: Cast iron hook.
6. Wall Support for Pipe Sizes 4 Inches and Over: Welded steel bracket and wrought steel clamp.

7. Vertical Support: Steel riser clamp.
 8. Floor Support: Cast iron adjustable pipe saddle, lock nut, nipple, floor flange, and concrete pier or steel support.
 9. Copper Plate Support: Carbon steel ring, adjustable, copper plated.
 10. All hangers to be a maximum of 12 inches from the end of a branch line or an arm-over for drop. Pipe hangers and supports shall be of one manufacturer. Grinnell, Anvil or Tolco are approved manufacturers. Substitutions require prior approval.
- D. Gate Valves:
1. Up to and including 2 Inches:
 - a. Manufactures:
 - 1) Nibco Model T-104-O.
 - 2) Where Nibco is listed, Victaulic, Stockham, Watts, Tyco and Milwaukee are equal.
 - b. Bronze body, bronze trim 175 psi WP, UL Listed, rising stem, handwheel, solid wedge or disc, threaded ends.
 2. Over 2 Inches:
 - a. Manufactures:
 - 1) Nibco Model F-607-OTS.
 - 2) Where Nibco is listed, Victaulic, Watts, Tyco and Milwaukee are equal.
 - b. Iron body, bronze trim 175 psi WP, UL Listed, rising stem pre-grooved for mounting tamper switch, handwheel, OS&Y, solid bronze or cast iron wedge, flanged or grooved ends.
- E. Butterfly Valves:
1. Cast or Ductile Iron Body
 - a. Manufactures:
 - 1) Nibco Model GD-4765-4/8.
 - 2) Where Nibco is listed, Victaulic, Watts, Tyco and Milwaukee are equal.
 2. Cast or ductile iron, chrome or nickel plated ductile iron or aluminum bronze disc, resilient replaceable EPDM seat, lug, or grooved ends, extended neck, handwheel and gear drive and integral indicating device, and internal tamper switch rated, UL / FM approved.
- F. Check Valves:
1. Up to and including 2-1/2 inches to 6 inches:
 - a. Manufacturers:
 - 1) Nibco Model G-917-W.
 - 2) Where Nibco is listed, Victaulic, Watts, Tyco and Milwaukee are equal.
 - b. Iron body and swing disc, bronze seat, stainless steel spring, grooved ends, 175 psi WP.
- G. Water Flow Switch:
1. System sensor WFD water flow detector. Poetter Roemer, Viking, and Tyco are acceptable manufacturers.
- H. Supervisory Switches:
- System sensor OSY2 Model tamper detector. Poetter Roemer, Viking, and Tyco are acceptable manufacturers.
- I. Fire Department Siamese Connection:
1. Crocker Figure No. 6410-PC chrome plated exposed with clappers, caps and chains.
 2. Location to be coordinate with Fire Chief and Architect.
- Elkhart, Croker and Guardian Fire are acceptable manufacturers

- J. Test and Drain Assembly:
1. Viking Model A-1 complete with sight glass and ½” orifice for test purpose. Pipe discharge to drain riser on to exterior and spill on splash block.

Tyco, Victaulic, and Reliable are acceptable manufacturers.

2.02 FIRE STOP SYSTEMS

- A. All wall and floor penetrations are to be closed. Refer to the Arch. Life Safety Plans and close all openings with a U.L. listed assembly compatible with the rating of the wall or floor being penetrated.
- B. Non-rated walls – sheet rock joint compound may be used to seal opening.
- C. For piping passing through listed sheet rock walls or partitions:
1. Uninsulated pipe passing through 2 hour walls or partitions – minimum 5/8” depth of Hilti FS 605 filling annular space between wall and pipe on both sides of wall. U.L. Listing #WL1056.
 2. Uninsulated pipe passing through 2 hour walls or partitions – minimum 1-1/4” depth of Hilti FS 601 filling annular space between pipe and wall on both sides of wall, U.L. Listing #WL1054.
- D. For piping passing through concrete floors, concrete walls or concrete block walls.
1. Uninsulated Schedule 40 steel pipe; fill annular space between pipe and opening with Hilti #FS 605. U.L. Listing #CJ1184.

PART 3 - EXECUTION

3.01 PREPARATION

- A. Install piping in accordance with NFPA 13R for sprinkler systems, NFPA 14 for standpipe and hose systems, and NFPA 24 for service mains.
- B. Connect to site fire service installed under another section. Verify the site with civil drawings for the exact size and location of the service prior to beginning work.
- C. Route piping in orderly manner, plumb and parallel to building structure. Maintain gradient.
- D. Install piping to conserve building space, to not interfere with use of space and other work.
- E. Group piping whenever practical at common elevations.
- F. Install piping to allow for expansion and contraction without stressing pipe, joints, or connected equipment.
- G. Inserts:
1. Provide inserts for placement in concrete formwork.
 2. Provide inserts for suspending hangers form reinforcement concrete slabs and sides of reinforced concrete beams.
 3. Provide hooked rod to concrete reinforcement section for inserts carrying pipe over 4 inches.
 4. Where concrete slabs form finished ceiling, locate inserts flush with slab surface.
- H. Pipe Hanger and Supports:
1. Install in accordance with NFPA 13R and NFPA 14.
 2. Hangers on branch lines to comply with NFPA 13R, 9.2.3.
 3. Hangers on mains to comply with NFPA 13R, 9.2.4.

4. All hangers to be a maximum of 12 inches from the end of a branch line or an arm-over for a drop.
 5. Support vertical piping at every floor. Support riser piping independently of connected horizontal piping.
 6. Where several pipes can be installed in parallel and at same elevation, provide multiple trapeze hangers may be used.
 7. Provide copper plated hangers and supports for copper piping.
 8. Prime coat exposed steel hangers and supports. Hangers and supports located in crawl spaces, pipe shafts, and suspended ceiling spaces are not considered exposed.
- I. Slope piping and arrange systems to drain at low points.
 - J. Prepare pipe, fittings, supports, and accessories for finish painting. Where pipe support members are welded to structural building framing, scrape, brush clean, and apply one coat of zinc rich primer to welding.
 - K. Do not penetrate building structural members unless indicated.
 - L. Provide sleeves when penetrating floors and wall. Seal pipe and sleeve penetrations to achieve fire resistance equivalent to fire separation required.
 - M. When installing more than one piping system material, ensure system components are compatible and joined to ensure the integrity of the system. Provide necessary joining fittings. Ensure flanges, unions, and couplings for servicing are consistently provided.
 - N. Die cut threaded joints with full cut standard taper pipe threads and connect with Teflon tape or Teflon pipe compound applied to male threads.
 - O. Install valves with stems upright or horizontal, not inverted.
 - P. Provide valves for shut-off or isolating service and where shown on plans.
 - Q. Provide drain valves at main shut-off valves, low points of piping and apparatus.
 - R. Install piping in attic directly on top of joists. Install plastic sheeting over top of pipe and secure joists. Insulation to be installed over pipe and plastic sheeting.
 - S. Provide automatic sprinkler coverage at the bottom of hydraulic elevator shafts and elevator machine room in Accordance with NFPA 13R and local requirements.
 - T. Exterior exposed equipment shall be chrome plated.
 - U. All fire department or maintenance connections shall be coordinated with the Fire Department.
 - V. The fire protection contractor is responsible for coordination and labelling of fire devices supplied under this specification.
 - W. Where pipes penetrate exterior or finished surfaces escutcheons shall be used. Escutcheons shall be chrome finished and single piece design.
 - X. All devices and equipment shall be labelled as required by NFPA 13R, 24.

SECTION 22480**INSULATION****PART 1 GENERAL****1.01 SCOPE:**

- A. Include Section 22410 "GENERAL PROVISIONS - PLUMBING AND FIRE PROTECTION", with this Section.
- B. Repair existing insulation at points of connection to existing work.
- C. "Exposed" is defined as: Exposed to view when construction is complete. Items which are not "exposed" are concealed".
- D. Insulate all items subject to sweating or loss of heat.
- E. All insulation shall be installed by licensed applicator and applied in accordance with the Manufacturer's Recommendations.

1.02 INSULATION REQUIREMENTS:

- A. Comply with NFPA 90A.
- B. Pipe hanger saddles are specified in Section 22450 "MATERIALS AND METHODS - PLUMBING"
- C. Use insulation and adhesives with Underwriter's Laboratories flame spread rating not over 25 without evidence of continued progressive combustion, and smoke developed rating not exceeding:
 - 1. 50 for pipe covering located in air ducts, plenum or casing.
 - 2. 150 for all other pipe, and equipment insulation.

PART 2 PRODUCTS**2.01 FIBERGLASS PIPE COVERING:**

- A. Snap-on glass fiber insulation minimum density 5#/cu. ft. maximum thermal conductivity at 75°F mean temperature 0.25 BTU/(hr) (sq. ft.) (°F/in.) with UL rated vinyl coated and embossed vapor barrier laminate of aluminum foil and kraft reinforced with glass fiber yarns (ASJ).
- B. For all lines seal jacket with self sealing lap and staple with outward clinching staples 3" o.c. Butt adjoining sections of insulation tightly and seal with self-adhering butt joint strips.
- C. Cover fittings to thickness of adjacent covering with factory pre-molded fitting covers. Cover flanged valve bodies with flanged unions. Do not cover screwed unions on hot lines. Finish fittings with a skim-coat of insulating cement and when cement is dry fitting shall be covered with glass fab and vinyl acrylic mastic. Finish fittings exposed in equipment rooms, boiler room, and in finished spaces with vinyl acrylic mastic over glass fab.
- D. At Contractor's option, concealed tees may be insulated with field fabricated tee covers consisting of straight pipe covering on run of tee with notch at branch together with pipe covering on branch contoured to fit notch. Glass fab shall be applied around main, lapping contoured joint at branch by 1" minimum for the full circumference of joint. Cover entire fitting covering with vinyl- acrylic mastic over glass fab, 1/8" thick (dry) coat. Submit sample of fabricated tee covering to Architect for approval before work is begun.

2.02 ALUMINUM JACKET PIPING COVER:

- A. 0.010" thick corrugated aluminum jacket with laminated polyethylene and draft paper adhered liner.
- B. Securely rivet jacket in place and band with flat aluminum bands 18" o.c.
- C. Finish fittings on aluminum jacketed lines with 1/8" thick (dry) coat of vinyl acrylic mastic reinforced with glass cloth.

2.03 MANUFACTURERS

- A. Acceptable Manufactures for Fiberglass Insulation Materials:
 - 1. Owens-Corning.
 - 2. Certaniteed.
 - 3. Knauf.
 - 4. Manville Corporation
- B. Acceptable Manufacturers for Foamed Plastic Closed Cell Elastometric Insulation Materials:
 - 1. Armstrong AP.

2. Rubatex.
- C. Acceptable Manufacturers for Adhesives, Mastics and Coatings:
1. Armstrong.
 2. Benjamin Foster.
 3. Childers.
 4. Marathon.
- D. Acceptable Manufacturers for Metal Jackets:
1. Childers.
 2. Manville Metal-Loc.

2.04 SCHEDULES - PIPING

- A. Plumbing Piping:
1. Domestic Cold Water Interior, Above Grade:
 - a. Glass Fiber Pipe Insulation
 - 1) All pipe sizes: 1 inch thick.
 - 2) Pipes located in walls: ½ inch thick.
 - b. Foamed Plastic Pipe Insulation
 - 1) All pipe sizes: 1 inch thick.
 - 2) Pipes located in walls: ½ inch thick.
 2. Domestic Hot and Recirculating Water Interior, Above Grade:
 - a. Glass Fiber Pipe Insulation
 - 1) All pipe sizes: 1-1/2 inch thick.
 - 2) Pipe located in walls: 1 inch thick.
 - b. Foamed Plastic Pipe Insulation
 - 1) All pipe sizes: 1 inch thick.
 - 2) Pipes located in walls: ½ inch thick.
 3. Floor Drain Bodies, Traps and Waste Piping Between Floor Drain and Waste Stack for Floor Drains Serving Refrigeration Equipment, Ice Machine and AC Units; Interior, Above Grade:
 - a. Glass Fiber Pipe Insulation
 - 1) All pipe sizes: 1 inch thick.

2.05 INSTALLATION – EQUIPMENT INSULATION GENERAL

- A. Install in accordance with NAIMA Insulation Standards.
- B. Factory Insulated Equipment: Do not insulate.
- C. Exposed Equipment: Locate insulation and cover seams in least visible locations.
- D. Apply insulation close to equipment by grooving, scoring, and beveling insulation. Fasten insulation to equipment with studs, pins, clips, adhesive, wires or bands.
- E. Fill joints, cracks, seams and depressions with bedding compound to form smooth surface. On cold equipment, use vapor barrier cement.
- F. Insulated equipment containing fluids below ambient temperature: Insulate entire system.
- G. Finish insulation at supports, protrusions, and interruptions.
- H. Equipment in Mechanical Rooms or Finished Spaces: Finish with canvas jacket or as scheduled.
- I. Nameplates and ASME Stamps: Bevel and seal insulation around; do not insulate over.

- J. Equipment Requiring Access for Maintenance, Repair, or Cleaning: Install insulation so it can be easily removed and replaced without damage.
- K. Install in accordance with NAIMA National Insulation Standards.
- L. Exposed Piping: Locate insulation and cover seams in least visible locations.
- M. Insulated pipes conveying fluids below ambient temperature: Insulate entire system including fittings, valves, unions, flanges, strainers, flexible connections, pump bodies, and expansion joints.
- N. Fit pipe hangers over insulation.
- O. Inserts and Shields:
 - 1. Application: Protect insulated piping at hangers and supports with insulation shield. On pipe sizes over 2 inches, provide insert.
 - 2. Insulation Protection Shield: Galvanized steel formed in half circle to fit insulation. Length and gauge as follows:
 - a. Up to NPS 4: 12 inches long and 22 gauge.
 - b. NPS 6: 18 inches long and 22 gauge.
 - c. NPS 8 through 12: 24 inches long and 18 gauge.
 - d. NPS 14 and Large: 24 inches long and 16 gauge.
 - 3. Insulation-Insert Material: Water repellent treated, ASTM C533, Type I calcium silicate; or ASTM C552, Type II cellular glass of same thickness and vapor barrier jacket specified for surrounding insulation. Insert shall be a minimum of 2 inches longer than the shield.
 - 4. For Trapeze or Clamped Systems: Insert and shield shall cover entire circumference of pipe.
 - 5. For Clevis Hangers: Insert shall cover lower 180 degrees of pipe.
 - 6. Option: At Contractor's option, insert may be factory fabricated Thermal Hanger Shield (insulation insert encased in sheet metal shield) equal to Pipe Shield, Inc. "Insulated Pipe Supports."
- P. Continue insulation through metal studs, walls, sleeves, pipe hangers, and other pipe penetrations. Finish firestopping at supports, protrusions, and interruptions. At fire separations, refer to Division 7 and Section 22410: Sleeves.
- Q. Exterior Applications: Provide vapor barrier jacket. Insulate fittings, joints and valves with insulation of like material and thickness as adjoining pipe, and finish with glass mesh reinforced vapor barrier cement. Cover with aluminum jacket with seams located on bottom side of horizontal piping.

PART 3 EXECUTION

3.01 PLUMBING PIPING INSULATION:

- A. Bodies of floor drains serving refrigeration equipment, AC units and ice machines and traps and waste piping between such drains and waste stack: "Fiberglass Pipe Covering". 1" thick.
- B. Cold water piping, interior, above grade: "Fiberglass Pipe Covering", 1" thick. Pipe insulation in partitions and chases may be 1/2" thick "Arma-cell" or approved equal.
- C. Hot and Hot Water Return water piping, interior, above grade: "Fiberglass Pipe Covering", 1-1/2" thickness. Pipe insulation in partitions and chases may be 1" thick "Arma-cell" or approved equal.
- D. Exposed P-Traps, stops and supplies on handicapped lavatories, and sinks. Equal to "PRO-WRAP" by McGuire.
- E. Roof drain and overflow drain bodies and all storm piping above ceiling: "Fiberglass Pipe Covering", 1" thick.
- F. Insulation with aluminum jacket: All exposed hot and cold water piping in Mechanical Rooms, Janitor's Closets and Water Heater Rooms.

SECTION 22490**FIXTURES AND EQUIPMENT****PART 1 GENERAL****1.01 SCOPE:**

- A. Include Section 22410, "GENERAL PROVISIONS - PLUMBING ", with this Section.
- B. Pay particular attention to requirements in the General Provisions for substitution of products not named or listed as substitutions.

PART 2 PRODUCTS**2.01 CLEANOUTS:**

- A. Furnish and install cleanouts where indicated on drawings and at all 90-degree bends, angle, upper terminals and not over 50 feet apart on straight runs. All cleanouts to have bronze countersunk tapered slotted plugs, except acid waste piping cleanouts, which shall be standard of piping system used. Flush-with-floor cleanout access covers shall have non-skid covers. All wall cleanout access covers shall have polished satin finish. All cleanouts shall be full size of pipe, piping larger than 6" shall have minimum 6" cleanout covers.
- B. Exposed Cleanouts: Cast brass plug type, J.R. Smith #4470.
- C. Wall type cleanout plug and access covers, J.R. Smith #4472. Cleanout plug must be within 1" of finish wall and must be tapped for access cover.
- D. Install wall cleanouts on stacks at flush valve fixtures 12" above top of flush valve, 12" above finish floor on sinks, lavatories and water coolers and 12" above grab bars at fixtures with grab bars. Locate cleanouts to clear baseboard at floor.
- E. Floor type cleanout access covers: J.R. Smith #4248-NB. Plug must be within 3" of finished floor. Grout cleanout below access cover to seal watertight.
- F. Outside Cleanouts: J.R. Smith #4258 cleanout access encased in a 18" X 18" X 6" deep concrete pad. See Detail on Drawings.

2.02 REDUCED PRESSURE ZONE BACKFLOW PREVENTER AND DOUBLE CHECK VALVE ASSEMBLIES:

- A. One (1) inch and larger: Equal to Watts #909 with gate valves and inlet strainer. Provide additional valve upstream of strainer. Clayton, Beeco, Febco, Conbraco, Wilkins or equal. Provide same size as piping.
- B. One-half (1/2) inch and three-fourth (3/4) inch: Watts #9D, Wilkins #750, same size as pipe.
- C. Pipe relief from backflow preventer full size to nearest floor drain. Provide factory made air gap for relief connection.
- D. Double check valve assemblies: Watts, Clayton or Beeco.

2.03 PLUMBING FIXTURES AND EQUIPMENT:

- A. All "wetted" domestic potable fixtures, piping materials, valves shall meet the Federal Lead Free Guidelines. All materials shall be clearly marked and submitted with complete data during submittal review.
- B. Unless otherwise specified, all fixtures complete as catalogued, commercial grade, white color, exposed metal trim chromium plated.
- C. Fixtures and brass shall be securely anchored. Carriers shall be securely anchored to floor with lug bolts in all holes as recommended by the manufacturer.
- D. Flush valve "YJ" supports shall be installed 1" below vacuum breaker on all water closet flush valves and around vacuum breaker on urinals.
- E. Seal all fixtures at wall and floor with white silicone sealant. Seal countertop fixtures with clear silicone sealant.

- F. Mount all fixtures at standard mounting height unless otherwise noted.
- G. Furnish sinks and lavatories with correct number of drilling required by the faucet and accessories. Cock hole covers are not acceptable.
- H. All items complete as catalogued as shown on drawings:

2.05 SUBSTITUTE MANUFACTURERS:

- A. Where Kohler is listed above, Crane, Eljer, American Standard or Zurn may be substituted.
- B. Where J.R. Smith is listed above, Josam, Zurn or Wade may be substituted.
- C. Where Elkay water coolers are mentioned above, Halsey Taylor, or Oasis may be substituted, only if water ways are constructed of totally lead free materials.
- D. Where McGuire is listed above for traps, outlets and stops, EBC, Kohler, Crane, Eljer or American Standard may be substituted.
- E. Where Symmons is listed above, Chicago Faucet or Powers, Zurn may substituted.
- F. Where Chicago Faucet is listed, T&S Brass may be substituted.
- G. Where Elkay sink (s) are listed above, Just may be substituted.
- H. Where Church is listed above, Bemis, Beneke or Centoco may be substituted.
- I. Where Lochinvar tank type water heaters are listed, A.O. Smith or Rheem may be substituted.
- J. Where Stern Williams is listed above, Fiat may be substituted.
- K. Where Sloan is listed, Toto and Zurn may be substituted.
- L. Where Symmons is listed above for shower control valves, Speakman, Leonard, Powers, T&S or Zurn may be substituted.
Where Armstrong is listed above, the equal of B & G, Taco, Grundfos or Thrush may be substituted.

PART 3 EXECUTION

3.01 INSTALLATION:

- A. Equipment shall be installed in accordance with manufacturer's recommendation.
- B. See details for mounting instruction and accessories.
- C. Install electric water heaters so elements can be removed without disconnecting and/or removing heater.
- D. Cleanouts on water closet stacks shall be installed minimum 12" above top of the flush valve on standard water closets, minimum 12" above top of grab bar on handicapped water closets and minimum 12" above tope of tanks on non-handicapped tank type water closets. On urinal locate cleanouts minimum 12" above top of flush valve on handicapped urinals and 12" above finish floor on standard units. On lavatories and sinks - 12" above finish floor and all other fixtures 12" above floor or above top of fixture.
- F. Stops and supplies are to be installed with chrome plated brass nipples penetrating wall with deep escutcheon at wall. Compression type stops are not acceptable.
- G. All floor mounted fixtures supports are to be securely attached to the floor using anchors in all mounting hole of size as recommended by manufacturer.
- H. Provide wood backing in wall at all flush valve brackets and faucet supports and anchor brackets and supports to wood backing with anchors of sufficient length to penetrate backing.
- I. Handicapped flush valve shall be installed with the pull handle on the open side or side opposite the adjacent wall.

SECTION 260500
GENERAL ELECTRICAL WORK

PART 1 - GENERAL

1.1 GENERAL CONDITIONS

- A. The accompanying General Conditions shall apply to and form a part of this Section.

1.2 GENERAL REQUIREMENTS

- A. Carefully examine General Conditions, other specification Sections, and other drawings (in addition to electrical), in order to be fully acquainted with their effect on electrical work.
- B. Do all work in compliance with following applicable codes:
1. National Electrical Code (NEC).
 2. National Electrical Safety Code (NESC).
 3. National Electrical Manufacturers Association (NEMA).
 4. American National Standards Institute (ANSI).
 5. Insulated Cable Engineers Association (ICEA).
 6. Institute of Electrical and Electronic Engineers (IEEE).
 7. American Society for Testing and Materials (ASTM).
 8. Joint Industrial Council (JIC).
 9. Illumination Engineering Society (IES).
 10. Applicable Local Codes.
 11. Americans with Disabilities Act (ADA).
- C. Do all work in compliance with laws and ordinances and local authorities having jurisdiction and, where applicable, utility companies. Obtain and pay for any and all required permits, inspections, certificates of inspections and approval, and the like, and deliver such certificates to the Architect.
- D. Cooperate with other trades and contractors at job. Perform work in such manner and at such times as not to delay work of other trades. Complete all work as soon as the condition of the structure and installation of equipment will permit. Patch, in a satisfactory manner and by the proper craft, any work damaged by electrical work.
- E. All equipment (wiring devices, light fixtures, panelboards, disconnect switches, conductors, raceways, boxes, cabinets, circuit breakers, low voltage equipment, auxiliary systems, motors, machines, etc.) used for this project shall be tested by Underwriter's Laboratories, Inc and have "UL" nameplate.

1.3 DEFINITIONS

1. Provide: Furnish all materials, hardware, equipment, labor and services required for the installation of complete and properly working equipment and/or systems as shown on the drawings and described herein.
2. Wire: Furnish all conduit, wiring, materials, hardware, equipment, labor and services required for complete and proper operation and/or control of equipment and/or systems as shown on the drawings and described herein.
3. Install: Furnish all labor.

4. Furnish: Furnish all conduit, wiring, materials, hardware, equipment.
5. Work: A complete and properly working installation of materials for equipment and/or systems as shown on the drawings and described herein.
6. AWG: American Wire Gage.
7. NEC: National Electrical Code - latest edition or the latest edition adopted by the local authorities having jurisdiction where applicable.
8. NFPA: National Fire Protection Association.
9. OSHA: Occupation Safety and Health Administration.
10. UL: Underwriter's Laboratories, Inc.
11. NEMA: National Electrical Manufacturers Association.
12. IEEE: Institute of Electrical and Electronic Engineers.
13. ADA: The Americans with Disabilities Act.
14. Concealed: Rendered inaccessible by the structure or finish of the building.
15. Exposed: On or attached to the surface or behind panels designed to allow access.
16. OFCI: Owner furnish, contractor install.
17. OFOI: Owner furnish, owner install.
18. NIC: Not in contract.

1.4 DRAWINGS

- A. The drawings indicate only diagrammatically the extent, general character and approximate location of work. Where work is indicated but with minor details omitted, furnish and install it complete and so as to perform its intended functions. For building details and mechanical equipment follow architectural, structural, and mechanical drawings and fit electrical work thereto.
- B. Take finish dimensions at the job site in preference to scale dimensions.
- C. Except as above noted, make no changes or deviations from the work as shown or specified except on written order of the Engineer.
- D. Obtain from manufacturer's data on all equipment, the dimensions of which may affect electrical work. Use this data to coordinate proper service characteristics, entry locations, etc., and to ensure minimum clearances are maintained.

1.5 QUALIFICATIONS OF CONTRACTOR

- A. The electrical contractor shall have had experience of at least the same size and scope as this project, on at least two other projects, within the last 5 years in order to be qualified to bid this project. This qualification shall also apply to his subcontractors.

- B. Workmen shall be experienced in their respective trade. Workmanship of installed work shall be first class and will be so judged by the Architect/Engineer. Substandard work shall be removed and replaced.
- C. Qualifications stated for the electrical contractor shall also apply to any subcontractors employed by the electrical contractor during the course of this work.

1.6 SITE VISIT

- A. The Bidders shall visit the site to thoroughly familiarize themselves with existing conditions prior to submitting their bid. Include cost in bid for any additional work required to satisfy contract documents. No allowances will be made for lack of knowledge of existing conditions.

1.7 ELECTRICAL SERVICE CHARACTERISTICS

- A. Existing electrical services shall be as shown on drawings.

1.8 WARRANTY

- A. See GENERAL CONDITIONS (one-Year warranty of conformance with drawings and specifications).
- B. In addition to the foregoing warranty, Contractor shall and does hereby warrant all materials and equipment furnished under this Division of the Specifications to be free from defects and to function or operate satisfactorily for one year after final acceptance of the work, and that any items not meeting this requirement will be made good by him without cost to owner, provided such defects or failures are not due to abuse, neglect, or lack of reasonable and ordinary maintenance.

PART 2 - PRODUCTS

2.1 APPROVED MATERIALS AND DEVICES

- A. Unless otherwise specified, provide only new, standard first grade materials throughout, conforming to standards established by Underwriter's Laboratories, Inc., and so marked and labeled, together with manufacturer's brand or trademark. All equipment subject to approval of Architect/Engineer before installation. All like items shall be of one manufacture.

2.2 ELECTRICAL EQUIPMENT

- A. Where shown on the drawings or specified herein, furnish and install electrical equipment.
- B. Furnish all materials, hardware, equipment, labor and services required for the installation of complete and properly working installations as shown on the drawings and described herein.
- C. References in these specifications to a particular manufacturer or model number shall be interpreted as establishing a standard of quality and shall not be construed as limiting competition. Equipment by manufacturers other than those specified shall be submitted for review in accord with Section 260501.
- D. All equipment shall be installed by qualified workmen who shall have reviewed all manufacturer's data for purposes of coordinating service characteristics, entry locations, mounting requirements, dimensions, etc.
- E. The contractor shall cooperate with the Owner, other trades, etc. for coordination of their requirements or the effects of the installed equipment on the overall project.

2.3 AUXILIARY SYSTEMS

- A. Where shown on the drawings or specified herein, furnish and install electrical auxiliary systems.
- B. Furnish all materials, hardware, equipment, labor and services required for the installation of a complete and properly working systems as shown on the drawings and described herein.
- C. References in these specifications to a particular manufacturer or model number shall be interpreted as establishing a standard of quality and shall not be construed as limiting competition. Equipment by manufacturers other than those specified shall be submitted for review in accord with Section 260501.
- D. All systems equipment shall be installed by qualified systems technicians in the employ of the systems contractor, or by qualified workmen in the employ of the Contractor under the supervision of qualified representatives of the manufacturer. "Qualified representatives" shall be factory authorized or certified by the systems equipment manufacturer.
- E. The systems technicians and/or contractor shall cooperate with the Owner, other trades, etc. for coordination of their requirements or the effects of the installed systems on the overall project.

PART 3 - EXECUTION

3.1 WORKMANSHIP

- A. The work shall be in accordance with the NEC and the rules and regulations of local bodies having jurisdiction.
- B. All work shall be executed in a workmanlike manner and shall present a neat and mechanical appearance upon completion.
- C. Care shall be exercised that all items are plumb, straight, level.
- D. Care shall be exercised so that not less than code clearance is allowed for all panels, switchboards, etc. Do not allow other trades to infringe on this clearance. Minimum code clearance shall be as required by Article 110 of the NEC.
- E. Care shall be exercised that no piping, ducts, or equipment foreign to the electrical equipment or architectural appurtenances shall be allowed to be installed in, enter or pass through the exclusively dedicated spaces above, adjacent to and below switchboards and panelboards as set forth in Article 384, paragraph 4, of the NEC.
- F. Balance load as equally as practicable on service and all feeders, circuits and panelboard buses.

3.2 ACCEPTANCE TESTING

- A. Upon completion of work, the entire wiring system shall be tested, and shall be shown to be in perfect working condition in accordance with the intent of the specifications and drawings. It shall be the responsibility of the Electrical Contractor to have all systems ready for operation and to have an electrician available to operate same in accordance with and under the supervision of the inspection representative of the Architect/Engineer. The electrician shall be available to assist in removal of panelboard fronts, etc., to permit inspection as required.

3.3 TEMPORARY POWER

- A. The electrical contractor shall provide temporary electrical wiring for construction if necessary. The temporary service shall be a minimum of 400 amperes, three phase, four wire, 120/240 volts fused at main

disconnect. All receptacles on this temporary service shall be protected by ground fault interruptible circuit breakers.

END OF SECTION 260500

SECTION 260501
ELECTRICAL-SCOPE OF WORK

PART 1 - GENERAL

1.1 WORK REQUIRED

- A. Removal or relocation of all electrical services located on or crossing through the project property, either above or below grade, which would obstruct the construction of the project or conflict in any manner with the completed project or any code pertaining thereto.
- B. Complete electric lighting systems, power systems and auxiliary systems as shown or herein specified.
- C. Furnishing and installation of all electrical items shown on drawings or herein specified, unless shown or specified otherwise.
- D. Furnishing and installation of disconnect switches for motors as required and where shown.
- E. Connection of all equipment requiring electrical connection, mentioned in this Section or shown on drawings, whether furnished by electrical contractor or others. Coordinate with other sub-contractors and verify required electrical connections for their equipment.
- F. Complete raceways, pull wires, outlets and junction boxes for voice data and cable television systems.
- H. Addition and alterations to existing fire alarm system as required to meet code.
- G. ADA communication features for telephone and doorbell in accessible rooms shown on plans. Provide complete turn key system.

PART 2 - PRODUCTS

2.1 PROPOSED SUBSTITUTES

- A. Submit to Architect ten (15) days prior to bid date three (3) copies of any items which are proposed as substitutes for those specified.

2.2 SHOP DRAWINGS AND CATALOG DATA

- A. Submit to Architect within fifteen (15) days after award of contract, prior to purchasing, six (6) copies of manufacturer's shop drawings and catalog data for the items listed below.
- B. All shop drawings of a specific item or system shall be in one submittal and shall be marked to clearly identify the manufacturer, the intended use of the item, and if not readily apparent, the intended location for installation of the item.

C. Shop drawings of all power equipment shall contain exact details of device placement, phasing and numbering, in form of elevations, for each piece of equipment.

D. Shop drawings submittals shall include:

- Load Centers
- Safety Switches
- Lighting Fixtures
- Lighting Control Devices
- Wireways
- Receptacles
- Terminal Cabinets
- Cable
- Wiring Devices
- Equipment Coordination Data Sheets
- Ceiling Coordination Data Sheets
- As required by individual sections of these Specifications

E. Shop Drawings for the following items may consist of typewritten lists, listing manufacture with description, to be used (one only for each item).

- Building Wire
- ROMEX Wiring
- Conduit: Rigid, I.M.C., E.M.T.
- Conduit, PVC
- EMT Couplings and Connectors
- Wire Connectors

F. Obtain manufacturer's data on all equipment requiring electrical service and review it for purposes of coordinating service characteristics, entry locations, mounting requirements, dimensions, etc. Verify that the electrical service requirements are as shown on the electrical drawings or, if at variance to that shown, indicate the area of nonconformance. Submit one copy of this data with shop drawings, along with a statement of the following:

1. The information contained in the submittal includes data on all equipment within the scope of this project which will require electrical service or coordination with electrical work.
2. The information contained in the submittal has been reviewed by the electrical contractor, with the general contractor's project manager, and that the electrical service requirements will be coordinated with the information obtained from the manufacturer's data.

The statement shall identify the source of the information and shall be signed by the representative of the electrical contractor responsible for obtaining and coordinating the information and the general contractor's project manager.

G. Obtain data on all ceilings and review it for purposes of coordinating mounting requirements, dimensions, recess depth etc., of light fixtures. Verify that the proposed mounting trim and hardware are correct for the ceiling to be utilized and that depth of recessed light fixtures and cable tray will not be in conflict with

HVAC equipment, ductwork, structural members, etc. Electrical contractor shall assist the mechanical contractor in preparation of above ceiling coordination drawings in corridors. Coordination drawings shall show duct, cable tray, pipe, recessed light fixtures, etc. Submit one copy of this data with shop drawings, along with a statement of the following:

The information contained in the submittal has been reviewed by the electrical contractor and the general contractor's project manager and the mounting details are correct for the proposed application.

The statement shall identify the source of the information and shall be signed by the representative of the electrical contractor and the general contractor's project manager.

- H. None of the above items shall be installed until shop drawings or catalog data has been accepted in writing. Any listed item not submitted even if specified shall be considered not acceptable and shall be removed if directed.

PART 3 - EXECUTION

3.1 MOTORS STARTERS AND CONTROLS

- A. Unless otherwise specified or shown, all motors will be furnished and installed under other sections of the specifications.
- B. Unless otherwise specified or shown, all individually mounted starters and/or equipment control contactors shall be furnished under other sections of these specifications.
- C. Installation of individual mounted starters, equipment control contactors and all power wiring connections to all motors, starters, equipment control contactors and equipment shall be performed under this section of these specifications.
- D. Where required by the NEC or local codes, each motor or piece of equipment required to have a disconnecting mean within sight of the motor or equipment shall be so equipped. All such disconnects shall be furnished and installed under this section of these specifications unless provided as part of an equipment package furnished under other sections. This requirement shall apply whether shown on the drawings or not.
- E. Where required by the NEC or local codes, each piece of HVAC equipment required to have a 15 ampere, 120 volt, receptacle within sight of the motor or equipment shall be so equipped. All such receptacles shall be furnished and installed under this section of these specifications unless provided as part of an equipment package furnished under other sections. Receptacles shall be equipped with weatherproof covers and Class "A" ground fault protection where located out of doors or subject to moisture and shall be wired to the nearest general convenience outlet circuit. This requirement shall apply whether shown on the drawings or not.

3.2 EXCAVATION, CUTTING, PATCHING

- A. Perform all excavating and cutting as required to receive electrical work, and after inspection and approval of work by Architect, do all required backfilling, patching and repairing. Obtain specific approval of Architect before cutting into any structural members.

- B. For all such work employ competent workmen, and finish in a neat and workmanlike manner, equal to quality and appearance of adjacent work.

3.3 FIRESTOPPING

- A. Wall, floor and smoke/fire barrier penetrations shall be sealed as required to maintain the fire rating of the penetrated barrier.
- B. All penetrations shall be sealed utilizing "Fire Barrier" as manufactured by 3M (no exceptions). "Fire Barrier" may be applied in strips or with a caulking gun as required by jobsite conditions. Penetrations which are too large for sealing with "Fire Barrier" alone shall be repaired to match existing and then sealed with "Fire Barrier".
- C. Panelboards, equipment enclosures, outlet boxes, etc. installed in fire rated partitions shall be boxed in with wall board or other suitable fire rated material as required to maintain or restore the fire rating of the assembly.
- D. Shall comply with National Electrical Code section 300-21, 800-52(b) and 820-52(b).

3.4 ROOF PENETRATION

- A. Furnish roof flashings for all equipment installed under this Section that penetrates the roof. Appropriate flashings are specified under Roofing and Sheet Metal Section. Supply these flashings for installation under Roofing and Sheet Metal Section.

3.5 PAINTING

- A. Finish painting of any exposed raceways is not included in this Section. (See Painting and Finishing Section).

3.6 IDENTIFICATION

- A. Identification nameplates shall be laminated plastic.
- B. Each switchboard and panelboard shall be equipped with a nameplate with 1/4" minimum letters.
- C. Each individual mounted circuit breaker, switch, starter, contactor and/or any other control or protective device shall be equipped with a nameplate with 1/4" minimum letters. Nameplates on fusible equipment shall state fuse size.
- D. Each branch circuit in a switchboard or panelboard shall be identified.
 - 1. Panelboards with covers and directory pockets shall have typewritten directories.
 - 2. Switchboards and panelboards without directories shall have a nameplate with 1/8" minimum letters installed adjacent to each circuit device stating equipment fed and fuse size, if applicable.

- E. All nameplates shall have white background with red letters for emergency power and white background with black letters for normal power.

Nameplate for panelboards, disconnect switches, individual mounted circuit breakers shall include equipment designation or load served, voltage, phase and source of feed. Typical nameplate:

LS-313N
120/240V 1PH 4W

- F. Each junction box shall be marked to identify the system it serves. The following color coding system shall be spray painted on each box cover:
 1. Normal - Galvanized
 2. Fire Alarm System - Red
- G. Junction boxes containing power circuits shall have associated panel and circuit numbers, for voice data shall have "VD" and for security shall have "SC" printed on the cover.

3.7 STORAGE OF MATERIALS

- A. Store all materials to prevent damage from rust, corrosion, physical injury, etc.
- B. Keep site clean of accumulation of cartons, trash, debris, etc.

3.8 "AS BUILT" DRAWINGS

- A. A set of electrical drawings shall be kept on the job site on which all changes from the contract drawings are recorded, in red, on a day-to-day basis.

3.9 OPERATIONS AND MAINTENANCE INSTRUCTION

- A. At the completion of the job, the electrical contractor shall turn over to the Owner:

One (1) set of print marked "as built" reflecting the actual work done.

Three (3) sets of all equipment catalog and maintenance data.

Three (3) sets of shop drawings on all equipment requiring same.

One (1) CD of as built drawings and specification.

Spare lamps

Spare fuses

- B. The contractor shall explain and demonstrate all systems to the Owner's representative.

3.10 ACCESS PANELS

- A. Access panels for electrical equipment, devices, junction boxes, etc., shall be provided where building finishes do not allow access. This Contractor shall furnish and have installed appropriate access panels except when such panels are specified otherwise in other sections of these specifications, in which case, this Contractor shall coordinate panel locations with the installing Contractor.

END OF SECTION 260501

SECTION 260519
CONDUCTORS

PART 1 - GENERAL

1.1 SCOPE

- A. This section outlines the quality and type of conductors to be used in the various systems, locations and conditions.
- B. Electrical wiring shall conform to requirements in section 112.1 of 2015 Technical Code of the City of Birmingham. This project is located within the designated fire district.

PART 2 - PRODUCTS

2.1 WIRE AND CABLE 600 VOLT

- A. Conductors shall have current carrying capacities as per NEC, #12 minimum except for controls, and fixture wire.
- B. Conductors for general use, sized #10 and smaller, shall be solid copper. Conductors #8 and larger, and any size to motors or vibrating equipment shall be stranded copper. Feeder conductors serving panelboards, meter centers and secondary conductors serving switchboards #2 and larger shall be compact aluminum.
- C. All conductor insulation shall be 600 volt.
- D. Insulation for branch circuits, sized #10 and smaller, shall be color coded type THHN/XHHW.
- E. Insulation for feeders, #8 and larger, and for circuits run in wet or dry locations or below grade shall be THHN-THWN.
- F. Conductor color codes shall be as set forth below.
- G. All branch circuit conductors used in wood studs and wood roof joists inside apartments shall be non-metallic sheathed (ROMEX) type cable. See section 260520 of specifications.

2.2 FIXTURE WIRE

- A. Fixture wire shall be Type SF-2 except that type THHN or XHHW may be used in the channel of and flex to fluorescent fixtures.

2.3 CONTROL WIRE

- A. Control wire shall be #14, 19 strand, type THHN-THWN, rated 90 degrees C full color range.

2.4 MANUFACTURER

- A. Wire and cable shall be manufactured by Rome, Cerro, General, American, Essex, Aetna, Colonial, Encore or Southwire.

2.5 WIRE CONNECTIONS

- A. Wire connections, #10 and smaller connections shall be made with insulated wire connectors with steel spring connector threads. Wire connectors shall be "Twister" Wire-Nut series as manufactured by Ideal Industries, Inc. or approved equal.
- B. On wire larger than #10, shall be made with approved solderless connectors and covered with Scotch #33 electrical tape so that the insulation is equal to conductor insulation.
- C. Connection of stranded conductors, #8 and larger, to bus bars in switchboards, panelboards, equipment enclosures, junction boxes, etc. shall be made with individual lugs, size as required by conductor, bolted to bus bar with full size bolts and nuts with lock washers.

PART 3 - EXECUTION

3.1 INSTALLATION OF WIRE AND CABLE

- A. No conductor shall be smaller than #12 except where designated on the drawings or hereinafter specified.
- B. Multi-wire lighting branches shall be used as indicated.
- C. All joints and splices in wire shall be made with approved solder-less connectors, and covered so that insulation is equal to the conductor insulation.
- D. No splices shall be pulled into conduit.
- E. Conductors and conduits shall be continuous between outlets.
- F. No conductor shall be pulled until conduit is cleaned of all foreign matter.
- G. Where installed in panelboards, cabinets, wireways, switches and equipment wire and cable shall be neatly formed and tied.
- H. Where conductors are run in parallel, each conductor making up the feeder shall be exactly the same length, the same size, and the same type of conductor with the same insulation. Further, each group of conductors making up a phase or neutral must be bonded at both ends in the same manner.
- I. In installing the main service, additional slack conductors shall be provided as required by the electric utility for connection to their equipment.

3.2 OUTLETS AND BRANCH CIRCUITS

- A. Outlets shall be connected to branch circuits as indicated on drawings by circuit number adjacent to outlet symbols. No more outlets than are indicated shall be connected to a circuit.
- B. All branch and feeder conductors shall have identification tag in all panelboards. Each tag shall have room name and circuit number which is serving.

3.3 WIRE AND CABLE COLOR CODING

- A. A color coding system as listed below shall be followed throughout the entire network of branch circuits.

Voltage	120/240
Phase Color	Color

A	Black	
B	Red	
C	Blue	
Neutral	White	Gray
Ground	Green	

- B. Conductors sized #10 AWG and below shall have permanently colored insulation. Conductors sized #8 AWG and above shall be color coded by either permanently colored insulation or by means of colored tape applied to the conductor within 12" of each termination and in each enclosure, junction box, etc.
- C. Control Conductors: Shall be color coded by use of color coded "tracers". No control circuit shall have two identical conductors.

END OF SECTION

SECTION 260520
NON-METALLIC SHEATHED CABLES (ROMEX)

PART 1 - GENERAL

1.1 SCOPE

- A. This section deals with the materials to be used as non-metallic sheathed cable (ROMEX) and non-metallic service entrance cable (SE).

1.2 WHERE USED

- A. Non-metallic sheathed cable (ROMEX) shall be permitted for branch circuits in Dwelling Units, where permitted by local code.
- B. Non-Metallic sheathed cable shall not be utilized outside of the interior of dwelling units. Do not use to wire devices in canopies, roof etc.
- C. Before installation of ROMEX cable, ensure building envelope is complete and building interior condition is completely dry where installation occurs. Should installed cabling be ordered to be removed and new wiring installed by local AHJ due to installation in wet/moist condition, such shall be done at the expense of the contractor.

PART 2 - PRODUCTS

2.1 NON-METALLIC SHEATHED CABLE (ROMEX)

- A. Non-metallic sheathed cable (ROMEX), size #12 and #10 shall be solid with type TW insulation in a non-metallic sheath.
- B. Non-metallic sheathed cable (ROMEX), conductors larger than #10 shall be stranded with type TW insulation in a non-metallic sheath.
- C. All non-metallic sheathed cables shall be equipped with a separate, code size, grounding conductor which may be bare or green insulated.

2.2 MANUFACTURER

- A. Romex cable shall be manufactured by Royal, Rome, Cerro, Carol, Triangle, General, American, Senator, Essex, Diamond or Southwire.

2.3 WIRE CONNECTIONS

- A. On wire larger than #10, shall be made with approved solderless connectors and covered with Scotch #33 electrical tape so that the insulation is equal to conductor insulation.
- B. Wire connections, #10 and smaller connections shall be made with insulated wire connectors with steel spring connector threads. Wire connectors shall be "Twister" Wire-Nut series as manufactured by Ideal Industries, Inc.

PART 3 - EXECUTION

- A. General Use in Dwelling Units, where permitted by local code: #12 and #10 shall be solid with type TW insulation in a non-metallic sheathed cable (ROMEX). Conductors larger than #10 shall be stranded. All non-metallic sheathed cables shall be equipped with a separate code sized grounding conductor which may be bare or green insulated.

3.1 INSTALLATION OF WIRE AND CABLE

- A. No conductor shall be smaller than #12 except where so designated on the drawings or hereinafter specified.
- B. All joints and splices in wire shall be made with approved solder-less connectors, and covered so that insulation is equal to the conductor insulation.
- C. All splices shall be in approved boxes.
- D. Conductors and conduits shall be continuous between outlets or junction boxes.
- D. Where installed in panelboards, cabinets, wireways, switches and equipment wire and cable shall be neatly formed and tied.
- E. Install only in dry conditions.

3.3 OUTLETS AND BRANCH CIRCUITS

- A. Outlets shall be connected to branch circuits as indicated on drawings by circuit number adjacent to outlet symbols. No more outlets than are indicated shall be connected to a circuit.

3.4 WIRE COLOR CODING:

- A. A color coding system as listed below shall be followed throughout the entire network of branch circuits.

Voltage	120/240
Phase	Color
A	Black
B	Blue
C	Red
Neutral	White
Ground	Green

- B. Conductors sized #10 AWG and below shall have permanently colored insulation.

END OF SECTION

SECTION 260526
GROUNDING

PART 1 - GENERAL

1.1 SCOPE

- A. This section deals with the grounding of service equipment, transformers, non-current carrying conductive surfaces of equipment, metal buildings, structures, cable tray, and other equipment.
- B. All grounded connections shall be installed in accordance with the National Electrical Code and all local codes and requirements. Such codes shall be considered minimum requirements and installation of the grounding system shall insure freedom from dangerous shock voltage exposure and provide a low impedance ground fault path to permit operation of overcurrent and ground fault protection devices.

PART 2 - PRODUCTS

2.1 CONDUCTORS

- A. Grounding conductors shall be insulated copper unless specifically shown or specified otherwise.
- B. Grounding conductors shall be identified by green insulation or by green tape.
- C. All buried grounding system wire shall be bare, solid, soft-drawn, annealed, copper sized #2 AWG minimum, or as shown on drawings.

2.2 GROUND RODS

- A. Ground rods shall be 5/8 inch by 10 feet, copperweld unless noted otherwise on the drawings.

2.3 CONNECTIONS

- A. The connection of a grounding conductor to ground rods or building steel shall be by means of a cadweld.
- B. Grounding conductor connections to conduit terminations shall be made with approved ground bushings.

PART 3 - EXECUTION

3.1 MAIN SERVICE GROUND

- A. The main service shall have the grounded conductor (neutral) grounded to the grounding electrode system at the supply side of the service disconnecting means by a grounding electrode conductor not smaller than that shown in Table 250-66 of the NEC.
- B. The grounded conductor (neutral), the grounding electrode conductor, and the equipment grounding conductor connections shall be made inside the service entrance equipment.
- C. The equipment grounding conductor shall be connected to the grounded conductor on the supply side of the service disconnecting means in accordance with Table 250-66 of the NEC for the ampere rating of the service equipment. Where in a service entrance switchboard the equipment grounding conductor shall be connected to a bus bar rated not less than 25 percent of the main bus rating.

3.2 GROUNDING ELECTRODE SYSTEM

A. Shall consist of each of the following electrodes bonded together by the grounding electrode conductors:

1. An underground water main, if metal and in contact with earth for 10 feet or more, at the point of entry into the building.

A full size copper conductor (same size as service ground conductor) jumper shall be installed around the water meter and any valve, pressure regulator, etc., which is within the building between the bonding point and the point of entry into the building and/or exterior to the building, above or below grade, on the project property.

2. The metal frame of the building.
3. Rebars in slab and footing.
4. Driven Ground Rods: 3-ground rods, spaced a minimum of 20 feet apart in a triangular pattern, shall be driven to 18" below grade and interconnected.
5. Other grounding electrodes if available shall be connected to the grounding electrode system as described in Section 250-50 of N.E.C.

B. An earth impedance tester shall be utilized to determine the actual resistance to ground. The maximum acceptable resistance to ground is 25 OHMS, if this value or less is not obtained, additional ground rods shall be driven and connected in parallel until an instrument reading of less than 25 OHMS is obtained. All test readings shall be recorded and submitted to the Engineer for review.

3.3 CADWELDING

A. Cadwelding shall be performed in strict accordance with the manufacturer's requirements.

B. All personnel performing cadwelding shall have been trained by factory certified representatives and proof of this training shall be presented to the Architect/ Engineer at the time of Cadweld inspection.

C. Cadwelding shall not be performed during conditions of high humidity which inhibit the process from proper bonding. Consult the Manufacturer's instructions for acceptable conditions and do not attempt any Cadwelding during such times as these conditions do not exist.

D. Cadweld molds shall be sized and configured for the specific welding application. Molds which have been field modified for application other than their original purpose will not be utilized under any circumstance. Cadweld "one shot" connections shall not be utilized.

E. In no circumstances will worn out or loose Cadweld molds be utilized. Molds which experience "blow out" during the welding process shall be replaced immediately and any welds made which exhibit evidence of incomplete welding shall be cut off and rewelded.

3.4 SEPARATELY DERIVED SYSTEMS

A. Separately derived systems (dry type transformers with primary and secondary electrically isolated and secondary having a grounded circuit neutral conductor) shall be grounded in accordance with NEC Section 250-30.

- B. The grounding electrode shall be the nearest available effectively grounded structural member and the nearest available effectively grounded cold water pipe. Where the cold water bonding point is not the point of entry into the building, a #1/0 copper (min.) jumper shall be installed around any valve, pressure regulator, water meter, etc., which is within the building between the bonding point and the point of entry into the building.

3.5 EQUIPMENT GROUNDING

- A. An equipment grounding conductor (sized in accordance with Table 250-122 of the N.E.C. unless shown or specified elsewhere to be larger) shall be installed in the same raceway with all circuit conductors.
- B. Equipment grounding conductors shall be bonded at each enclosure and pole base. All equipment grounding conductors shall be connected to a common bus, bonded to the equipment enclosure or pole base.
- C. An equipment grounding jumper shall be installed from the receptacle ground terminal to the outlet box where an equipment ground conductor is not installed in the conduit with the circuit conductors.

END OF SECTION 260526

SECTION 260532
RACEWAYS – NON-METALLIC

PART 1 - GENERAL

1.1 SCOPE

- A. This section deals with the materials to be used as raceway where shown on the plans or specified as non-metallic conduit.

1.2 WHERE USED

- A. Non-metallic conduit shall be used for auxiliary system service entrance, feeders and power service where below grade. Non-metallic conduit shall, however, convert to rigid metal conduit prior to leaving concrete in areas where conduit would be exposed. Conduit adapters shall be used for transitions. All elbows shall be rigid metal conduit.

PART 2 - PRODUCTS

2.1 COMPOSITION

- A. Conduits and fittings shall be constructed of polyvinyl chloride compounds in accordance with the applicable requirements of UL, NEMA and the NEC.

2.2 SCHEDULE 40, RIGID PVC:

- A. Shall be U.L. listed for use with 90 degrees C. rated conductors and in conformity with Article 347 of the NEC.

2.3 FITTINGS

- A. All couplings, adapter, bells, reducers, etc., shall be of the same material and by the same manufacturer as conduit.

2.4 CEMENT

- A. Solvent cement shall be as recommended by the manufacturer.

2.5 MANUFACTURER

- A. The conduit manufacturer shall have had a minimum of 5 years experience in the manufacture of the products. Non-metallic conduit shall be as manufactured by Carlon, Queen City, Cantex or approved equal.

PART 3 - EXECUTION

3.1 INSTALLATION

- A. All elbows, bends, etc., shall be either factory bends or made with an approved heat bender.
- B. All cuts shall be made with an approved saw and ends deburred.
- C. All joints shall be made as follows:

Clean the outside of the conduit to depth of the socket, and the inside of socket with an approved cleaner. Apply solvent cement to the interior of the socket and exterior of conduit, making sure to coat all surfaces to be joined. Insert conduit into the socket and rotate 1/4 to 1/2 turn and allow to dry.

- D. No P.V.C. conduit shall be run exposed.

3.2 DUCT TYPE

- A. Non-metallic conduit shall be Schedule 40 unless specifically noted otherwise.

3.3 CONCRETE ENCASEMENT

- A. All non-metallic conduits installed below roads, driveways, parking areas or other areas subject to heavy traffic shall be concrete encased.
- B. Non-metallic conduits shall be concrete encased where indicated on plans.
- C. Concrete encasement shall be 3 inch minimum around all conduits.

3.4 GROUNDING

- A. Where non-metallic conduit is to be installed as permitted in Section 1.02 an insulated ground wire shall be installed. Ground wire shall be "Code" sized as per NEC unless shown larger on the plans. Conduit shall be increased where required to meet Code fill requirements.

END OF SECTION 260532

SECTION 260533
RACEWAYS - METAL

PART 1 - GENERAL

1.1 SCOPE

- A. This section deals with the materials to be used as metal raceways, connections, and supports.

PART 2 - PRODUCTS

- A. Conduit: Rigid and IMC shall be galvanized outside and inside by hot dipping. EMT shall be Electro-Galvanized. Conduit shall be as manufactured by Republic, Wheatland, Triangle, Pittsburgh Standard, Youngstown, or Allied.
- B. Sealtight flexible metal conduit shall consist of flexible galvanized steel tubing with a liquidtight jacket of PVC. All flexible conduit shall have a copper bonding conductor wound into conduit body.
- C. Couplings and connectors on rigid and IMC shall be standard threaded type, galvanized outside and inside by hot dipping. Clamp type and threadless are not acceptable. Couplings and connectors, for rigid and IMC shall be as manufactured by Raco or Appleton.
- D. EMT connectors shall be steel, set screw unless required by code to be compression type, equipped with insulating throats. Connectors couplings shall be O-Z/Gedney 7000ST or 7000RST series, T & B 5123 - 5623 series, Midwest Electric series 1650, or equal series of Raco. Cast metal couplings will not be approved for any location.
- E. EMT couplings shall be steel, set screw unless required by code to be compression type. Couplings shall be O-Z/Gedney 6000S or 6000RS series, T & B 5120 - 5620 series, Midwest Electric series 660, or equal series of Raco. Cast metal connectors will not be approved for any location.
- F. Connectors raintight: Meyers or approved equal.
- G. Bushings on rigid and IMC shall be threaded malleable iron with integral noncombustible insulator. Rigid and IMC bushings shall be O-Z/Gedney "IBC" series, T & B BIM series, Midwest Electric series 1031 - 1043 or equal by Penn Union. Grounding bushings shall be O-Z/Gedney "IBC-L" series, T & B 3870 - 3999 series, Midwest Electric GLL series or equal by Penn Union.
- H. Watertight Flex Connectors: O-Z/Gedney, Raco, or Midwest Electric with insulating throat.
- I. Conduit clamps and supports shall be as manufactured by T & B, Midwest Electric, or O-Z/Gedney.
- J. Conduit fittings shall be manufactured by Pyle-National, Appleton, Crouse-Hinds, or Russellstoll.
- K. Finished metal raceway shall be Wiremold 4000G series.
- L. Finished metal raceway shall be Wiremold 2000V series.
- M. Finished none metallic raceway shall be Wiremold 2900 series.
- N. Finished none metallic raceway shall be Wiremold 2800 series.

PART 3 - EXECUTION

3.1 CONDUIT, TYPE OF INSTALLATION

- A. EMT conduit with set screw shall be used for all branch circuits, power feeders, auxiliary, signaling and controls circuits in none hazardous dry locations. EMT may be used exposed where not subject to physical damage. EMT with compression fitting may be used in damp locations. Otherwise use rigid or intermediate hot dipped galvanized inside and out steel, threaded for screwed fitting only conduits unless specified on the drawings otherwise.
- B. Contractor may use MC cable in lieu of EMT where permitted by NEC, IBC and local code

3.2 INSTALLATION OF CONDUIT EMT, IMC, RIGID

- A. Conduits shall be sized in accordance with the latest National Electrical Code.
- B. Follow methods which are appropriate and approved for the location and conditions involved. Where not otherwise shown, specified, or approved in a particular case, run all wiring concealed.
- C. Where rigid and/or IMC conduits enter boxes they shall be secured in place by approved locknuts and bushing.
- D. Where EMT enters boxes they shall be secured in place with approved insulating fittings.
- E. Conduit ends shall be plugged during construction.
- F. The use of running threads is absolutely prohibited. All conduit shall be jointed with approved conduit couplings. All couplings on IMC and rigid conduit shall be threaded.
- G. Install conduit runs to avoid proximity to steam or hot water pipes. In no place shall a conduit be run within 6" of such pipes except where crossing is unavoidable, then conduit shall be kept at least 3" from the covering of the pipe crossed.
- H. Before installing raceways for motors and fixed appliances, check location of motor and appliances connections to locate and arrange raceways appropriately. Provide flexible conduit connections to all motors and/or any equipment which has moving or vibrating parts. Flexible conduit shall generally not exceed 24" in length and shall in all cases be equipped with a ground wire, bonded at both ends. Sealtight flexible conduit shall be used in all areas exposed to moisture.
- I. Exposed conduit runs shall be run parallel and/or right angles to building walls and/or partitions.
- J. Fasten conduit securely in place by means of approved conduit clamps, hangers, supports and fastenings. Arrangement and methods of fastening all conduits shall be subject to Architect/Engineer's direction and approval. Galvanized wire may be used only on concealed conduit. Use only approved clamps on exposed conduit.
- K. All conduits shall be supported within 3 feet of each coupling, fitting, outlet box, junction box, cabinet or equipment enclosure Conduit supports shall be independent of ducts, plumbing piping, ceiling supports, etc. Conduits shall not be supported by junction boxes, pull boxes, fixtures, etc.
- L. Multiple conduit runs shall be supported by trapeze hangers, run tight against the ceiling.

- M. All conduit connections to sheet metal cabinets or enclosures subject to the elements shall terminate by use of raintight hubs.
- N. All exposed conduit threads, metal supports, etc., exposed to the elements or exterior of building shall be painted with rust preventive paint.
- O. A 100 pound test nylon pull cord shall be installed in each empty conduit.
- P. Apply two coats of asphaltum paint to all underground metallic conduit. Carefully retouch any breaks in paint and allow to dry before covering with earth. Leave exposed until after Architect/ Engineer's inspection. Pittsburgh Standard Rob-Kote may be used in lieu of painting.
- Q. No conduit with an external diameter larger than $\frac{1}{3}$ the thickness of the slab, shall be placed in the slab and conduits in the slab shall not be spaced closer than 3 diameters on center.
- R. No conduit shall be run in slag or fill under the ground floor slab. Where running in the slab is not permissible, conduits shall be run in trenches, 18" minimum, below grade and backfilled.
- S. Any conduit stubbed out for future shall be capped and marked with a 2" minimum red metal tag which identifies conduit origin. Conduits stubbed up above grade or roof shall be tagged on the conduit. Conduits stubbed out below grade shall be tagged on nearest building wall, curb, etc., directly over the conduit run.
- T. Conduit in riser shafts shall be supported at each floor level by approved "U" clamp hangers.
- U. Where conduit crosses a structural expansion joint an approved conduit expansion fitting will be installed.
- V. Where hazardous locations must be entered or penetrated, rigid steel conduit, explosion proof junction boxes, fittings and hardware shall be installed in accordance with Articles 500 through 503 and other pertinent sections of the NEC, applicable Standards or Sections of NFPA and any other codes or regulations as required by the local Authority having jurisdiction. Explosion proof seal-off fittings shall be the first exposed fittings on both ends of any conduit penetration of a hazardous area. Seal-off fittings shall be installed in strict accordance with the manufacturer's instructions and shall be packed and sealed with the manufacturer's recommended sealing compound(s), as required to obtain full Code compliance.

END OF SECTION

SECTION 260534

OUTLET AND JUNCTION BOXES

PART 1 - GENERAL

1.1 SCOPE

- A. This section outlines the quality, type and installation of outlet and junction boxes for general and special use.

PART 2 - PRODUCTS

2.1 WALL OUTLET BOXES

- A. Shall be standard type, with knockouts, made of hot dipped galvanized steel, Steel City, Raco, Appleton, or Bowers.
- B. Ceiling outlet boxes shall be 4" octagon 1-1/2" deep or larger as required due to number of wires.
- C. Boxes shall be provided with approved 3/8" fixture studs when required to support stem mounted light fixtures.
- D. Except when located in exposed concrete block, switch and receptacle boxes shall be 4" square with trim ring for single gang installation. Appropriate gang boxes shall be used for mounting ganged switches.
- E. When installed in exposed concrete block, switch and receptacle boxes shall be square type designed for exposed block installation.
- F. When installed exposed in finished area switch, receptacle telephone and data. Etc., outlet boxes shall be Wiremold 2100 series.
- G. When installed exposed in finished area receptacle, telephone and data shall be installed at base in finished metal raceway Wiremold 4000 series.

2.2 CAST METAL DEVICE BOXES

- A. General
 - 1. Rugged continuous and seamless cast construction to prevent entry of dirt, dust, and moisture.
- B. For sealing boxes installed recessed
 - 1. Where device boxes are recessed mounted, the box to the adjacent wall, ceiling, or floor surface shall be sealed. Once wiring is installed, the wiring shall be surrounded by a one inch barrier of silicone caulking around the conductors within the device box hub. Gasketed device cover plates shall be used, with an additional continuous bead of silicone caulk between the device plate and the adjacent wall, ceiling, or floor surface.
- C. For sealing boxes installed exposed

1. Where device boxes and conduits are surface mounted, and where the device box meets the wall, ceiling, or floor surface, a continuous bead of silicone caulk shall be provided.

2.3 PULL AND JUNCTION BOXES

A. General

1. NEMA type and size as required by area or as shown, complete with matching cover. Where necessary, gaskets shall be used to prevent entrance of moisture.

2.4 FLOOR OUTLETS

- ### A. See drawings.

2.5 JUNCTION BOXES

- A. Sheet metal junction boxes, through 4-11/16", shall be standard type of hot dipped galvanized steel, with knockouts, Steel City, Raco, Appleton, Bowers or approved equal.
- B. Cast metal junction boxes, through 4-11/16", shall be type FS, FD, JB, GS, or SEH as required for application.
- C. Sheet metal junction boxes larger than 4-11/16" shall be NEMA 1, Code gauge steel, flush or surface mounted as indicated and shall be Hoffman or approved equal.

PART 3 - EXECUTION

3.1 INSTALLATION OF WALL OUTLET BOXES

- A. Outlet boxes shall be securely fastened to structural members and shall not be supported by dry wall, gypsum board, plaster, etc. The device or plate installed in conjunction with the outlet box shall not be used for support.
- B. Surface fixture outlet boxes shall be set so edge of cover comes flush with finished surface.
- C. There shall be no more knockouts opened in any outlet box than are actually required.
- D. Boxes shall be sealed during construction.
- E. Under no circumstances shall through-the-wall boxes be used. Back to back boxes shall be staggered at least 3 inches, except in fire rated partitions, in which case, back to back boxes shall be staggered at least 24 inches.
- F. Outlet boxes two gangs and wider shall not be supported by attachment clips or any means which supports the boxes from less than two opposite sides of the box. Such outlet boxes in stud walls shall be supported securely by support members spanning between studs.
- G. Outlet boxes installed in fire rated partitions shall be boxed in with wall board or other suitable fire rated material as required to maintain or restore the fire rating of the assembly.

3.2 INSTALLATION OF FLOOR OUTLET BOXES

- A. Floor outlet boxes to be imbedded in concrete shall be properly leveled and anchored in place before the concrete is poured.
- B. Floor outlet boxes shall be set so edge of cover comes flush with finished floor surface.
- C. There shall be no more knockouts opened in any outlet box than are actually required.
- D. Boxes shall be sealed during construction.

3.3 INSTALLATION OF JUNCTION BOXES

- A. Provide junction or pull boxes where shown on the drawings and as required to facilitate installing conductors. Such boxes shall be "Code" sized unless required to be larger by the plans or other sections of these specifications. All junction boxes shall be accessible.
- B. Junction boxes shall be securely fastened to the building structure independent of ductwork, plumbing, etc. Junction boxes shall not be supported by EMT conduit fittings.
- C. There shall not be more knockouts opened in any box than are actually required.
- D. Boxes shall be properly protected during construction and shall be cleaned of all foreign matter before conductors are installed.
- E. Boxes to be imbedded in concrete shall be properly leveled and anchored in place before the concrete is poured.

END OF SECTION 260534

SECTION 260544

SLEEVES AND SLEEVES SEALS FOR ELECTRICAL RACEWAYS AND CABLING

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

- A. Section Includes:
 - 1. Sleeves for raceway and cable penetration of non-fire-rated construction walls and floors.
 - 2. Sleeve-seal systems.
 - 3. Sleeve-seal fittings.
 - 4. Grout.
 - 5. Silicone sealants.

1.3 ACTION SUBMITTALS

- A. Product Data: For each type of product.

PART 2 - PRODUCTS

2.1 SLEEVES

- A. Wall Sleeves:
 - 1. Steel Pipe Sleeves: ASTM A 53/A 53M, Type E, Grade B, Schedule 40, zinc coated, plain ends.
- B. Sleeves for Conduits Penetrating Non-Fire-Rated Gypsum Board Assemblies: Galvanized-steel sheet; 0.0239-inch (0.6-mm) minimum thickness; round tube closed with welded longitudinal joint, with tabs for screw-fastening the sleeve to the board.
- C. Sleeves for Rectangular Openings:
 - 1. Material: Galvanized sheet steel.
 - 2. Minimum Metal Thickness:
 - a. For sleeve cross-section rectangle perimeter less than 50 inches (1270 mm) and with no side larger than 16 inches (400 mm), thickness shall be 0.052 inch (1.3 mm).
 - b. For sleeve cross-section rectangle perimeter 50 inches (1270 mm) or more and one or more sides larger than 16 inches (400 mm), thickness shall be 0.138 inch (3.5 mm).

2.2 SLEEVE-SEAL SYSTEMS

- A. Description: Modular sealing device, designed for field assembly, to fill annular space between sleeve and raceway or cable.
1. Manufacturers: Subject to compliance with requirements, provide products by the following
 - a. Advance Products & Systems, Inc.
 - b. CALPICO, Inc.
 - c. Metraflex Company (The).
 - d. Pipeline Seal and Insulator, Inc.
 - e. Proco Products, Inc.
 2. Sealing Elements: EPDM rubber interlocking links shaped to fit surface of pipe. Include type and number required for pipe material and size of pipe.
 3. Pressure Plates: Stainless steel.
 4. Connecting Bolts and Nuts: Stainless steel of length required to secure pressure plates to sealing elements.

2.3 SLEEVE-SEAL FITTINGS

- A. Description: Manufactured plastic, sleeve-type, waterstop assembly made for embedding in concrete slab or wall. Unit shall have plastic or rubber waterstop collar with center opening to match piping OD.
1. Manufacturers: Subject to compliance with requirements, provide products by the following
 - a. Presealed Systems.

2.4 GROUT

- A. Description: Nonshrink; recommended for interior and exterior sealing openings in non-fire-rated walls or floors.
- B. Standard: ASTM C 117/C 117M, Grade B, post-hardening and volume-adjusting, dry, hydraulic-cement grout.
- C. Design Mix: 5000-psi (34.5-MPa), 28-day compressive strength.
- D. Packaging: Premixed and factory packaged.

2.5 SILICONE SEALANTS

- A. Silicone Sealants: Single-component, silicone-based, neutral-curing elastomeric sealants of grade indicated below.
1. Grade: Pourable (self-leveling) formulation for openings in floors and other horizontal surfaces that are not fire rated.
 2. Sealant shall have VOC content according to 40 CFR 59, Subpart D (EPA Method 24).
- B. Silicone Foams: Multicomponent, silicone-based liquid elastomers that, when mixed, expand and cure in place to produce a flexible, nonshrinking foam.

PART 3 - EXECUTION

3.1 SLEEVE INSTALLATION FOR NON-FIRE-RATED ELECTRICAL PENETRATIONS

- A. Comply with NECA 1.
- B. Comply with NEMA VE 2 for cable tray and cable penetrations.
- C. Sleeves for Conduits Penetrating Above-Grade Non-Fire-Rated Concrete and Masonry-Unit Floors and Walls:
 - 1. Interior Penetrations of Non-Fire-Rated Walls and Floors:
 - a. Seal annular space between sleeve and raceway or cable, using joint sealant appropriate for size, depth, and location of joint. Comply with requirements in Division 7 Section "Joint Sealants."
 - b. Seal space outside of sleeves with mortar or grout. Pack sealing material solidly between sleeve and wall so no voids remain. Tool exposed surfaces smooth; protect material while curing.
 - 2. Use pipe sleeves unless penetration arrangement requires rectangular sleeved opening.
 - 3. Size pipe sleeves to provide 1/4-inch (6.4-mm) annular clear space between sleeve and raceway or cable unless sleeve seal is to be installed or unless seismic criteria require different clearance.
 - 4. Install sleeves for wall penetrations unless core-drilled holes or formed openings are used. Install sleeves during erection of walls. Cut sleeves to length for mounting flush with both surfaces of walls. Deburr after cutting.
 - 5. Install sleeves for floor penetrations. Extend sleeves installed in floors 2 inches (50 mm) 6 inch above finished floor level. Install sleeves during erection of floors.
- D. Sleeves for Conduits Penetrating Non-Fire-Rated Gypsum Board Assemblies:
 - 1. Use circular metal sleeves unless penetration arrangement requires rectangular sleeved opening.
 - 2. Seal space outside of sleeves with approved joint compound for gypsum board assemblies.
- E. Roof-Penetration Sleeves: Seal penetration of individual raceways and cables with flexible boot-type flashing units applied in coordination with roofing work.
- F. Aboveground, Exterior-Wall Penetrations: Seal penetrations using cast-iron pipe sleeves and mechanical sleeve seals. Select sleeve size to allow for 1-inch (25-mm) annular clear space between pipe and sleeve for installing mechanical sleeve seals.
- G. Underground, Exterior-Wall and Floor Penetrations: Install cast-iron pipe sleeves. Size sleeves to allow for 1-inch (25-mm) annular clear space between raceway or cable and sleeve for installing sleeve-seal system.

3.2 SLEEVE-SEAL-SYSTEM INSTALLATION

- A. Install sleeve-seal systems in sleeves in exterior concrete walls and slabs-on-grade at raceway entries into building.
- B. Install type and number of sealing elements recommended by manufacturer for raceway or cable material and size. Position raceway or cable in center of sleeve. Assemble mechanical sleeve seals and

install in annular space between raceway or cable and sleeve. Tighten bolts against pressure plates that cause sealing elements to expand and make watertight seal.

3.3 SLEEVE-SEAL-FITTING INSTALLATION

- A. Install sleeve-seal fittings in new walls and slabs as they are constructed.
- B. Assemble fitting components of length to be flush with both surfaces of concrete slabs and walls. Position water stop flange to be centered in concrete slab or wall.
- C. Secure nailing flanges to concrete forms.
- D. Using grout, seal the space around outside of sleeve-seal fittings.

END OF SECTION

SECTION 262418
LOAD CENTERS

PART 1 - GENERAL

1.1 SCOPE

- A. This section outlines the requirements for circuit breaker load centers.
- B. Load centers shall be dead front type, manufactured in accordance with Underwriter's Laboratories, Inc., standard of panelboards and enclosing cabinets, and be so labeled.

PART 2 - PRODUCTS

2.1 LOAD CENTER ENCLOSURES

- A. Load centers shall be fabricated from sheet steel and equipped with a hinged door with a catch. A circuit directory card shall be provided on the inside of the door.

2.2 LOAD CENTER BUSSING

- A. Load center bus ampacity, service voltage, service entrance (main breakers or lugs) and branch breakers shall be as shown on the drawings. All bus connections shall be tin plated.
- B. Main lugs shall be mechanical type.
- C. Branch circuit breakers shall be connected to the bus in a distributed phase arrangement. Breakers shall not be held in place by trim.
- D. Neutral bars shall be full sized and equipped with lugs to accommodate all conductors to be connected.
- E. Ground bars shall be furnished in all load centers.

2.3 CIRCUIT BREAKERS

- A. Branch circuit protective devices shall be 50 ampere frame, quick-lag, quick-make, quick-break, plug-in type thermal magnetic circuit breakers for alternating current. Automatic tripping shall be indicated by the handle assuming a position between manual "OFF" and "ON" positions.
- B. Multi-pole circuit breakers shall be single handle common trip type rated for 240 volts, A.C. External handle ties of any type will not be accepted.
- C. Where noted on the panelboard schedule or on the plans, UL Class A (5 milliampere sensitivity) ground fault circuit protection breakers shall be provided. Ground fault protection shall be an integral part of the breaker in addition to the protection specified above. The addition of ground fault protection to the molded case breaker shall not require additional panelboard space.
- D. All circuit breakers shall be arc fault type circuit breaker.

2.4 CIRCUIT BREAKER ARRANGEMENTS

- A. Breakers shall be arranged so that the entire left row is filled then begin top right.

- B. Breakers shall be numbered vertically beginning top left. Breaker numbers shall be metallic, permanently attached to trim.

2.5 MANUFACTURER

- A. Load Centers shall be as manufactured by Siemens, Square "D", GE, Cutler Hammer, or approved equal.

PART 3 - EXECUTION

3.1 INSTALLATION

- A. All load center dimensions shall be carefully checked and coordinated with the proper trades to ensure proper mounting space and support.
- B. Where existing load centers are mounted on plywood backboards the backboards shall be extended as required to mount the new panels. Plywood backboards shall be painted with two coats of fire retardant paint prior to installation.
- C. Wiring in load center gutters shall be done in a neat and workmanlike manner. Wiring shall be grouped into neat bundles and secured with approved non-metallic tie wraps.

END OF SECTION

SECTION 262726
WIRING DEVICES

PART 1 - GENERAL

1.1 SCOPE

- A. This section outlines the quality and requirements of the Basic Devices, switches, receptacles, etc., to be used and the installation instructions for the devices.

PART 2 - PRODUCTS

2.1 WIRING DEVICES

- A. Switches shall be residential grade, AC type, in NEMA configuration as shown on drawings. Switches and receptacles shall be as manufactured by Arrow Hart, Hubbell, Leviton, or P & S.
- B. Switches shall be silent operation toggle, rated 20 amperes, 120/277 volt AC, Hubbell Catalog # 1121 or equal.
- C. Switches installed in door or window frames, or in other space limited areas, shall be narrow type as manufactured by Arrow Hart. Narrow switches shall be Series QT90/T-1600, rated 20 ampere, in configuration as shown on drawings.
- D. Receptacles shall be side wired, residential grade, in NEMA configuration as shown on drawings.
- E. Where noted on the drawings, and/or required by code, receptacles shall be equipped with integral Class A ground fault protection (5 milliampere sensitivity). Unless noted otherwise all "GFI" receptacles shall be duplex, rated 20 amperes, 120 volts with "TEST" and "RESET" buttons and feed through feature for ground fault protection of all devices on the load side of the unit.

2.2 PLATES AND ACCESSORIES

- A. All devices shall have proper plates, trim, etc.
- B. Plates shall be plastic except where other-wise specified or noted on the drawings. Color to be selected by architect/owner.
- D. Where required to be weatherproof, cover plates shall be high impact polycarbonate in-used type with gray finish. See legend on drawings for more information.
- E. Surface mounted devices with exposed conduit in unfinished areas shall have galvanized metal plates with rounded or beveled edges.

2.3 FINISHES

- A. Switches and receptacles served by the normal power system shall be white with white cover plates. Verify finished with architect/owner.
- B. Switches and receptacles served by the emergency power system shall be red with white cover plates. Verify cove plate finish with architect/owner.

PART 3 - EXECUTION

3.1 MOUNTING HEIGHTS AND LOCATIONS

- A. Symbols on drawings and mounting heights are approximate. Exact locations and mounting heights shall be determined on the job and it shall be the Contractor's responsibility to coordinate with all trades to ensure correct installation, i.e., over counters in or above back-splashes, in block walls, tile, and other specific construction features.
- B. Outlets, unless otherwise shown shall be located with the center line of outlet boxes the following distance above the finished floor:

Receptacles, General:	1'-6"
Telephone Outlets:	1'-6"
Receptacles Over Counters:	3'-8" (Verify with architect)
Switches, General:	3'-10"
Audio visual:	6'-8" (to the bottom of device)
Visual:	6'-8" (to the bottom of device)
Pull Stations:	3'-10"

- C. All device mounting heights shall be in accordance with the Americans with Disabilities Act and all Federal, State, and Local requirements for making buildings accessible to the handicapped. Contractor shall verify mounting height of devices with architect before rough in, no exception.

3.2 GENERAL MOUNTING

- A. Verify all door swings with Architectural. Locate boxes for light switches within 4 inches of door trim on the strike side.
- B. Where switches are shown grouped together they shall be installed under a single plate. Where required, barriers shall be provided in the outlet box.
- C. Where receptacles, telephone outlets, and auxiliary system outlets are shown on the drawings grouped together they shall be installed with 4 inches between outlets.
- D. All receptacles within 6'- 0" of sinks, showers or normally wet or damp locations shall be equipped with ground fault protection.
- E. Devices and associated plates shall not be used as support. Outlet boxes shall be rigidly supported from structural members.
- F. Receptacles shall be mounted so that the ground slot will be on top.

END OF SECTION

SECTION 262813
FUSES

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

- A. Section Includes:
 - 1. Cartridge fuses rated 240-V ac and less for use in control circuits and enclosed switches
 - 2. Plug fuses rated 125-V ac and less for use in plug-fuse-type enclosed switches and fuse holders.

1.3 SUBMITTALS

- A. Product Data: For each type of product indicated. Include construction details, material, dimensions, descriptions of individual components, and finishes for spare-fuse cabinets. Include the following for each fuse type indicated:
 - 1. Dimensions and manufacturer's technical data on features, performance, electrical characteristics, and ratings.
 - 2. Current-limitation curves for fuses with current-limiting characteristics.
 - 3. Coordination charts and tables and related data.
- B. Operation and Maintenance Data: For fuses to include in emergency, operation, and maintenance manuals. In addition to items specified in Division 1 Section "Operation and Maintenance Data," include the following:
 - 1. Ambient temperature adjustment information.
 - 2. Current-limitation curves for fuses with current-limiting characteristics.
 - 3. Coordination charts and tables and related data.

1.4 QUALITY ASSURANCE

- A. Source Limitations: Obtain fuses, for use within a specific product or circuit, from single source from single manufacturer.
- B. Electrical Components, Devices, and Accessories: Listed and labeled as defined in NFPA 70, by a qualified testing agency, and marked for intended location and application.
- C. Comply with NEMA FU 1 for cartridge fuses.
- D. Comply with NFPA 70.
- E. Comply with UL 248-11 for plug fuses.

1.5 COORDINATION

- A. Coordinate fuse ratings with utilization equipment nameplate limitations of maximum fuse size and with system short-circuit current levels.

1.6 EXTRA MATERIALS

- A. Furnish extra materials that match products installed and that are packaged with protective covering for storage and identified with labels describing contents.
 - 1. Fuses: Equal to 10 percent of quantity installed for each size and type, but no fewer than two of each size and type.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

- A. Manufacturers: Subject to compliance with requirements, available manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following:
 - 1. Cooper Bussmann, Inc.
 - 2. Edison Fuse, Inc.
 - 3. Ferraz Shawmut, Inc.
 - 4. Littelfuse, Inc.

2.2 FUSES

- A. Characteristics: renewable cartridge fuses with voltage ratings consistent with circuit voltages.

2.3 PLUG FUSES

- A. Characteristics: UL 248-11, nonrenewable plug fuses; 125-V ac.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Examine fuses before installation. Reject fuses that are moisture damaged or physically damaged.
- B. Examine holders to receive fuses for compliance with installation tolerances and other conditions affecting performance, such as rejection features.
- C. Examine utilization equipment nameplates and installation instructions. Install fuses of sizes and with characteristics appropriate for each piece of equipment.
- D. Evaluate ambient temperatures to determine if fuse rating adjustment factors must be applied to fuse ratings.

- E. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 FUSE APPLICATIONS

- A. Cartridge Fuses:
 - 1. Motor Branch Circuits: Class RK1 time delay.
 - 2. Other Branch Circuits: Class RK1, time delay.
 - 3. Control Circuits: Class CC, time delay.

3.3 INSTALLATION

- A. Install fuses in fusible devices. Arrange fuses so rating information is readable without removing fuse.
- B. Install plug-fuse adapters in Edison-base fuseholders and sockets. Ensure that adapters are irremovable once installed.
- C. Install spare-fuse cabinet(s).

END OF SECTION

SECTION 262816
SAFETY SWITCHES

PART 1 - GENERAL

1.1 SCOPE

- A. This section deals with safety switches fused and non-fused. All safety switches shall be NEMA Heavy duty type.

1.2 SERVICE RATING

- A. Where required, safety switches shall be labeled for use as service entrance equipment.

PART 2 - PRODUCTS

2.1 SAFETY SWITCHES

- A. Shall be quick-make, quick-break, fused or non-fused as shown. Switch blades shall be fully visible in the off position with the door open. The switch handle shall be a part of the box, not the cover.
- B. Fusible switches shall have provisions for dual element fuses, UL Class K-5.
- C. Switch cover shall have a defeatable dual interlock to prevent inadvertent opening of the cover with the switch in the "ON" position. Provisions shall be made for padlocking in the "OFF" position.
- D. Switches shall be horsepower rated.

2.2 MANUFACTURER

- A. Switches shall be as manufactured by GE, Square D, cutler hammer, Siemens or approved equal.

PART 3 - EXECUTION

3.1 SAFETY SWITCHES

- A. Safety switches shall be installed as shown on the drawings and in accordance with the N.E.C.
- B. Disconnect switches for motors shall be rated in horsepower and shall be sized for motor served.
- C. Disconnect switches for non-motor loads shall be sized in accordance with equipment full load current.
- D. Safety switches shall be NEMA I enclosure except where installed in locations subject to moisture, in which case, safety switches shall have a raintight enclosure, NEMA 3R, except where other types of enclosures are shown on the drawings.
- E. Adequate support shall be provided for mounting safety switches. Safety switches shall be securely attached to building structure in all possible instances.

END OF SECTION

SECTION 26 5100
INTERIOR LIGHTING
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. Interior lighting fixtures, lamps, and ballasts.
2. Emergency lighting units.
3. Exit signs.
4. Lighting fixture supports.
5. Retrofit kits for fluorescent lighting fixtures.

B. Energy Compliance

1. Lamp and ballast as a system shall compliance with ASHRAE/IESNA 90.1-2009.

1.03 DEFINITIONS

- A. BF: Ballast factor.
- B. CCT: Correlated color temperature.
- C. CRI: Color-rendering index.
- D. HID: High-intensity discharge.
- E. LER: Luminaire efficacy rating.
- F. Lumen: Measured output of lamp and luminaire, or both.
- G. Luminaire: Complete lighting fixture, including ballast housing if provided.

1.04 SUBMITTALS

- A. Product Data: For each type of lighting fixture, arranged in order of fixture designation. Include data on features, accessories, finishes, and the following:
1. Physical description of lighting fixture including dimensions.
 2. Emergency lighting units including battery and charger.
 3. Ballast, including BF.
 4. Energy-efficiency data.
 5. Life, output (lumens, CCT, and CRI), and energy-efficiency data for lamps.

6. Photometric data and adjustment factors based on laboratory tests, complying with IESNA Lighting Measurements Testing & Calculation Guides, of each lighting fixture type. The adjustment factors shall be for lamps, ballasts, and accessories identical to those indicated for the lighting fixture as applied in this Project.
 - a. Manufacturer Certified Data: Photometric data shall be certified by a manufacturer's laboratory with a current accreditation under the National Voluntary Laboratory Accreditation Program for Energy Efficient Lighting Products.
 - B. Installation instructions.
 - C. Coordination Drawings: Reflected ceiling plan(s) and other details, drawn to scale, on which the following items are shown and coordinated with each other, using input from installers of the items involved:
 1. Lighting fixtures.
 2. Suspended ceiling components.
 3. Partitions and millwork that penetrate the ceiling or extends to within 12 inches (305 mm) of the plane of the luminaires.
 4. Ceiling-mounted projectors.
 5. Structural members to which suspension systems for lighting fixtures will be attached.
 6. Other items in finished ceiling including the following:
 - a. Air outlets and inlets.
 - b. Speakers.
 - c. Sprinklers.
 - d. Smoke and fire detectors.
 - e. Occupancy sensors.
 - f. Access panels.
 7. Perimeter moldings.
 - D. Qualification Data: For qualified agencies providing photometric data for lighting fixtures.
 - E. Product Certificates: For each type of ballast for bi-level and dimmer-controlled fixtures, from manufacturer.
 - F. Field quality-control reports.
 - G. Operation and Maintenance Data: For lighting equipment and fixtures to include in emergency, operation, and maintenance manuals.
 1. Provide a list of all lamp types used on Project; use ANSI and manufacturers' codes.
 - H. Warranty: Sample of special warranty.
- 1.05 QUALITY ASSURANCE
- A. Luminaire Photometric Data Testing Laboratory Qualifications: Provided by manufacturers' laboratories that are accredited under the National Volunteer Laboratory Accreditation Program for Energy Efficient Lighting Products.

- B. Electrical Components, Devices, and Accessories: Listed and labeled as defined in NFPA 70, by a qualified testing agency, and marked for intended location and application.
- C. Comply with NFPA 70.

1.06 COORDINATION

- A. Coordinate layout and installation of lighting fixtures and suspension system with other construction that penetrates ceilings or is supported by them, including HVAC equipment, fire-suppression system, and partition assemblies.

1.07 WARRANTY

- A. Special Warranty for Emergency Lighting Batteries: Manufacturer's standard form in which manufacturer of battery-powered emergency lighting unit agrees to repair or replace components of rechargeable batteries that fail in materials or workmanship within specified warranty period.
 - 1. Warranty Period for Emergency Lighting Unit Batteries: 5 years from date of Substantial Completion. Full warranty shall apply for first year, and prorated warranty for the remaining nine years.
 - 2. Warranty Period for Emergency Fluorescent Ballast and Self-Powered Exit Sign Batteries: Five years from date of Substantial Completion. Full warranty shall apply for first year, and prorated warranty for the remaining six years.

1.08 EXTRA MATERIALS

- A. Furnish extra materials that match products installed and that are packaged with protective covering for storage and identified with labels describing contents.
 - 1. Lamps: 10 for every 100 of each type and rating installed. Furnish at least one of each type.
 - 2. Plastic Diffusers and Lenses: One for every 100 of each type and rating installed. Furnish at least one of each type.
 - 3. Emergency battery pack: One for every 20 emergency lighting unit.
 - 4. Ballasts: One for every 100 of each type and rating installed. Furnish at least one of each type.
 - 5. Globes and Guards: One for every 20 of each type and rating installed. Furnish at least one of each type.

1.09 SPECIAL REQUIREMENTS

- A. All lighting fixtures shall be purchased from local manufacturer representative and local distributors which are located within 50 mile of project site, no exception.

1.10 QUICK DISCONNECT

- A. All light fixtures shall be provided with quick disconnect.

PART 2 - PRODUCTS

2.01 MANUFACTURERS

- A. Products: Subject to compliance with requirements, provide product indicated on Drawings. The following manufacturer shall provide pre-bid submittals for approval if their products not specified on lighting fixture schedule on drawings:

Acuity Brand, Philips, Cooper and Hubbell

2.02 GENERAL REQUIREMENTS FOR LIGHTING FIXTURES AND COMPONENTS

- A. Recessed Fixtures: Comply with NEMA LE 4 for ceiling compatibility for recessed fixtures.
- B. Incandescent Fixtures: Comply with UL 1598. Where LER is specified, test according to NEMA LE 5A.
- C. Fluorescent Fixtures: Comply with UL 1598. Where LER is specified, test according to NEMA LE 5 and NEMA LE 5A as applicable.
- D. LED Fixtures: Comply with UL 1598, Title 24-2008, IECC 2009, IES LM-79 and LM-80. Light fixture shall be designed for LED technology with two stage reflector system and frosted lens at the upper reflector producing smooth distribution with excellent light control and low aperture brightness.
- E. Sheet Metal Components: Steel unless otherwise indicated. Form and support to prevent warping and sagging.
- F. Doors, Frames, and Other Internal Access: Smooth operating, free of light leakage under operating conditions, and designed to permit relamping without use of tools. Designed to prevent doors, frames, lenses, diffusers, and other components from falling accidentally during relamping and when secured in operating position.
- G. Diffusers and Globes:
1. Acrylic Lighting Diffusers: 100 percent virgin acrylic plastic. High resistance to yellowing and other changes due to aging, exposure to heat, and UV radiation.
 - a. Lens Thickness: At least 0.125 inch (3.175 mm) minimum unless otherwise indicated.
 - b. UV stabilized.
 2. Glass: Annealed crystal glass unless otherwise indicated.
- H. Factory-Applied Labels: Comply with UL 1598. Include recommended lamps and ballasts. Labels shall be located where they will be readily visible to service personnel, but not seen from normal viewing angles when lamps are in place.

2.03 LED DRIVER

- A. Driver shall be accessible for service from above and through the aperture. Driver shall have minimum of replacement warranty of 5 years.
1.).

a. .

2.04 LED LAMPS

- B. LED lamps: IES LM-79 CRI 80 (minimum) color temperature 4100K, and rated life of 50,000 hours, minimum at 70% lumens maintenance, Auto resetting, thermally protected. LED should be turned off when safe operating temperatures are exceeded. Color variation within 3-step MacAdam ellipses.
- C. LED down lights shall meet part “A” above requirement and shall be equipped with dimmable drivers.
- D. Comply with ANSI C82.1, IES LM-79 and LM-80, 5 years minimum lamp and driver replacement warranty.

PART 3 - EXECUTION

3.01 INSTALLATION

- A. Lighting fixtures:
 - 1. Set level, plumb, and square with ceilings and walls unless otherwise indicated.
 - 2. Install lamps in each luminaire.
- B. Temporary Lighting: If it is necessary, and approved by Architect, to use permanent luminaires for temporary lighting, install and energize the minimum number of luminaires necessary. When construction is sufficiently complete, remove the temporary luminaires, disassemble, clean thoroughly, install new lamps, and reinstall.
- C. Remote Mounting of Ballasts: Distance between the ballast and fixture shall not exceed that recommended by ballast manufacturer. Verify, with ballast manufacturers, maximum distance between ballast and luminaire.
- D. Lay-in Ceiling Lighting Fixtures Supports: Use grid as a support element.
 - 1. Install ceiling support system rods or wires, independent of the ceiling suspension devices, for each fixture. Support fixture from structure from all four corners.
 - 2. Support Clips: Fasten to lighting fixtures and to ceiling grid members at or near each fixture corner with clips that are UL listed for the application.
 - 3. Fixtures of Sizes Less Than Ceiling Grid: Install as indicated on reflected ceiling plans or center in acoustical panel, and support fixtures independently with at least two 3/4-inch (20-mm) metal channels spanning and secured to ceiling tees.
 - 4. Install at least one independent support rod or wire from structure to a tab on lighting fixture. Wire or rod shall have breaking strength of the weight of fixture at a safety factor of 3.
- E. Suspended Lighting Fixture Support:
 - 1. Pendants and Rods: Where longer than 48 inches (1200 mm), brace to limit swinging.
 - 2. Stem-Mounted, Single-Unit Fixtures: Suspend with twin-stem hangers.
 - 3. Continuous Rows: Use tubing or stem for wiring at one point and tubing or rod for suspension for each unit length of fixture chassis, including one at each end.

4. Do not use grid as support for pendant luminaires. Connect support wires or rods to building structure.

F. Connect wiring according to Division 26 Section "Low-Voltage Electrical Power Conductors and Cables."

3.02 IDENTIFICATION

A. Install labels with panel and circuit numbers on concealed junction and outlet boxes. Comply with requirements for identification specified in Division 26 Section "Identification for Electrical Systems."

3.03 FIELD QUALITY CONTROL

A. Test for Emergency Lighting: Interrupt power supply to demonstrate proper operation. Verify transfer from normal power to battery and retransfer to normal.

B. Prepare a written report of tests, inspections, observations, and verifications indicating and interpreting results. If adjustments are made to lighting system, retest to demonstrate compliance with standards.

3.04 STARTUP SERVICE

A. Burn-in all lamps that require specific aging period to operate properly, prior to occupancy by Owner. Burn-in fluorescent and compact fluorescent lamps intended to be dimmed, for at least 100 hours at full voltage.

3.05 ADJUSTING

A. Occupancy Adjustments: When requested within 12 months of date of Substantial Completion, provide on-site assistance in adjusting aimable luminaires to suit actual occupied conditions. Provide up to two visits to Project during other-than-normal occupancy hours for this purpose. Some of this work may be required after dark.

END OF SECTION

SECTION 28 3111
DIGITAL FIRE-ALARM SYSTEM
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. Fire-alarm control unit.
 2. Manual fire-alarm boxes.
 3. System smoke detectors.
 4. Non-system smoke detectors.
 5. Heat detectors.
 6. Notification appliances.
 7. Magnetic door holders.
 8. Remote annunciator.
 9. Addressable interface device.
 10. Digital alarm communicator transmitter.
 11. Pre-Action System

1.03 DEFINITIONS

- A. LED: Light-emitting diode.
- B. NICET: National Institute for Certification in Engineering Technologies.

1.04 SYSTEM DESCRIPTION

- A. Noncoded, UL-certified addressable networkable system, with multiplexed signal transmission, dedicated to fire-alarm service ONLY. System shall be capable of walk test.

1.05 SUBMITTALS

- A. General Submittal Requirements:
1. Submittals shall be approved by authorities having jurisdiction prior to submitting them to Architect.
 2. Shop Drawings shall be prepared by persons with the following qualifications:
 - a. Trained and certified by manufacturer in fire-alarm system design.
 - b. NICET-certified fire-alarm technician, Level III minimum.
 - c. Licensed or certified by authorities having jurisdiction.

- B. Product Data: For each type of product indicated.
- C. Shop Drawings: For fire-alarm system. Include plans, elevations, sections, details, and attachments to other work.
 - 1. Comply with recommendations in the "Documentation" Section of the "Fundamentals of Fire Alarm Systems" Chapter in NFPA 72.
 - 2. Include voltage drop calculations for notification appliance circuits.
 - 3. Include battery-size calculations.
 - 4. Include performance parameters and installation details for each detector, verifying that each detector is listed for complete range of air velocity, temperature, and humidity possible when air-handling system is operating.
 - 5. Include plans, sections, and elevations of heating, ventilating, and air-conditioning ducts, drawn to scale and coordinating installation of duct smoke detectors and access to them. Show critical dimensions that relate to placement and support of sampling tubes, detector housing, and remote status and alarm indicators. Locate detectors according to manufacturer's written recommendations.
 - 6. Include floor plans to indicate final outlet locations showing address of each addressable device. Show size and route of cable and conduits.
- D. Delegated-Design Submittal: For smoke and heat detectors indicated to comply with performance requirements and design criteria, including analysis data signed and sealed by the qualified professional engineer responsible for their preparation.
 - 1. Drawings showing the location of each smoke and heat detector, ratings of each, and installation details as needed to comply with listing conditions of the detector.
 - 2. Design Calculations: Calculate requirements for selecting the spacing and sensitivity of detection, complying with NFPA 72.
- E. Qualification Data: For qualified Installer.
- F. Field quality-control reports.
- G. Operation and Maintenance Data: For fire-alarm systems and components to include in emergency, operation, and maintenance manuals. In addition to items specified in Division 1 Section "Operation and Maintenance Data," include the following:
 - 1. Comply with the "Records" Section of the "Inspection, Testing and Maintenance" Chapter in NFPA 72.
 - 2. Provide "Record of Completion Documents" according to NFPA 72 article "Permanent Records" in the "Records" Section of the "Inspection, Testing and Maintenance" Chapter.
 - 3. Record copy of site-specific software.
 - 4. Provide "Maintenance, Inspection and Testing Records" according to NFPA 72 article of the same name and include the following:
 - a. Frequency of testing of installed components.
 - b. Frequency of inspection of installed components.
 - c. Requirements and recommendations related to results of maintenance.
 - d. Manufacturer's user training manuals.
 - 5. Manufacturer's required maintenance related to system warranty requirements.
 - 6. Abbreviated operating instructions for mounting at fire-alarm control unit.
 - 7. Copy of NFPA 25.

1.06 QUALITY ASSURANCE

A. Codes, Standards, Ordinances, and Permits

1. All work shall comply with the codes adopted and enforced by the following agencies:
 - a. State Fire Marshal's Office (Adopted Volumes of National Fire Protection Association (NFPA) National Fire Codes)
 - 1) NFPA 72, National Fire Alarm Code 2013 Edition
 - 2) NFPA 101, Life Safety Code, 2013 Edition
 - b. Birmingham Fire and Rescue Service
 - 1) International Fire Code, 2015 Edition, and referenced standards
 - 2) All work and products shall also conform to the following nationally recognized standards:
 1. ANSI S3.41, Audible Emergency Evacuation Signal, 1996.
 2. UL 864, Control Units for Fire Protective Signaling Systems, 9th Edition, 2003.
 3. UL 1481, Power Supplies for Fire Protective Signaling Systems, 5th Edition, 2006.
 4. UL 268, Smoke Detectors for Fire Protection Signaling Systems, 5th Edition, 2006.
 5. UL 1971, Signaling Devices for the Hearing Impaired, 3rd Edition, 2002.
 6. UL 1480, Speakers for Fire Protective Signaling Systems, 5th Edition, 2003.
 - 3) All work and materials shall conform to all Federal, State and local codes and regulations governing the installation, including the current editions of the International Building and Fire Codes, and the codes, standards, guides and recommended practices included in the 2003 NFPA National Fire Codes.
 - 4) If there is a conflict between the referenced NFPA standards, federal, state or local codes, and this specification, it is the Contractor's responsibility to immediately bring the conflict to the attention of the Owner for resolution. Where conflict arises between the *International Fire Code* and NFPA 101, *Life Safety Code*, the most stringent code requirement will be enforced.
 - 5) All devices, appliances, systems, equipment and materials furnished and installed shall be new and listed by Underwriters Laboratories Inc. (UL) for their intended use. All equipment shall be installed in accordance with the manufacturer's recommendations and the UL listing limitations. Listing requirements for separate fire alarm systems, and smoke detectors shall be met. The Contractor shall provide evidence with his submittal of listings for all proposed equipment and combinations of equipment.
 - 6) All devices, appliances, systems, equipment and materials furnished and installed shall be of types or models approved and required by NFPA Standards or UL listing for use in systems and occupancies of this type.

7) The Contractor shall be responsible for filing of all documents, paying all fees (including, but not limited to plan checking and permit) and securing all permits, inspections and approvals necessary for conducting this work. Upon receipt of approved drawings from the Authority Having Jurisdiction, the Contractor shall immediately forward two sets of drawings to the Owner. These drawings shall either be stamped approved or a copy of the letter stating approval shall be included.

8) The contractor must have a NICET Level III Technician in a position of responsibility and the license shall be issued in the name of the certificate holder and the contractor. The Certified Fire Alarm Act also requires that technicians working for the Certified Contractor must hold a current NICET Level II, or equivalent, certification. The contractor shall show evidence at the pre-bid conference that he/she meets the certification requirements of the Act and holds a permit issued by the State Fire Marshall.

B. Contractor Qualifications

The Contractor shall:

1. Provide a job site supervisor/foreman who is to be present on site each day that work is actively in progress, as appropriate. The jobsite supervisor/foreman shall be a minimum National Institute for Certification in Engineering Technologies (NICET) Level II in Fire Alarm Systems. A daily site visit is required as a minimum. This individual shall be the same person throughout the course of the project, unless otherwise approved in writing by the Owner.
2. System configuration, installation, programming and testing shall be supervised by a NICET Level III or IV in Fire Alarm Systems, trained by the Contractor.
3. Hold all licenses and permits necessary to perform this work.
4. Have at least five years of experience in the installation of systems of this type and shall be familiar with all applicable local, state, and federal laws and regulations. Provide a project list representing projects of similar scope in the past three years including references.
5. Be regularly engaged in the design, servicing, installation, and testing of fire detection and alarm systems.
6. Installation shall be by personnel certified by NICET as fire- alarm Level III technician. The State of Alabama Certified Fire Alarm Act requires that every business who installs fire alarm systems in commercial occupancies must be licensed as a Certified Fire Alarm Contractor. The contractor must have a NICET Level III Technician in a position of responsibility, and the license will be issued in the name of the certificate holder and the contractor. The Certified Fire Alarm Act also requires that technicians working for the Certified Contractor must hold a current NICET Level II, or equivalent, certification. The fire alarm specifications shall require contractors wishing to bid on fire alarm work to show evidence at the pre-bid conference that he/she meets the certification requirements of the Act and holds a permit issued by the State Fire Marshall.

1.07 SOFTWARE SERVICE AGREEMENT

- A. Comply with UL 864.

- B. Technical Support: Beginning with Substantial Completion, provide software support for two years.
- C. Upgrade Service: Update software to latest version at Project completion. Install and program software upgrades that become available within two years from date of Substantial Completion. Upgrading software shall include operating system. Upgrade shall include new or revised licenses for use of software.
 - 1. Provide 30 days' notice to Owner to allow scheduling and access to system and to allow Owner to upgrade computer equipment if necessary.

1.08 EXTRA MATERIALS

- A. Furnish extra materials that match products installed and that are packaged with protective covering for storage and identified with labels describing contents.
 - 1. Lamps for Remote Indicating Lamp Units: Quantity equal to 10 percent of amount installed, but no fewer than 1 unit.
 - 2. Lamps for Strobe Units: Quantity equal to 10 percent of amount installed, but no fewer than 1 unit.
 - 3. Smoke Detectors, Fire Detectors: Quantity equal to 10 percent of amount of each type installed, but no fewer than 1 unit of each type.
 - 4. Detector Bases: Quantity equal to 2 percent of amount of each type installed, but no fewer than 1 unit of each type.
 - 5. Keys and Tools: One extra set for access to locked and tamper proofed components.
 - 6. Audible and Visual Notification Appliances: One of each type installed.
 - 7. Fuses: Two of each type installed in the system.

1.09 Fire Alarm System Listing

- A. Fire alarm system shall be UL listed.

PART 2 - PRODUCTS

2.01 MANUFACTURERS

- A. Manufacturers: Subject to compliance with requirements, as shown on drawings and specified here.
- B. Product: Shall be by Simplex, FireLite, or SilentKnight. Where FireLite or SilentKnight systems are provided existing fire alarm system shall be replaced with new to meet code as part of this contract. Provide cost in bid and pricing.

2.02 SYSTEMS OPERATIONAL DESCRIPTION

- A. Fire-alarm signal initiation shall be by one or more of the following devices and systems:
 - 1. Manual stations.
 - 2. Heat detectors.
 - 3. Flame detectors.
 - 4. Smoke detectors.

5. Duct smoke detectors.
6. Verified automatic alarm operation of smoke detectors.
7. Automatic sprinkler system water flow.
8. Heat detectors in elevator shaft and pit.

B. Fire-alarm signal shall initiate the following actions:

1. Continuously operate alarm notification appliances.
2. Identify alarm at fire-alarm control unit and remote annunciators.
3. Transmit an alarm signal to the remote alarm receiving station.
4. Unlock electric door locks in designated egress paths.
5. Release fire and smoke doors held open by magnetic door holders.
6. Switch heating, ventilating, and air-conditioning equipment controls to fire-alarm mode, Close smoke dampers in air ducts of designated air-conditioning duct systems.
7. Recall elevators to primary or alternate recall floors.
8. Record events in the system memory.
9. Record events by the system printer.
10. Send fire alarm system condition to Remote Monitoring Receiving Station.

C. Supervisory signal initiation shall be by one or more of the following devices and actions:

1. Valve supervisory switch.
2. Elevator shunt-trip supervision.

D. System trouble signal initiation shall be by one or more of the following devices and actions:

1. Open circuits, shorts, and grounds in designated circuits.
2. Opening, tampering with, or removing alarm-initiating and supervisory signal-initiating devices.
3. Loss of primary power at fire-alarm control unit.
4. Ground or a single break in fire-alarm control unit internal circuits.
5. Abnormal ac voltage at fire-alarm control unit.
6. Break in standby battery circuitry.
7. Failure of battery charging.
8. Abnormal position of any switch at fire-alarm control unit or annunciator.
9. Low-air-pressure switch operation on a dry-pipe or pre-action system.

E. System Trouble and Supervisory Signal Actions: Initiate notification appliance and annunciate at fire-alarm control unit and remote annunciators. Record the event on system printer.

2.03 FIRE-ALARM CONTROL UNIT

A. General Requirements for Fire-Alarm Control Unit:

1. Field-programmable, microprocessor-based, modular, power-limited design with electronic modules, complying with UL 864 and listed and labeled by an NRTL.
 - a. System software and programs shall be held in flash electrically erasable programmable read-only memory (EEPROM), retaining the information through failure of primary and secondary power supplies.
 - b. Include a real-time clock for time annotation of events on the event recorder and printer.
2. Addressable initiation devices that communicate device identity and status.

- a. Smoke sensors shall additionally communicate sensitivity setting and allow for adjustment of sensitivity at fire-alarm control unit.
 - b. Temperature sensors shall additionally test for and communicate the sensitivity range of the device.
 3. Addressable control circuits for operation of mechanical equipment.
- B. Alphanumeric Display and System Controls: Arranged for interface between human operator at fire-alarm control unit and addressable system components including annunciation and supervision. Display alarm, supervisory, and component status messages and the programming and control menu.
 1. Annunciator and Display: Liquid-crystal type, 3 line(s) of 80 characters, minimum.
 2. Keypad: Arranged to permit entry and execution of programming, display, and control commands and to indicate control commands to be entered into the system for control of smoke-detector sensitivity and other parameters.
- C. Circuits:
 1. Initiating Device, Notification Appliance, and Signaling Line Circuits: NFPA 72, Class B.
 - a. Initiating Device Circuits: Style D.
 - b. Notification Appliance Circuits: Style Z.
 - c. Signaling Line Circuits: Style 5.
 - d. Install no more than 50 addressable devices on each signaling line circuit.
- D. Smoke-Alarm Verification:
 1. Initiate audible and visible indication of an "alarm-verification" signal at fire-alarm control unit.
 2. Activate an NRTL-listed and -approved "alarm-verification" sequence at fire-alarm control unit and detector.
 3. Record events by the system printer.
 4. Sound general alarm if the alarm is verified.
 5. Cancel fire-alarm control unit indication and system reset if the alarm is not verified.
- E. Notification Appliance Circuit: Operation shall sound in the entire building.
- F. Elevator Recall:
 1. Smoke detectors at the following locations shall initiate automatic elevator recall. Alarm-initiating devices, except those listed, shall not start elevator recall.
 - a. Elevator lobby detectors except the lobby detector on the designated floor.
 - b. Smoke detector in elevator machine room.
 - c. Smoke detectors in elevator hoistway.
 2. Elevator lobby detectors located on the designated recall floors shall be programmed to move the cars to the alternate recall floor.
 3. Water-flow alarm connected to sprinkler in an elevator shaft and elevator machine room shall shut down elevators associated with the location without time delay.
 - a. Water-flow switch associated with the sprinkler in the elevator pit may have a delay to allow elevators to move to the designated floor.

- G. Door Controls: Door hold-open devices that are controlled by smoke detectors at doors in smoke barrier walls shall be connected to fire-alarm system.
- H. Remote Smoke-Detector Sensitivity Adjustment: Controls shall select specific addressable smoke detectors for adjustment, display their current status and sensitivity settings, and change those settings. Allow controls to be used to program repetitive, time-scheduled, and automated changes in sensitivity of specific detector groups. Record sensitivity adjustments and sensitivity-adjustment schedule changes in system memory, and print out the final adjusted values on system printer.
- I. Transmission to Remote Alarm Receiving Station: Automatically transmit alarm, supervisory, and trouble signals to the remote monitoring Receiving Stations.
- J. Primary Power: 24-V dc obtained from 120-V ac service and a power-supply module. Initiating devices, notification appliances, signaling lines, trouble signals, supervisory and digital alarm communicator transmitters shall be powered by 24-V dc source.
 - 1. Alarm current draw of entire fire-alarm system shall not exceed 80 percent of the power-supply module rating.
- K. Secondary Power: 24-V dc supply system with batteries, automatic battery charger, and automatic transfer switch.
 - 1. Batteries: Sealed lead calcium.
- L. Instructions: Computer printout or typewritten instruction card mounted behind a plastic or glass cover in a stainless-steel or aluminum frame. Include interpretation and describe appropriate response for displays and signals. Briefly describe the functional operation of the system under normal, alarm, and trouble conditions.
- M. Fire alarm control panel shall be furnished with transient voltage surge suppression on power supply and remote receiving monitor circuit.
- N. Fire alarm control panel shall be equipped with a key switch to bypass and/or release electric strike for doors with card access controls incase fire department wants to enter the floors from inside the stairs.
- O. Where new fire alarm system is by Simplex, New Fire alarm control panel shall be networkable to existing panel by fiber system. New Fire Alarm panel becomes the Master panel and will control all dial out/reporting functions.

2.04 MANUAL FIRE-ALARM BOXES

- A. General Requirements for Manual Fire-Alarm Boxes: Comply with UL 38. Boxes shall be finished in red with molded, raised-letter operating instructions in contrasting color; shall show visible indication of operation; and shall be mounted on recessed outlet box. If indicated as surface mounted, provide manufacturer's surface back box.
 - 1. Double-action mechanism requiring two actions to initiate an alarm, breaking glass or pull-lever type; with integral addressable module arranged to communicate manual-station status (normal, alarm, or trouble) to fire-alarm control unit.
 - 2. Station Reset: Key- or wrench-operated switch.

2.05 SYSTEM SMOKE DETECTORS

A. General Requirements for System Smoke Detectors:

1. Comply with UL 168; operating at 24-V dc, nominal.
2. Detectors shall be four-wire type.
3. Integral Addressable Module: Arranged to communicate detector status (normal, alarm, or trouble) to fire-alarm control unit.
4. Base Mounting: Detector and associated electronic components shall be mounted in a twist-lock module that connects to a fixed base. Provide terminals in the fixed base for connection to building wiring.
5. Self-Restoring: Detectors do not require resetting or readjustment after actuation to restore them to normal operation.
6. Integral Visual-Indicating Light: LED type indicating detector has operated and power-on status.
7. Remote Control: Unless otherwise indicated, detectors shall be analog-addressable type, individually monitored at fire-alarm control unit for calibration, sensitivity, and alarm condition and individually adjustable for sensitivity by fire-alarm control unit.
 - a. Rate-of-rise temperature characteristic shall be selectable at fire-alarm control unit for 15 or 20 deg F (8 or 11 deg C) per minute.
 - b. Fixed-temperature sensing shall be independent of rate-of-rise sensing and shall be settable at fire-alarm control unit to operate at 135 or 155 deg F (57 or 68 deg C).
 - c. Provide multiple levels of detection sensitivity for each sensor.

B. Photoelectric Smoke Detectors:

1. Detector address shall be accessible from fire-alarm control unit and shall be able to identify the detector's location within the system and its sensitivity setting.
2. An operator at fire-alarm control unit, having the designated access level, shall be able to manually access the following for each detector:
 - a. Primary status.
 - b. Device type.
 - c. Present average value.
 - d. Present sensitivity selected.
 - e. Sensor range (normal, dirty, etc.).

C. Duct Smoke Detectors: Photoelectric type complying with UL 168A.

1. Detector address shall be accessible from fire-alarm control unit and shall be able to identify the detector's location within the system and its sensitivity setting.
2. An operator at fire-alarm control unit, having the designated access level, shall be able to manually access the following for each detector:
 - a. Primary status.
 - b. Device type.
 - c. Present average value.
 - d. Present sensitivity selected.
 - e. Sensor range (normal, dirty, etc.).
3. Weatherproof Duct Housing Enclosure: NEMA 250, Type 4X; NRTL listed for use with the supplied detector.
4. Each sensor shall have multiple levels of detection sensitivity.

5. Sampling Tubes: Design and dimensions as recommended by manufacturer for specific duct size, air velocity, and installation conditions where applied.
6. Relay Fan Shutdown: Rated to interrupt fan motor-control circuit.

2.06 HEAT DETECTORS

- A. General Requirements for Heat Detectors: Comply with UL 521.
- B. Heat Detector, Combination Type: Actuated by either a fixed temperature of 135 deg F (57 deg C) or a rate of rise that exceeds 15 deg F (8 deg C) per minute unless otherwise indicated.
 1. Mounting: Twist-lock base interchangeable with smoke-detector bases.
 2. Integral Addressable Module: Arranged to communicate detector status (normal, alarm, or trouble) to fire-alarm control unit.
- C. Heat Detector, Fixed-Temperature Type: Actuated by temperature that exceeds a fixed temperature of 190 deg F (88 deg C).
 1. Mounting: Twist-lock base interchangeable with smoke-detector bases.
 2. Integral Addressable Module: Arranged to communicate detector status (normal, alarm, or trouble) to fire-alarm control unit.

2.07 NOTIFICATION APPLIANCES

- A. General Requirements for Notification Appliances: Individually addressed, connected to a signaling line circuit, equipped for mounting as indicated and with screw terminals for system connections.
 1. Combination Devices: Factory-integrated audible and visible devices in a single-mounting assembly, equipped for mounting as indicated and with screw terminals for system connections.
- B. Horns: Electric-vibrating-polarized type, 24-V dc; with provision for housing the operating mechanism behind a grille. Comply with UL 464. Horns shall produce a sound-pressure level of 90 dBA, measured 10 feet (3 m) from the horn, using the coded signal prescribed in UL 464 test protocol.
- C. Visible Notification Appliances: Xenon strobe lights comply with UL 1971, with clear or nominal white polycarbonate lens mounted on an aluminum faceplate. The word "Alert" is engraved in minimum 1-inch- (25-mm-) high letters on the lens.
 1. Rated Light Output:
 - a. 75, 110 and 177 cd as required by layout shown on drawing.
 - b. 15/30/75/110 cd, selectable in the field.
 2. Mounting: Wall mounted unless otherwise indicated.
 3. For units with guards to prevent physical damage, light output ratings shall be determined with guards in place.
 4. Flashing shall be in a temporal pattern, synchronized with other units.
 5. Strobe Leads: Factory connected to screw terminals.
 6. Mounting Faceplate: Factory finished, white.
- D. Finishes:

1. All Notification appliances shall be white, no exception

2.08 REMOTE ANNUNCIATOR

- A. Description: Annunciator functions shall match those of fire-alarm control unit for alarm, supervisory, and trouble indications. Annunciator located in the PBX room command center shall be equipped with remote microphone and shall be network display unit (NDU) type. Manual switching functions shall match those of fire-alarm control unit, including acknowledging, silencing, resetting, and testing.
 1. Mounting: Flush cabinet, NEMA 250, Type 1.
- B. Display Type and Functional Performance: Alphanumeric display and LED indicating lights shall match those of fire-alarm control unit. Provide controls to acknowledge, silence, reset, and test functions for alarm, supervisory, and trouble signals.
- C. Remote annunciators shall be flush mounted.

2.09 ADDRESSABLE INTERFACE DEVICE

- A. Description: Microelectronic monitor module, NRTL listed for use in providing a system address for alarm-initiating devices for wired applications with normally open contacts.
- B. Integral Relay: Capable of providing a direct signal to elevator controller to initiate elevator recall and to circuit-breaker shunt trip for power shutdown. Direct signal to all sound consoles and paging system. Fire alarm system shall override sound and paging systems when is in alarm.

2.010 DIGITAL ALARM COMMUNICATOR TRANSMITTER

- A. Digital alarm communicator transmitter shall be acceptable to the remote central station and shall comply with UL 632 and be listed and labeled by an NRTL.
- B. Functional Performance: Unit shall receive an alarm, supervisory, or trouble signal from fire-alarm control unit and automatically capture two telephone line(s) and dial a preset number for a remote central station. When contact is made with central station(s), signals shall be transmitted. If service on either line is interrupted for longer than 45 seconds, transmitter shall initiate a local trouble signal and transmit the signal indicating loss of telephone line to the remote alarm receiving station over the remaining line. Transmitter shall automatically report telephone service restoration to the central station. If service is lost on both telephone lines, transmitter shall initiate the local trouble signal.
- C. Local functions and display at the digital alarm communicator transmitter shall include the following:
 1. Verification that both telephone lines are available.
 2. Programming device.
 3. LED display.
 4. Manual test report function and manual transmission clear indication.
 5. Communications failure with the central station or fire-alarm control unit.
- D. Digital data transmission shall include the following:
 1. Address of the alarm-initiating device.

2. Address of the supervisory signal.
 3. Address of the trouble-initiating device.
 4. Loss of ac supply or loss of power.
 5. Low battery.
 6. Abnormal test signal.
 7. Communication bus failure.
- E. Secondary Power: Integral rechargeable battery and automatic charger.
- F. Self-Test: Conducted automatically every 24 hours with report transmitted to central station.
- G. Fire alarm panel shall be networkable type.

2.011 WIRE GUARD

- A. Provide wire guard for all devices shown to be installed in gymnasiums.

PART 3 - EXECUTION

3.01 EQUIPMENT INSTALLATION

- A. Comply with NFPA 72 for installation of fire-alarm equipment.
- B. Equipment Mounting: Install fire-alarm control unit on finished floor with tops of cabinets not more than 72 inches (1830 mm) above the finished floor.
1. Comply with requirements for seismic-restraint devices specified in Division 26 Section "Vibration and Seismic Controls for Electrical Systems."
 2. Comply with requirements for seismic-restraint devices specified in Division 26 Section "Vibration and Seismic Controls for Electrical Systems."
- C. Smoke- or Heat-Detector Spacing:
1. Comply with NFPA 72, "Smoke-Sensing Fire Detectors" Section in the "Initiating Devices" Chapter, for smoke-detector spacing.
 2. Comply with NFPA 72, "Heat-Sensing Fire Detectors" Section in the "Initiating Devices" Chapter, for heat-detector spacing.
 3. Smooth ceiling spacing shall not exceed 30 feet (9 m).
 4. Spacing of detectors for irregular areas, for irregular ceiling construction, and for high ceiling areas shall be determined according to Appendix A or Appendix B in NFPA 72.
 5. HVAC: Locate detectors not closer than 3 feet (1 m) from air-supply diffuser or return-air opening.
 6. Lighting Fixtures: Locate detectors not closer than 12 inches (300 mm) from any part of a lighting fixture.
- D. Duct Smoke Detectors: Comply with NFPA 72 and NFPA 90A. Install sampling tubes so they extend the full width of duct.
- E. Heat Detectors in Elevator Shafts: Coordinate temperature rating and location with sprinkler rating and location.

- F. Single-Station Smoke Detectors: Where more than one smoke alarm is installed within a dwelling or suite, they shall be connected so that the operation of any smoke alarm causes the alarm in all smoke alarms to sound.
- G. Remote Status and Alarm Indicators: Install near each smoke detector and each sprinkler water-flow switch and valve-tamper switch that is not readily visible from normal viewing position.
- H. Audible Alarm-Indicating Devices: Install not less than 6 inches (150 mm) below the ceiling. Install bells and horns on flush-mounted back boxes with the device-operating mechanism concealed behind a grille.
- I. Visible Alarm-Indicating Devices: Install adjacent to each alarm bell or alarm horn and at least 6 inches (150 mm) below the ceiling.
- J. Device Location-Indicating Lights: Locate in public space near the device they monitor.
- K. Fire-Alarm Control Unit: Surface mounted, with tops of cabinets not more than 72 inches (1830 mm) above the finished floor.
- L. Annunciator: Install with top of panel not more than 72 inches (1830 mm) above the finished floor.

3.02 CONNECTIONS

- A. For fire-protection systems related to doors in fire-rated walls and partitions and to doors in smoke partitions, comply with requirements in Division 08 Section "Door Hardware." Connect hardware and devices to fire-alarm system.
 - 1. Verify that hardware and devices are NRTL listed for use with fire-alarm system in this Section before making connections.
- B. Make addressable connections with a supervised interface device to the following devices and systems. Install the interface device less than 3 feet (1 m) from the device controlled. Make an addressable confirmation connection when such feedback is available at the device or system being controlled.
 - 1. Alarm-initiating connection to smoke-control system (smoke management) at firefighter smoke-control system panel.
 - 2. Alarm-initiating connection to stairwell and elevator-shaft pressurization systems.
 - 3. Smoke dampers in air ducts of designated air-conditioning duct systems.
 - 4. Alarm-initiating connection to elevator recall system and components.
 - 5. Alarm-initiating connection to activate emergency lighting control.
 - 6. Alarm-initiating connection to activate emergency shutoffs for gas and fuel supplies.
 - 7. Supervisory connections at valve supervisory switches.
 - 8. Supervisory connections at low-air-pressure switch of each dry-pipe sprinkler system.
 - 9. Supervisory connections at elevator shunt trip breaker.
 - 10. Supervisory connections at fire-pump power failure including a dead-phase or phase-reversal condition.
 - 11. Supervisory connections at fire-pump engine control panel.

3.03 IDENTIFICATION

- A. Identify system components, wiring, cabling, and terminals. Comply with requirements for identification specified in Division 26 Section "Identification for Electrical Systems."

- B. All fire alarm conduits shall be red.
- C. All fire alarm box covers shall be painted red.
- D. Install framed instructions in a location visible from fire-alarm control unit.

3.04 GROUNDING

- A. Ground fire-alarm control unit and associated circuits; comply with IEEE 1100. Install a ground wire from main service ground to fire-alarm control unit.

3.05 FIELD QUALITY CONTROL

- A. Field tests shall be witnessed by Architect, authorities having jurisdiction, owner and commissioning agent.
- B. Manufacturer's Field Service: Engage a factory-authorized service representative to inspect, test, and adjust components, assemblies, and equipment installations, including connections.
- C. Perform tests and inspections.
 - 1. Manufacturer's Field Service: Engage a factory-authorized service representative to inspect components, assemblies, and equipment installations, including connections, and to assist in testing.
- D. Tests and Inspections:
 - 1. Visual Inspection: Conduct visual inspection prior to testing.
 - a. Inspection shall be based on completed Record Drawings and system documentation that is required by NFPA 72 in its "Completion Documents, Preparation" Table in the "Documentation" Section of the "Fundamentals of Fire Alarm Systems" Chapter.
 - b. Comply with "Visual Inspection Frequencies" Table in the "Inspection" Section of the "Inspection, Testing and Maintenance" Chapter in NFPA 72; retain the "Initial/Reacceptance" column and list only the installed components.
 - 2. System Testing: Comply with "Test Methods" Table in the "Testing" Section of the "Inspection, Testing and Maintenance" Chapter in NFPA 72.
 - 3. Test audible appliances for the public operating mode according to manufacturer's written instructions. Perform the test using a portable sound-level meter complying with Type 2 requirements in ANSI S1.4.
 - 4. Test audible appliances for the private operating mode according to manufacturer's written instructions.
 - 5. Test visible appliances for the public operating mode according to manufacturer's written instructions.
 - 6. Factory-authorized service representative shall prepare the "Fire Alarm System Record of Completion" in the "Documentation" Section of the "Fundamentals of Fire Alarm Systems" Chapter in NFPA 72 and the "Inspection and Testing Form" in the "Records" Section of the "Inspection, Testing and Maintenance" Chapter in NFPA 72.

- E. Reacceptance Testing: Perform reacceptance testing to verify the proper operation of added or replaced devices and appliances.
- F. Fire-alarm system will be considered defective if it does not pass tests and inspections.
- G. Prepare test and inspection reports.
- H. Maintenance Test and Inspection: Perform tests and inspections listed for weekly, monthly, quarterly, and semiannual periods. Use forms developed for initial tests and inspections.
- I. Annual Test and Inspection: One year after date of Substantial Completion, test fire-alarm system complying with visual and testing inspection requirements in NFPA 72. Use forms developed for initial tests and inspections.

3.06 DEMONSTRATION

- A. Engage a factory-authorized service representative to train Owner's maintenance personnel to adjust, operate, and maintain fire-alarm system.

END OF SECTION