

PROJECT MANUAL  
ORANGE BEACH HIGH SCHOOL FIELD HOUSE  
ORANGE BEACH, ALABAMA



MCCOLLOUGH  
ARCHITECTURE

4790 Main Street, Suite F-209  
Orange Beach, Alabama 36561  
Tel: 251.968.7222

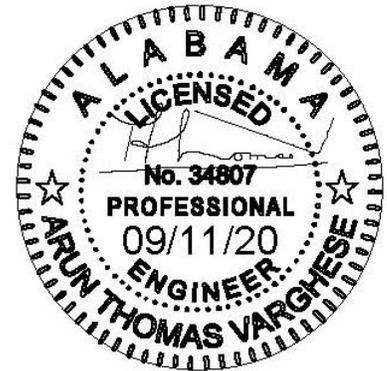
Architect's Project: 20-09



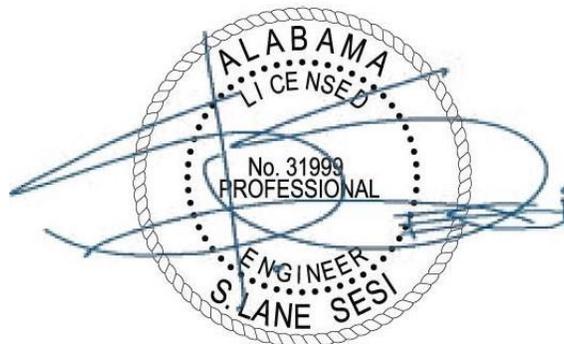
Mechanical/Plumbing Engineer



Architect



Electrical Engineer



Structural Engineer

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**NOTE:**

This Table of Contents is for convenience only. Its accuracy and completeness is not guaranteed, and it is not to be considered as part of the Specifications. In case of discrepancy between the Table of Contents and the Specifications, the Specifications shall govern.

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## ADVERTISEMENT FOR BIDS

Sealed proposals will be received by the City of Orange Beach at the office of the City Clerk located at Orange Beach City Hall, 4099 Orange Beach, AL 36561, until 2:00 PM, CST, January 21, 2021, for

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CITY OF ORANGE BEACH

at which time and place they will be publicly opened and read. General Contractor's License number and type must be on the envelope.

A cashier's check or bid bond payable to the City of Orange Beach in an amount not less than five (5) percent of the amount of the bid, but in no event more than \$10,000.00, must accompany the bidder's proposal. If awarded the bid and prior to beginning work, the Contractor is required to have a current City of Orange Beach Business License, furnish a Certificate of General Liability Insurance and Workers Compensation Insurance, and proof of Automobile General Liability Insurance. Insurance Certificate provided to the City shall name the City of Orange Beach as an additional insured. Performance and Payment Bonds must be executed upon award of the bid with a penalty equal to one hundred (100%) percent of the amount of the contract price.

Bid Drawings and specifications will be available and can be examined at Printing Pros on and after December 20, 2020.

Name of Architect: Sted McCollough  
Name of Company: McCollough Architecture  
Address: 4790 Wharf Pkwy Ste 209, Orange Beach, AL 36561  
Phone No.: (251) 968-7222

General Contractor Bidders may obtain a digital copy of the documents from Printing Pros in Orange Beach, Alabama. Hard copy sets of drawings and specifications will be available to qualified General Contractors and others for the cost of printing and handling directly from the document's printer: Printing Pros (22660 Canal Rd, Orange Beach, AL 36561; phone 251/974-5006). Addenda and other bidding information will be issued only to holders of drawings and specifications distributed by the Architect. Release of the Bid Documents to the bidder does not imply acceptance of the bidder's qualifications by the Owner or Architect.

Bid Documents can also be reviewed at Printing Pros. Cost of printing plans and specifications are non-refundable.

Bids must be submitted on proposal forms furnished by the Architect 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; 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 judgment, the best interests of the Owner will thereby be promoted.

A **Pre-Bid Conference** will be held at the City of Orange Beach at the office of the City Clerk located at Orange Beach City Hall, 4099 Orange Beach Blvd Orange Beach, AL 36561 at 10:00 a.m. Thursday, January 14, 2021.  
**Attendance by General Contractor Bidders at Pre-Bid Conference is mandatory.**

Awarding Authority:  
City of Orange Beach

Architect:  
McCollough Architecture: Sted McCollough, President

**ALL BIDS MUST BE RETURNED AS FOLLOWS:**

All bidders must use the bid form provided in the bid documents and show on the envelope "SEALED BID", the bid title, the bidder's name, and the opening date and time.

Mailed Bids via U.S. Postal Service  
City of Orange Beach  
Attention: City Clerk  
P.O. Box 458  
Orange Beach, AL 36561

Hand Delivered Bids  
City of Orange Beach  
Attention: City Clerk  
4099 Orange Beach Blvd  
Orange Beach, AL 36561

**INSTRUCTIONS TO BIDDERS & GENERAL CONDITIONS  
(PUBLIC WORKS PROJECTS)**

**1.0 INTRODUCTION**

All bidders will be bound to the general conditions and requirements set forth in these general instructions and such instructions shall form an integral part of each purchase contract awarded by the City of Orange Beach. Applicability of general conditions as stated below shall be determined by the City of Orange Beach. All bids must be submitted on and in accordance with the instructions provided by the City of Orange Beach.

**2.0 BID DOCUMENTS**

A complete set of Bid Documents is included herein. The date, time, and place of a bid opening will be given in the Invitation to bidders. Copies of the complete set of Bid Documents may be inspected and/or obtained at the following location:

City of Orange Beach  
4099 Orange Beach Blvd.  
Orange Beach, AL 36561

Or downloaded from the City's website:  
[www.orangebeachal.gov](http://www.orangebeachal.gov), see "Bids"

**3.0 EXAMINATION OF DOCUMENTS AND PROJECT SITE**

- 3.1 Carefully examine the Bid Documents, Specifications, and the Work Site.
- 3.2 Bids shall include all costs required to execute the work under the existing conditions.
- 3.3 Extra payments will not be made for conditions which can be determined by examining the documents and the site.

**4.0 INTERPRETATIONS AND ADDENDA**

- 4.1 Should a bidder find discrepancies, ambiguities, or omissions in the Specifications, or should he/she be in doubt as to their meaning, he/she shall immediately notify the City Clerk (Renee Eberly at 251.981.6806 or [reberly@orangebeachal.gov](mailto:reberly@orangebeachal.gov)).
- 4.2 The City Clerk will issue Addenda to clarify discrepancies, ambiguities, or omissions in the Specifications.
- 4.3 Addenda will be posted on the City's website at: [www.orangebeachal.gov](http://www.orangebeachal.gov)
- 4.4 Addenda shall become part of the bid and all bidders must acknowledge receipt of Addenda on their Bid Form or their bid will be rejected. Bidders shall be bound by all Addenda.
- 4.5 The City is not responsible for any oral instructions.

**5.0 PREPARATION OF BID**

- 5.1 The bid must be submitted on the Bid Form furnished. All information required by the Bid Documents must be given to constitute a complete bid.
- 5.2 The Bidder must print, in figures, without interlineations, alterations, or erasures, a Unit Price. The Bidder shall then print the total sum on the line designated as "Bid Total." The City will check the total sum

printed by the Bidder, and, in case of error or discrepancy, the unit price shall prevail, and the total shall be corrected.

- 5.3 Prices and all information must be legible. Illegible or vague bids may be rejected.
- 5.4 All signatures must be written. Facsimile, printed, or typewritten signatures are not acceptable.
- 5.5 Under penalty of perjury, the Bidder certifies by signature on the Bid Form that:
  - The bid has been arrived at by the Bidder independently and has been submitted without collusion with any other vendor of materials, supplies, equipment, or services for the type described in the Invitation to Bid; and
  - The contents of the bid have not been communicated by the Bidder; nor to his/her best knowledge and belief by any of his/her employees or agents to any person not an employee or agent of the Bidder or its surety on any bond furnished herewith prior to the official opening of the bid.

## **6.0 DELIVERY AND SUBMISSION OF BID**

- 6.1 Each bid shall be placed, together with the Bid Bond, if applicable, in a sealed envelope. Bid envelopes must be clearly marked "SEALED BID," the Bidder's name, the title of the bid, and the opening date and time.
- 6.2 All bids received after the time stated in the Invitation to Bid will not be considered and will be returned unopened to the Bidder. The Bidder assumes risk of delay in the mail. Whether sent by mail or by means of personal delivery, the bidder assumes responsibility for having bids deposited on time at the place specified.
- 6.3 The submission of a bid will be construed to mean that the Bidder is fully informed as to the extent and character of the supplies, materials, or equipment required, and as a representation that the bidder can furnish the supplies, materials, or equipment satisfactorily in complete compliance with the specifications.

## **7.0 MODIFICATIONS AND WITHDRAWALS OF BIDS**

- 7.1 No alteration, erasure, or addition is to be made in the typewritten or printed matter. Deviations from the specifications must be set forth in the space provided in bid or by attached sheets for this purpose.
- 7.2 Bids may not be modified after submittal.
- 7.3 Bidder may withdraw his/her bid, either personally or by written request, at any time prior to the scheduled bid opening time.
- 7.4 No bidder may withdraw his/her bid for a period of thirty (30) days after the bid opening.

## **8.0 RIGHT TO REJECT BID**

Bids may be rejected if they contain any omissions, alterations of form, additions not called for, conditional bids, alternate bids unless requested by the City, incomplete bids, erasures, or irregularities of any kind. Bids in which the Unit or Lump Sum prices are obviously unbalanced may be rejected. The City reserves the right to reject any and all bids for any reason and to waive any informality or irregularity in the bids received.

## **9.0 BASIS OF AWARD**

- 9.1 The City will award a single contract, dependent on the availability of funds.
- 9.2 The contract will be awarded to the lowest responsive qualified contractor, subject to the City's right to reject any or all bids and to waive informality and irregularity in bids and bidding.

9.3 The City shall have the right to accept alternates in any order or combination, unless otherwise specifically provided in the bid documents, and to determine the low bidder on the basis of the sum of the base bid and alternates accepted.

**10.0 SAMPLE OF MATERIALS**

Sample of items, when required, must be furnished free of expense to the City and, if not destroyed, will upon request be returned at the bidder's expense.

**11.0 PRE-QUALIFICATION OF CONTRACTORS**

Each Bidder shall be prepared, if requested by the City, to present evidence of its experience, qualifications, and financial ability to carry out the terms of the Contract. The City reserves the right to disqualify any bidder who, in the sole judgement of the City, fails to adequately demonstrate qualifications and experience sufficient to enable that bidder to successfully complete the scope of work under this Contract.

**12.0 EXECUTION OF CONTRACT**

12.1 Within ten (10) days of Notice of Award, the Contractor shall deliver to the City proof of insurance as required by Contract Documents. All proof of insurance shall be approved by the City before the Contractor may proceed with Work.

12.2 The Contractor shall commence work within ten (10) days following receipt of the Notice to Proceed or on a date stipulated in the authorization to proceed.

**13.0 LAWS AND REGULATIONS**

The Contractor's attention is directed to the fact that all applicable State laws, Municipal Ordinances, and the Rules and Regulations of all authorities having jurisdiction over construction of the project shall apply to the Contract throughout, and they will be deemed to be included in the Contract the same as though herein written out in full.

**14.0 ALABAMA LICENSE CONTRACTOR**

All Contractors submitting bids in excess of Fifty Thousand Dollars (\$50,000.00) must be licensed contractors in the State of Alabama and must state their License Number on their Bid Form. Contracts less than Fifty Thousand Dollars (\$50,000.00) will not require a General Contractor's License; however, all other requirements shall remain the same.

**15.0 BUSINESS LICENSE**

The successful bidder will be required to obtain a City of Orange Beach Business License in order to operate within the Corporate Limits.

**16.0 BID BOND**

All bids in excess of Fifty Thousand Dollars (\$50,000.00) shall require a bid bond equal to 5% of the contract amount or \$10,000, whichever is lesser. Bid bonds will be returned by the City after the contract has been awarded.

**17.0 PERFORMANCE BOND**

If the winning bid is in excess of Fifty Thousand Dollars (\$50,000.00), the Contractor shall obtain a performance bond equal to 100% of the contract amount and shall provide such bond within ten (10) days of Notice of Award.

**18.0 LABOR & MATERIALS BOND**

If the winning bid is in excess of Fifty Thousand Dollars (\$50,000.00), the Contractor shall obtain a Labor & Materials Payment Bond equal to but not less than 50% of the contract amount and shall provide such bond within ten (10) days of Notice of Award. The bond shall include payment of reasonable attorney's fees incurred by successful claimants in civil actions.

## **19.0 INSURANCE REQUIREMENTS**

Contractor agrees, at its sole expense, to maintain on a primary and non-contributory basis during the life of this Contract, or the performance of Work hereunder, insurance coverages, limits, and endorsements as set out below. Contractor agrees to obtain Commercial General Liability, Business Auto Liability, Worker's Compensation, and Commercial Umbrella/Excess Liability before starting the work. Contractor also agrees to undertake the obligation to ensure that all subcontractors abide by these same insurance requirements.

The Contractor agrees the insurance requirements herein as well as City's review or acknowledgment is not intended to and shall not in any manner limit or qualify the liabilities and obligations assumed by the Contractor under this Contract.

### ***Commercial General Liability***

Contractor agrees to maintain Commercial General Liability at a limit of liability not less than \$1,000,000 Each Occurrence, \$2,000,000 Annual Aggregate. Contractor agrees its coverage will not contain any restrictive endorsement(s) excluding or limiting Product/Completed Operations, Independent Contractors, Broad Form Property Damage, X-C-U Coverage, Contractual Liability, or Cross Liability.

### ***Business Automobile Liability***

Contractor agrees to maintain Business Automobile Liability at a limit of liability not less than \$1,000,000 Each Occurrence. Coverage shall include liability for Owned, Non-Owned, and Hired Automobiles.

### ***Worker's Compensation & Employer's Liability***

Regardless of any "minimum requirements" of the State of Alabama, Contractor shall obtain Worker's Compensation insurance covering **all** workers involved in the Work. (Note: Elective exemptions or coverage through an employee leasing arrangement will violate this requirement.) Subcontractor shall also obtain Employer's Liability insurance with minimum limits of \$500,000 Each Accident, \$500,000 Disease Policy Limit, and \$500,000 Each Employee.

### ***Commercial Umbrella/Excess Liability***

Contractor agrees to maintain either a Commercial Umbrella or Excess Liability at a limit of liability not less than \$1,000,000 Each Occurrence, \$1,000,000 Aggregate. The Contractor agrees to endorse the City as an "Additional Insured" on the Commercial Umbrella/Excess Liability, unless the Commercial Umbrella/Excess Liability provides coverage on a pure/true follow-form basis, or the City is automatically defined as an Additional Protected Person.

### ***Additional Insured Endorsements***

The Contractor agrees to endorse the City as an Additional Insured on the Commercial General Liability with the following Additional Insured endorsement, or similar endorsement providing equal or broader Additional Insured coverage than:

- CG2010 10 01 – Additional Insured; Owners, Lessees, or Contractors, OR
- CG2010 07 04 – Additional Insured; Owners, Lessees, or Contractors; Scheduled Person or Organization endorsement

The name of the organization endorsed as Additional Insured for all endorsements shall read "City of Orange Beach."

### ***Waiver of Subrogation***

Contractor agrees by entering into this written Contract to a Waiver of Subrogation in favor of the City . If a policy prohibits waiving subrogation rights without an endorsement, the Contractor agrees to endorse it with a Waiver of Transfer of Rights of Recovery against Others, or an equivalent endorsement. This Waiver of Subrogation requirement shall not apply to any policy which voids coverage if subrogation is waived.

***Right to Revise or Reject***

The City reserves the right to revise any insurance requirement based on insurance market conditions affecting the availability or affordability of coverage; or changes in the scope of work/specifications affecting the applicability of coverage. Additionally, the City reserves the right, but not the obligation, to review and reject and insurance policies failing to meet the criteria stated herein, or any insurer(s) providing coverage, due to its poor financial condition or failure to operate legally in the State of Alabama. In such events, City shall provide Contractor written notice of such revisions or rejections.

***No Representation of Coverage Adequacy***

The coverages, limits, or endorsements required herein protect the primary interests of the City , and the Contractor agrees in no way should these coverages, limits, or endorsements required be relied upon when assessing the extent or determining appropriate types and limits of coverage to protect the Contractor against any loss exposures, whether as a result of the Project or otherwise.

***Certificate of Insurance***

Contractor agrees to provide City a Certificate of Insurance evidencing the above coverages. If the Contractor receives a non-renewal or cancellation or other material change notice from an insurance carrier affording coverage required herein, Contractor agrees to notify the City immediately with specifics as to which coverage is no longer in compliance. The City shall have the right, but not the obligation, of prohibiting Contractor from entering the Work site until a new Certificate of Insurance is provided to the City evidencing the replacement coverage. The Contractor agrees the City reserves the right to withhold payment to Contractor until evidence of reinstated or replacement coverage is provided to the City. If the Contractor fails to maintain the insurance as set forth herein, the Contractor agrees the City shall have the right, but not the obligation, to purchase replacement insurance, which the Contractor agrees to reimburse any premiums or expenses incurred by the City .

The Contractor agrees the Certificate(s) of Insurance shall:

1. Clearly indicate the City has been endorsed on the Commercial Umbrella/Excess Liability and Commercial General Liability policy as an Additional Insured. Clearly indicate the project name and project number.
2. Clearly indicated Certificate Holder(s) as follows:

Original to: City of Orange Beach  
Attn: Renee Eberly  
4099 Orange Beach Blvd.  
Orange Beach, AL 36561  
reberly@orangebeachal.gov

**20.0 COMPLETION DATE**

- 20.1 Unless otherwise specified by the City , the Contractor shall commence the work within ten (10) days from the date of receipt of the Notice to Proceed, and shall complete the work within one-hundred and fifty two days (152) calendar days from the date of receipt of the Notice to Proceed.
- 20.2 The completion date shall not be extended except for unavoidable delays caused by, but not limited to, fires, floods, storms, strikes, accidents, or other circumstances beyond the Contractor’s control. The Contractor may request additional completion time within one week from the occurrence of the delay. The City shall be the sole judge of such “unavoidable delays,” and the extent thereof. In the event that

such a determination is made, the date of completion shall be extended by a length of time equal to that lost by such circumstances. The City shall not be liable to the Contractor for any damages or additional compensation as a consequence of any delay, hindrance, interference, or other similar event beyond the City's control. Failure by the Contractor to notify the City within one week from the occurrence of delay will constitute a forfeiture of any potential time extension.

**21.0 LIQUIDATED DAMAGES**

21.1 Deduction at the rate of Five Hundred Dollars (\$500.00) per day shall be made from the total Contract price for each and every calendar day beyond the thirty (30) days from the date of Notice to Proceed that the work remains not satisfactorily completed.

21.2 The above-mentioned sum shall be deducted as Liquidated Damages. Such liquidated damages are intended to represent estimated actual damages and are not intended as a penalty, and Contractor shall pay them to the City without limiting the City's right to terminate this agreement for default as provided elsewhere herein.

**22.0 DEFAULT OF CONTRACTOR**

In cases of default of the contractor, the City may procure the Work from other sources and hold the contractor responsible for any excess cost occasioned thereby.

**23.0 PAYMENT**

The Bidder may submit an Application for Payment for provided labor and materials in accordance with the accepted Unit Prices. Payment shall be made to the Bidder within thirty (30) days of receipt and approval of Application for Payment.

SECTION 00 3100

AVAILABLE PROJECT INFORMATION

PART 1 GENERAL

1.01 EXISTING CONDITIONS

- A. Certain information relating to existing surface and subsurface conditions and structures is available to bidders but will not be part of the Contract Documents, as follows:
- B. Alabama Line Locator Service - Alabama 811: [www.al1call.com](http://www.al1call.com).
  - 1. To utilize AL 811 services and comply with Alabama Law excavators need to call Alabama 811 at least 48 hours, excluding weekends and holidays, prior to commencing work.
  - 2. Contact Alabama 811 by calling 1-800-292-8525, or #DIG which is a free call with certain wireless providers. Approved users may notify AL 811's members through the remote ticket entry program.
- C. Geotechnical Report: Report of Geotechnical Exploration, Orange Beach High School Field House, 23908 Canal Road, Orange Beach, Alabama, Prepared by GeoCon Engineering & materials Testing, Inc. and dated in the year, 2020.
  - 1. Copy is attached following this Section.
  - 2. This report identifies properties of below grade conditions and offers recommendations for the design of foundations, prepared primarily for the use of Architect.
  - 3. The commendations described shall not be construed as a requirement of this Contract, unless specifically reference in the Contract Documents.
  - 4. This report, by its nature cannot reveal all conditions that exist on the site. Should subsurface conditions be found to vary substantially from this report, changes in the design and construction of foundations will be made, with resulting credits or expenditures to the Contract Price accruing to Owner.

**PART 2 PRODUCTS (NOT USED)**

**PART 3 EXECUTION (NOT USED)**

**END OF SECTION**

SECTION 00 4000  
PROCUREMENT FORMS AND SUPPLEMENTS

PART 1 GENERAL

- 1.01 CONTRACTOR IS RESPONSIBLE FOR OBTAINING A VALID LICENSE TO USE ALL COPYRIGHTED DOCUMENTS SPECIFIED, UNLESS LEGAL COPIES ARE INCLUDED IN THE PROJECT MANUAL.
- A. AIA documents may be obtained individually at the following web site:  
<https://documentsondemand.aia.org>.
  - B. AIA document bulk licensing may be obtained at the following web site:  
<http://www.aia.org/contractdocs/forcontractors/index.htm>.
- 1.02 FORMS
- A. Use the following forms for the specified purposes unless otherwise indicated elsewhere in the procurement requirements.
  - B. Instructions to Bidders: AIA A701, Section 00 2113.
  - C. Substitution Request Form (During Procurement): CSI Form 1.5C, 2013 Edition.
  - D. Bid Form: Section 00 4100 - Bid Form.
  - E. Procurement Form Supplements:
    - 1. Bid Security Form: AIA A310.
    - 2. Substitution Request Form (for substitutions requested with bid): 00 4325 – Substitution Request Form, CSI/CSC Form 1.5C - Substitution Request Form (During the Bidding/Negotiating Stage).
    - 3. Proposed Schedule of Values Form: AIA G703.
  - F. Representations and Certifications:
    - 1. Bidder's Qualifications: AIA A305.
- 1.03 REFERENCE STANDARDS
- A. AIA A305 - Contractor's Qualification Statement; 1986.
  - B. AIA A310 - Bid Bond; 2010.
  - C. AIA A701 - Instructions to Bidders; 2007.
  - D. AIA G703 - Continuation Sheet; 1992.
  - E. CSI/CSC Form 1.5C - Substitution Request (During the Bidding/Negotiating Stage); Current Edition.

PART 2 PRODUCTS - NOT USED

PART 3 EXECUTION - NOT USED

END OF SECTION

PROPOSAL FORM

TO: **City of Orange Beach**, Orange Beach, Alabama, hereinafter called the Owner

Date: \_\_\_\_\_

In compliance with the Invitation to Bid 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: Orange Beach High School Field House

\_\_\_\_\_  
in accordance with Drawings and Specifications, dated \_\_\_\_\_, prepared by  
McCollough Architecture, 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 (\$ \_\_\_\_\_)

ALLOWANCE: Include allowances in Base Bid in accord with Section 01 2100 - Allowances  
Allowance No. 1 Contractor shall provide Builders' Risk Insurance and indicate 100% of the total deductible  
amount below. All unclaimed deductible amounts will be reimbursed to the Owner at project completion  
as a deductive change order to the contractor. Contractor shall provide evidence from insurer of 100%  
deductive amount within 48 hours of bid.

\_\_\_\_\_  
Dollars (\$ \_\_\_\_\_)

TOTAL BID (including Base Bid & Allowance): \_\_\_\_\_  
Dollars (\$ \_\_\_\_\_)

Attach Section 004102 – Bid Proposal Form Attachment "A" to this Bid Proposal Form.

ALTERNATES: If alternates as set forth in the Bid Documents are accepted, the following adjustments are  
to be made to the Base Bid: Alternates are further described in Section 01 2300.

No Alternates.

BID SECURITY: The undersigned agrees to enter into a Construction Contract and furnish the prescribed Performance and Payment Bonds Alternates 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 blank 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 Owner.

BIDDER'S ALABAMA LICENSE:

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

**Also attached hereto is Document 00 4301 – Bid Form Supplements Cover Sheet and listed attachments.**

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 (type or print) \_\_\_\_\_ (Seal)

\* Title \_\_\_\_\_

Telephone Number \_\_\_\_\_

\* 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.

- END OF PROPOSAL FORM -

**ATTACHMENT 'A' TO BID FORM**  
**Orange Beach High School Field House**  
**Sales Tax**

**1.1 SALES TAX:**

- A. The undersigned provides the following Sales Tax value for information only. This value is NOT to be included as part of the base bid.
- B. Submit the following Sales Tax Value within 24 hours of the time scheduled for the opening of bids.

<u>ITEM</u>	<u>TOTAL</u>
Base Bid Sales Tax	\$

<u>ITEM</u>	<u>TOTAL</u>
<b>Alternate 1 Sales Tax</b>	<b>\$</b>
<b>TOTAL</b>	<b>\$</b>

**END OF ATTACHMENT A TO BID FORM**



### REQUIREMENTS FOR CONTRACTS AND PURCHASES

Effective January 1, 2012 under the "Beason-Hammon Alabama Taxpayer and Citizen Protection Act," Act No. 2011-535, Alabama Code (1975) Section 31-13-1, Et Seq., before entering into a contract with the City to:

1. Perform a service;
2. Perform work;
3. Provide a product;
4. Accept a grant; and/or
5. Accept an initiative

The State of Alabama requires the business entity to sign a notarized affidavit agreeing:

1. Not to knowingly employ, hire for employment, or continue to employ, any unauthorized aliens in the State of Alabama;
2. To enroll in the E-Verify Program, to verify the immigration status of every employee required to be re-verified through that system and to provide documentation of its enrollment; and
3. To require its subcontractors to comply with the above requirements.

Before any contract can be let, purchase can be made, or payment can be issued by the City of Orange Beach after January 1, 2012, the Affidavit on the reverse side of this document must be completed, notarized, and returned to our offices.

Note: Proof of enrollment in the E-Verify Program must accompany the Affidavit, unless you do not have or hire any employees.

Questions about this process may be directed to Renee Eberly, City Clerk/Procurement Officer, at (251) 981-6806 or via e-mail at [reberly@orangebeachal.gov](mailto:reberly@orangebeachal.gov).

**COMPLETED AFFIDAVIT MUST BE RETURNED IN SEALED BID.**

AFFIDAVIT OF CONTRACTOR OR DIRECT VENDOR

State of \_\_\_\_\_

County of \_\_\_\_\_

Before me, a notary public, personally appeared \_\_\_\_\_ (print name) who, being duly sworn, says as follows:

As a condition for the award of any contract, grant, or incentive by the City of Orange Beach, Alabama, I hereby attest that in my capacity as \_\_\_\_\_ (state position) for \_\_\_\_\_ (state business entity/employer/contractor name) that said business entity/employer/contractor shall not knowingly employ, hire for employment, or continue to employ an unauthorized alien within the State of Alabama.

I further attest that said business entity/employer/contractor is enrolled in the E-Verify program.

(Attach documentation establishing that business entity/employer/contractor is enrolled in the E-Verify Program.)

\_\_\_\_\_  
Signature of Affiant

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

I certify that the affiant is known (or made known) to me to be the identical party he or she claims to be.

\_\_\_\_\_  
Signature and Seal of Notary Public

My Commission Expires: \_\_\_\_\_



# AIA<sup>®</sup> Document A305<sup>™</sup> – 1986

## Contractor's Qualification Statement

The Undersigned certifies under oath that the information provided herein is true and sufficiently complete so as not to be misleading.

**SUBMITTED TO:**

**ADDRESS:**

**SUBMITTED BY:**

**NAME:**

**ADDRESS:**

**PRINCIPAL OFFICE:**

- Corporation
- Partnership
- Individual
- Joint Venture
- Other

**NAME OF PROJECT:** *(If applicable)*

**TYPE OF WORK:** *(File a separate form for each Classification of Work.)*

- General Construction
- HVAC
- Electrical
- Plumbing
- Other: *(Specify)*

### § 1.0 ORGANIZATION

§ 1.1 How many years has your organization been in business as a Contractor?

This form is approved and recommended by the American Institute of Architects (AIA) and The Associated General Contractors of America (AGC) for use in evaluating the qualifications of contractors. No endorsement of the submitting party or verification of the information is made by AIA or AGC.

§ 1.2 How many years has your organization been in business under its present business name?

§ 1.2.1 Under what other or former names has your organization operated?

§ 1.3 If your organization is a corporation, answer the following:

§ 1.3.1 Date of incorporation:

§ 1.3.2 State of incorporation:

§ 1.3.3 President's name:

§ 1.3.4 Vice-president's name(s):

§ 1.3.5 Secretary's name:

§ 1.3.6 Treasurer's name:

§ 1.4 If your organization is a partnership, answer the following:

§ 1.4.1 Date of organization:

§ 1.4.2 Type of partnership, if applicable:

§ 1.4.3 Name(s) of general partner(s):

§ 1.5 If your organization is individually owned, answer the following:

§ 1.5.1 Date of organization:

§ 1.5.2 Name of owner:

§ 1.6 If the form of your organization is other than those listed above, describe it and name the principals:

**§ 2.0 LICENSING**

§ 2.1 List jurisdictions and trade categories in which your organization is legally qualified to do business, and indicate registration or license numbers, if applicable.

§ 2.2 List jurisdictions in which your organization's partnership or trade name is filed.

**§ 3.0 EXPERIENCE**

§ 3.1 List the categories of work that your organization normally performs with its own forces.

**§ 3.2 Claims and Suits**

*(If the answer to any of the questions below is yes, attach details.)*

§ 3.2.1 Has your organization ever failed to complete any work awarded to it?

§ 3.2.2 Are there any judgments, claims, arbitration proceedings or suits pending or outstanding against your organization or its officers?

§ 3.2.3 Has your organization filed any law suits or requested arbitration with regard to construction contracts within the last five years?

§ 3.3 Within the last five years, has any officer or principal of your organization ever been an officer or principal of another organization when it failed to complete a construction contract?

*(If the answer is yes, attach details.)*

§ 3.4 On a separate sheet, list major construction projects your organization has in progress, giving the name of project, owner, architect, contract amount, percent complete and scheduled completion date.

§ 3.4.1 State total worth of work in progress and under contract:

§ 3.5 On a separate sheet, list the major projects your organization has completed in the past five years, giving the name of project, owner, architect, contract amount, date of completion and percentage of the cost of the work performed with your own forces.

§ 3.5.1 State average annual amount of construction work performed during the past five years:

§ 3.6 On a separate sheet, list the construction experience and present commitments of the key individuals of your organization.

#### § 4.0 REFERENCES

§ 4.1 Trade references:

§ 4.2 Bank references:

#### § 4.3 Surety

§ 4.3.1 Name of bonding company:

§ 4.3.2 Name and address of agent:

#### § 5.0 FINANCING

##### § 5.1 Financial Statement

§ 5.1.1 Attach a financial statement, preferably audited, including your organization's latest balance sheet and income statement showing the following items:

- .1 Current Assets (e.g., cash, joint venture accounts, accounts receivable, notes receivable, accrued income, deposits, materials inventory and prepaid expenses);
- .2 Net Fixed Assets;
- .3 Other Assets;
- .4 Current Liabilities (e.g., accounts payable, notes payable, accrued expenses, provision for income taxes, advances, accrued salaries and accrued payroll taxes); and
- .5 Other Liabilities (e.g., capital, capital stock, authorized and outstanding shares par values, earned surplus and retained earnings).

§ 5.1.2 Name and address of firm preparing attached financial statement, and date thereof:

§ 5.1.3 Is the attached financial statement for the identical organization named on page one?

§ 5.1.4 If not, explain the relationship and financial responsibility of the organization whose financial statement is provided (e.g., parent-subsiary).

§ 5.2 Will the organization whose financial statement is attached act as guarantor of the contract for construction?

§ 6.0 SIGNATURE

§ 6.1 Dated this \_\_\_\_\_ day of \_\_\_\_\_ 20\_\_\_\_

Name of organization:

By:

Title:

§ 6.2

M \_\_\_\_\_ being  
duly sworn deposes and says that the information provided herein is true and sufficiently complete so as not to be  
misleading.

Subscribed and sworn before me this \_\_\_\_\_ day of \_\_\_\_\_ 20\_\_\_\_

Notary Public:

My commission expires:

**CAUTION: You should sign an original AIA Contract Document, on which this text appears in RED. An original assures that changes will not be obscured.**

Do not staple this form; use clips.

# 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

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





# SUBSTITUTION REQUEST

(During the Bidding/Negotiating Stage)

Project: \_\_\_\_\_ Substitution Request Number: \_\_\_\_\_

From: \_\_\_\_\_

To: \_\_\_\_\_ Date: \_\_\_\_\_

A/E Project Number: \_\_\_\_\_

Re: \_\_\_\_\_ Contract For: \_\_\_\_\_

Specification Title: \_\_\_\_\_ Description: \_\_\_\_\_

Section: \_\_\_\_\_ Page: \_\_\_\_\_ Article/Paragraph: \_\_\_\_\_

Proposed Substitution: \_\_\_\_\_

Manufacturer: \_\_\_\_\_ Address: \_\_\_\_\_ Phone: \_\_\_\_\_

Trade Name: \_\_\_\_\_ Model No.: \_\_\_\_\_

Attached data includes product description, specifications, drawings, photographs, and performance and test data adequate for evaluation of the request; applicable portions of the data are clearly identified.

Attached data also includes a description of changes to the Contract Documents that the proposed substitution will require for its proper installation.

The Undersigned certifies:

- Proposed substitution has been fully investigated and determined to be equal or superior in all respects to specified product.
- Same warranty will be furnished for proposed substitution as for specified product.
- Same maintenance service and source of replacement parts, as applicable, is available.
- Proposed substitution will have no adverse effect on other trades and will not affect or delay progress schedule.
- Proposed substitution does not affect dimensions and functional clearances.
- Payment will be made for changes to building design, including A/E design, detailing, and construction costs caused by the substitution.

Submitted by: \_\_\_\_\_

Signed by: \_\_\_\_\_

Firm: \_\_\_\_\_

Address: \_\_\_\_\_



Telephone: \_\_\_\_\_

### A/E's REVIEW AND ACTION

- Substitution approved - Make submittals in accordance with Specification Section 01 25 00 Substitution Procedures.
- Substitution approved as noted - Make submittals in accordance with Specification Section 01 25 00 Substitution Procedures.
- Substitution rejected - Use specified materials.
- Substitution Request received too late - Use specified materials.

Signed by: \_\_\_\_\_

Date: \_\_\_\_\_

Supporting Data Attached:  Drawings  Product Data  Samples  Tests  Reports  \_\_\_\_\_



# 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.*

Company ID Number: \_\_\_\_\_

## THE E-VERIFY MEMORANDUM OF UNDERSTANDING FOR EMPLOYERS

### ARTICLE I PURPOSE AND AUTHORITY

The parties to this agreement are the Department of Homeland Security (DHS) and the \_\_\_\_\_ (Employer). The purpose of this agreement is to set forth terms and conditions which the Employer will follow while participating in E-Verify.

E-Verify is a program that electronically confirms an employee's eligibility to work in the United States after completion of Form I-9, Employment Eligibility Verification (Form I-9). This Memorandum of Understanding (MOU) explains certain features of the E-Verify program and describes specific responsibilities of the Employer, the Social Security Administration (SSA), and DHS.

Authority for the E-Verify program is found in Title IV, Subtitle A, of the Illegal Immigration Reform and Immigrant Responsibility Act of 1996 (IIRIRA), Pub. L. 104-208, 110 Stat. 3009, as amended (8 U.S.C. § 1324a note). The Federal Acquisition Regulation (FAR) Subpart 22.18, "Employment Eligibility Verification" and Executive Order 12989, as amended, provide authority for Federal contractors and subcontractors (Federal contractor) to use E-Verify to verify the employment eligibility of certain employees working on Federal contracts.

### ARTICLE II RESPONSIBILITIES

#### A. RESPONSIBILITIES OF THE EMPLOYER

1. The Employer agrees to display the following notices supplied by DHS in a prominent place that is clearly visible to prospective employees and all employees who are to be verified through the system:
  - a. Notice of E-Verify Participation
  - b. Notice of Right to Work
2. The Employer agrees to provide to the SSA and DHS the names, titles, addresses, and telephone numbers of the Employer representatives to be contacted about E-Verify. The Employer also agrees to keep such information current by providing updated information to SSA and DHS whenever the representatives' contact information changes.
3. The Employer agrees to grant E-Verify access only to current employees who need E-Verify access. Employers must promptly terminate an employee's E-Verify access if the

Page 1 of 13 E-Verify MOU for Web Services Employers | Revision Date 06/01/13

employee is separated from the company or no longer needs access to E-Verify.

4. The Employer agrees to become familiar with and comply with the most recent version of the E-Verify User Manual.

5. The Employer agrees that any Employer Representative who will create E-Verify cases will complete the E-Verify Tutorial before that individual creates any cases.

a. The Employer agrees that all Employer representatives will take the refresher tutorials when prompted by E-Verify in order to continue using E-Verify. Failure to complete a refresher tutorial will prevent the Employer Representative from continued use of E-Verify.

6. The Employer agrees to comply with current Form I-9 procedures, with two exceptions:

a. If an employee presents a "List B" identity document, the Employer agrees to only accept "List B" documents that contain a photo. (List B documents identified in 8 C.F.R. § 274a.2(b)(1)(B)) can be presented during the Form I-9 process to establish identity.) If an employee objects to the photo requirement for religious reasons, the Employer should contact E-Verify at 888-464-4218.

b. If an employee presents a DHS Form I-551 (Permanent Resident Card), Form I-766 (Employment Authorization Document), or U.S. Passport or Passport Card to complete Form I-9, the Employer agrees to make a photocopy of the document and to retain the photocopy with the employee's Form I-9. The Employer will use the photocopy to verify the photo and to assist DHS with its review of photo mismatches that employees contest. DHS may in the future designate other documents that activate the photo screening tool.

Note: Subject only to the exceptions noted previously in this paragraph, employees still retain the right to present any List A, or List B and List C, document(s) to complete the Form I-9.

7. The Employer agrees to record the case verification number on the employee's Form I-9 or to print the screen containing the case verification number and attach it to the employee's Form I-9.

8. The Employer agrees that, although it participates in E-Verify, the Employer has a responsibility to complete, retain, and make available for inspection Forms I-9 that relate to its employees, or from other requirements of applicable regulations or laws, including the obligation to comply with the antidiscrimination requirements of section 274B of the INA with respect to Form I-9 procedures.

a. The following modified requirements are the only exceptions to an Employer's obligation to not employ unauthorized workers and comply with the anti-discrimination provision of the INA: (1) List B identity documents must have photos, as described in paragraph 6 above; (2) When an Employer confirms the identity and employment eligibility of newly hired employee using E-Verify procedures, the Employer establishes a rebuttable presumption that it has not violated section 274A(a)(1)(A) of the Immigration and Nationality Act (INA) with respect to the hiring of that employee; (3) If the Employer receives a final nonconfirmation for an employee, but continues to employ that person, the Employer must notify DHS and the Employer is subject to a civil money penalty between \$550 and \$1,100 for each failure to notify DHS of continued employment

following a final nonconfirmation; (4) If the Employer continues to employ an employee after receiving a final nonconfirmation, then the Employer is subject to a rebuttable presumption that it has knowingly employed an unauthorized alien in violation of section 274A(a)(1)(A); and (5) no E-Verify participant is civilly or criminally liable under any law for any action taken in good faith based on information provided through the E-Verify.

b. DHS reserves the right to conduct Form I-9 compliance inspections, as well as any other enforcement or compliance activity authorized by law, including site visits, to ensure proper use of E-Verify.

9. The Employer is strictly prohibited from creating an E-Verify case before the employee has been hired, meaning that a firm offer of employment was extended and accepted and Form I-9 was completed. The Employer agrees to create an E-Verify case for new employees within three Employer business days after each employee has been hired (after both Sections 1 and 2 of Form I-9 have been completed), and to complete as many steps of the E-Verify process as are necessary according to the E-Verify User Manual. If E-Verify is temporarily unavailable, the three-day time period will be extended until it is again operational in order to accommodate the Employer's attempting, in good faith, to make inquiries during the period of unavailability.

10. The Employer agrees not to use E-Verify for pre-employment screening of job applicants, in support of any unlawful employment practice, or for any other use that this MOU or the E-Verify User Manual does not authorize.

11. The Employer must use E-Verify for all new employees. The Employer will not verify selectively and will not verify employees hired before the effective date of this MOU. Employers who are Federal contractors may qualify for exceptions to this requirement as described in Article II.B of this MOU.

12. The Employer agrees to follow appropriate procedures (see Article III below) regarding tentative nonconfirmations. The Employer must promptly notify employees in private of the finding and provide them with the notice and letter containing information specific to the employee's E-Verify case. The Employer agrees to provide both the English and the translated notice and letter for employees with limited English proficiency to employees. The Employer agrees to provide written referral instructions to employees and instruct affected employees to bring the English copy of the letter to the SSA. The Employer must allow employees to contest the finding, and not take adverse action against employees if they choose to contest the finding, while their case is still pending. Further, when employees contest a tentative nonconfirmation based upon a photo mismatch, the Employer must take additional steps (see Article III.B. below) to contact DHS with information necessary to resolve the challenge.

13. The Employer agrees not to take any adverse action against an employee based upon the employee's perceived employment eligibility status while SSA or DHS is processing the verification request unless the Employer obtains knowledge (as defined in 8 C.F.R. § 274a.1(l)) that the employee is not work authorized. The Employer understands that an initial inability of the SSA or DHS automated verification system to verify work authorization, a tentative nonconfirmation, a case in continuance (indicating the need for additional time for the government to resolve a case), or the finding of a photo mismatch, does not establish, and should not be interpreted as, evidence that the employee is not work authorized. In any of such cases, the employee must be provided a full and fair opportunity to contest the finding, and if he or she does so, the employee

may not be terminated or suffer any adverse employment consequences based upon the employee's perceived employment eligibility status (including denying, reducing, or extending work hours, delaying or preventing training, requiring an employee to work in poorer conditions, withholding pay, refusing to assign the employee to a Federal contract or other assignment, or otherwise assuming that he or she is unauthorized to work) until and unless secondary verification by SSA or DHS has been completed and a final nonconfirmation has been issued. If the employee does not choose to contest a tentative nonconfirmation or a photo mismatch or if a secondary verification is completed and a final nonconfirmation is issued, then the Employer can find the employee is not work authorized and terminate the employee's employment. Employers or employees with questions about a final nonconfirmation may call E-Verify at 1-888-464-4218 (customer service) or 1-888-897-7781 (worker hotline).

14. The Employer agrees to comply with Title VII of the Civil Rights Act of 1964 and section 274B of the INA as applicable by not discriminating unlawfully against any individual in hiring, firing, employment eligibility verification, or recruitment or referral practices because of his or her national origin or citizenship status, or by committing discriminatory documentary practices. The Employer understands that such illegal practices can include selective verification or use of E-Verify except as provided in part D below, or discharging or refusing to hire employees because they appear or sound "foreign" or have received tentative nonconfirmations. The Employer further understands that any violation of the immigration-related unfair employment practices provisions in section 274B of the INA could subject the Employer to civil penalties, back pay awards, and other sanctions, and violations of Title VII could subject the Employer to back pay awards, compensatory and punitive damages. Violations of either section 274B of the INA or Title VII may also lead to the termination of its participation in E-Verify. If the Employer has any questions relating to the anti-discrimination provision, it should contact the Immigrant and Employee Rights Section, Civil Rights Division, U.S. Department of Justice at 1-800-255-8155 or 1-800-237-2515 (TTY) or go to <https://www.justice.gov/ier>.

15. The Employer agrees that it will use the information it receives from E-Verify only to confirm the employment eligibility of employees as authorized by this MOU. The Employer agrees that it will safeguard this information, and means of access to it (such as PINS and passwords), to ensure that it is not used for any other purpose and as necessary to protect its confidentiality, including ensuring that it is not disseminated to any person other than employees of the Employer who are authorized to perform the Employer's responsibilities under this MOU, except for such dissemination as may be authorized in advance by SSA or DHS for legitimate purposes.

16. The Employer agrees to notify DHS immediately in the event of a breach of personal information. Breaches are defined as loss of control or unauthorized access to E-Verify personal data. All suspected or confirmed breaches should be reported by calling 1-888-464-4218 or via email at [E-Verify@dhs.gov](mailto:E-Verify@dhs.gov). Please use "Privacy Incident – Password" in the subject line of your email when sending a breach report to E-Verify.

17. The Employer acknowledges that the information it receives from SSA is governed by the Privacy Act (5 U.S.C. § 552a(i)(1) and (3)) and the Social Security Act (42 U.S.C. 1306(a)). Any person who obtains this information under false pretenses or uses it for any purpose other than as provided for in this MOU may be subject to criminal penalties.

18. The Employer agrees to cooperate with DHS and SSA in their compliance monitoring and evaluation of E-Verify, which includes permitting DHS, SSA, their contractors and

other agents, upon reasonable notice, to review Forms I-9 and other employment records and to interview it and its employees regarding the Employer's use of E-Verify, and to respond in a prompt and accurate manner to DHS requests for information relating to their participation in E-Verify.

19. The Employer shall not make any false or unauthorized claims or references about its participation in E-Verify on its website, in advertising materials, or other media. The Employer shall not describe its services as federally-approved, federally-certified, or federally-recognized, or use language with a similar intent on its website or other materials provided to the public. Entering into this MOU does not mean that E-Verify endorses or authorizes your E-Verify services and any claim to that effect is false.

20. The Employer shall not state in its website or other public documents that any language used therein has been provided or approved by DHS, USCIS or the Verification Division, without first obtaining the prior written consent of DHS.

21. The Employer agrees that E-Verify trademarks and logos may be used only under license by DHS/USCIS (see [M-795 \(Web\)](#)) and, other than pursuant to the specific terms of such license, may not be used in any manner that might imply that the Employer's services, products, websites, or publications are sponsored by, endorsed by, licensed by, or affiliated with DHS, USCIS, or E-Verify.

22. The Employer understands that if it uses E-Verify procedures for any purpose other than as authorized by this MOU, the Employer may be subject to appropriate legal action and termination of its participation in E-Verify according to this MOU.

## **B. RESPONSIBILITIES OF FEDERAL CONTRACTORS**

1. If the Employer is a Federal contractor with the FAR E-Verify clause subject to the employment verification terms in Subpart 22.18 of the FAR, it will become familiar with and comply with the most current version of the E-Verify User Manual for Federal Contractors as well as the E-Verify Supplemental Guide for Federal Contractors.

2. In addition to the responsibilities of every employer outlined in this MOU, the Employer understands that if it is a Federal contractor subject to the employment verification terms in Subpart 22.18 of the FAR it must verify the employment eligibility of any "employee assigned to the contract" (as defined in FAR 22.1801). Once an employee has been verified through E-Verify by the Employer, the Employer may not create a second case for the employee through E-Verify.

a. An Employer that is not enrolled in E-Verify as a Federal contractor at the time of a contract award must enroll as a Federal contractor in the E-Verify program within 30 calendar days of contract award and, within 90 days of enrollment, begin to verify employment eligibility of new hires using E-Verify. The Employer must verify those employees who are working in the United States, whether or not they are assigned to the contract. Once the Employer begins verifying new hires, such verification of new hires must be initiated within three business days after the hire date. Once enrolled in E-Verify as a Federal contractor, the Employer must begin verification of employees assigned to the contract within 90 calendar days after the date of enrollment or within 30 days of an employee's assignment to the contract, whichever date is later.

b. Employers enrolled in E-Verify as a Federal contractor for 90 days or more at the time of a contract award must use E-Verify to begin verification of employment

eligibility for new hires of the Employer who are working in the United States, whether or not assigned to the contract, within three business days after the date of hire. If the Employer is enrolled in E-Verify as a Federal contractor for 90 calendar days or less at the time of contract award, the Employer must, within 90 days of enrollment, begin to use E-Verify to initiate verification of new hires of the contractor who are working in the United States, whether or not assigned to the contract. Such verification of new hires must be initiated within three business days after the date of hire. An Employer enrolled as a Federal contractor in E-Verify must begin verification of each employee assigned to the contract within 90 calendar days after date of contract award or within 30 days after assignment to the contract, whichever is later.

c. Federal contractors that are institutions of higher education (as defined at 20 U.S.C. 1001(a)), state or local governments, governments of Federally recognized Indian tribes, or sureties performing under a takeover agreement entered into with a Federal agency under a performance bond may choose to only verify new and existing employees assigned to the Federal contract. Such Federal contractors may, however, elect to verify all new hires, and/or all existing employees hired after November 6, 1986. Employers in this category must begin verification of employees assigned to the contract within 90 calendar days after the date of enrollment or within 30 days of an employee's assignment to the contract, whichever date is later.

d. Upon enrollment, Employers who are Federal contractors may elect to verify employment eligibility of all existing employees working in the United States who were hired after November 6, 1986, instead of verifying only those employees assigned to a covered Federal contract. After enrollment, Employers must elect to verify existing staff following DHS procedures and begin E-Verify verification of all existing employees within 180 days after the election.

e. The Employer may use a previously completed Form I-9 as the basis for creating an E-Verify case for an employee assigned to a contract as long as:

- i. That Form I-9 is complete (including the SSN) and complies with Article II.A.6,
- ii. The employee's work authorization has not expired, and
- iii. The Employer has reviewed the Form I-9 information either in person or in communications with the employee to ensure that the employee's Section 1, Form I-9 attestation has not changed (including, but not limited to, a lawful permanent resident alien having become a naturalized U.S. citizen).

f. The Employer shall complete a new Form I-9 consistent with Article II.A.6 or update the previous Form I-9 to provide the necessary information if:

- i. The Employer cannot determine that Form I-9 complies with Article II.A.6,
- ii. The employee's basis for work authorization as attested in Section 1 has expired or changed, or
- iii. The Form I-9 contains no SSN or is otherwise incomplete.

Note: If Section 1 of Form I-9 is otherwise valid and up-to-date and the form otherwise complies with Article II.C.5, but reflects documentation (such as a U.S. passport or Form I-551) that expired after completing Form I-9, the Employer shall

not require the production of additional documentation, or use the photo screening tool described in Article II.A.5, subject to any additional or superseding instructions that may be provided on this subject in the E-Verify User Manual.

g. The Employer agrees not to require a second verification using E-Verify of any assigned employee who has previously been verified as a newly hired employee under this MOU or to authorize verification of any existing employee by any Employer that is not a Federal contractor based on this Article.

3. The Employer understands that if it is a Federal contractor, its compliance with this MOU is a performance requirement under the terms of the Federal contract or subcontract, and the Employer consents to the release of information relating to compliance with its verification responsibilities under this MOU to contracting officers or other officials authorized to review the Employer's compliance with Federal contracting requirements.

### **C. RESPONSIBILITIES OF SSA**

1. SSA agrees to allow DHS to compare data provided by the Employer against SSA's database. SSA sends DHS confirmation that the data sent either matches or does not match the information in SSA's database.

2. SSA agrees to safeguard the information the Employer provides through E-Verify procedures. SSA also agrees to limit access to such information, as is appropriate by law, to individuals responsible for the verification of Social Security numbers or responsible for evaluation of E-Verify or such other persons or entities who may be authorized by SSA as governed by the Privacy Act (5 U.S.C. § 552a), the Social Security Act (42 U.S.C. 1306(a)), and SSA regulations (20 CFR Part 401).

3. SSA agrees to provide case results from its database within three Federal Government work days of the initial inquiry. E-Verify provides the information to the Employer.

4. SSA agrees to update SSA records as necessary if the employee who contests the SSA tentative nonconfirmation visits an SSA field office and provides the required evidence. If the employee visits an SSA field office within the eight Federal Government work days from the date of referral to SSA, SSA agrees to update SSA records, if appropriate, within the eight-day period unless SSA determines that more than eight days may be necessary. In such cases, SSA will provide additional instructions to the employee. If the employee does not visit SSA in the time allowed, E-Verify may provide a final nonconfirmation to the employer.

Note: If an Employer experiences technical problems, or has a policy question, the employer should contact E-Verify at 1-888-464-4218.

### **D. RESPONSIBILITIES OF DHS**

1. DHS agrees to provide the Employer with selected data from DHS databases to enable the Employer to conduct, to the extent authorized by this MOU:

- a. Automated verification checks on alien employees by electronic means, and
- b. Photo verification checks (when available) on employees.

2. DHS agrees to assist the Employer with operational problems associated with the Employer's participation in E-Verify. DHS agrees to provide the Employer names, titles, addresses, and telephone numbers of DHS representatives to be contacted during the E-Verify process.
3. DHS agrees to provide to the Employer with access to E-Verify training materials as well as an E-Verify User Manual that contain instructions on E-Verify policies, procedures, and requirements for both SSA and DHS, including restrictions on the use of E-Verify.
4. DHS agrees to train Employers on all important changes made to E-Verify through the use of mandatory refresher tutorials and updates to the E-Verify User Manual. Even without changes to E-Verify, DHS reserves the right to require employers to take mandatory refresher tutorials.
5. DHS agrees to provide to the Employer a notice, which indicates the Employer's participation in E-Verify. DHS also agrees to provide to the Employer anti-discrimination notices issued by the Immigrant and Employee Rights Section, Civil Rights Division, U.S. Department of Justice.
6. DHS agrees to issue each of the Employer's E-Verify users a unique user identification number and password that permits them to log in to E-Verify.
7. DHS agrees to safeguard the information the Employer provides, and to limit access to such information to individuals responsible for the verification process, for evaluation of E-Verify, or to such other persons or entities as may be authorized by applicable law. Information will be used only to verify the accuracy of Social Security numbers and employment eligibility, to enforce the INA and Federal criminal laws, and to administer Federal contracting requirements.
8. DHS agrees to provide a means of automated verification that provides (in conjunction with SSA verification procedures) confirmation or tentative nonconfirmation of employees' employment eligibility within three Federal Government work days of the initial inquiry.
9. DHS agrees to provide a means of secondary verification (including updating DHS records) for employees who contest DHS tentative nonconfirmations and photo mismatch tentative nonconfirmations. This provides final confirmation or nonconfirmation of the employees' employment eligibility within 10 Federal Government work days of the date of referral to DHS, unless DHS determines that more than 10 days may be necessary. In such cases, DHS will provide additional verification instructions.

### **ARTICLE III REFERRAL OF INDIVIDUALS TO SSA AND DHS**

#### **A. REFERRAL TO SSA**

1. If the Employer receives a tentative nonconfirmation issued by SSA, the Employer must print the notice as directed by E-Verify. The Employer must promptly notify employees in private of the finding and provide them with the notice and letter containing information specific to the employee's E-Verify case. The Employer also agrees to provide both the English and the translated notice and letter for employees with limited English proficiency to employees. The Employer agrees to provide written referral instructions to employees and instruct affected employees to bring the English copy of

the letter to the SSA. The Employer must allow employees to contest the finding, and not take adverse action against employees if they choose to contest the finding, while their case is still pending.

2. The Employer agrees to obtain the employee's response about whether he or she will contest the tentative nonconfirmation as soon as possible after the Employer receives the tentative nonconfirmation. Only the employee may determine whether he or she will contest the tentative nonconfirmation.

3. After a tentative nonconfirmation, the Employer will refer employees to SSA field offices only as directed by E-Verify. The Employer must record the case verification number, review the employee information submitted to E-Verify to identify any errors, and find out whether the employee contests the tentative nonconfirmation. The Employer will transmit the Social Security number, or any other corrected employee information that SSA requests, to SSA for verification again if this review indicates a need to do so.

4. The Employer will instruct the employee to visit an SSA office within eight Federal Government work days. SSA will electronically transmit the result of the referral to the Employer within 10 Federal Government work days of the referral unless it determines that more than 10 days is necessary.

5. While waiting for case results, the Employer agrees to check the E-Verify system regularly for case updates.

6. The Employer agrees not to ask the employee to obtain a printout from the Social Security Administration number database (the Numident) or other written verification of the SSN from the SSA.

## **B. REFERRAL TO DHS**

1. If the Employer receives a tentative nonconfirmation issued by DHS, the Employer must promptly notify employees in private of the finding and provide them with the notice and letter containing information specific to the employee's E-Verify case. The Employer also agrees to provide both the English and the translated notice and letter for employees with limited English proficiency to employees. The Employer must allow employees to contest the finding, and not take adverse action against employees if they choose to contest the finding, while their case is still pending.

2. The Employer agrees to obtain the employee's response about whether he or she will contest the tentative nonconfirmation as soon as possible after the Employer receives the tentative nonconfirmation. Only the employee may determine whether he or she will contest the tentative nonconfirmation.

3. The Employer agrees to refer individuals to DHS only when the employee chooses to contest a tentative nonconfirmation.

4. If the employee contests a tentative nonconfirmation issued by DHS, the Employer will instruct the employee to contact DHS through its toll-free hotline (as found on the referral letter) within eight Federal Government work days.

5. If the Employer finds a photo mismatch, the Employer must provide the photo mismatch tentative nonconfirmation notice and follow the instructions outlined in paragraph 1 of this section for tentative nonconfirmations, generally.

6. The Employer agrees that if an employee contests a tentative nonconfirmation based upon a photo mismatch, the Employer will send a copy of the employee's Form I-551, Form I-766, U.S. Passport, or passport card to DHS for review by:

- a. Scanning and uploading the document, or
- b. Sending a photocopy of the document by express mail (furnished and paid for by the employer).

7. The Employer understands that if it cannot determine whether there is a photo match/mismatch, the Employer must forward the employee's documentation to DHS as described in the preceding paragraph. The Employer agrees to resolve the case as specified by the DHS representative who will determine the photo match or mismatch.

8. DHS will electronically transmit the result of the referral to the Employer within 10 Federal Government work days of the referral unless it determines that more than 10 days is necessary.

9. While waiting for case results, the Employer agrees to check the E-Verify system regularly for case updates.

## **ARTICLE IV SERVICE PROVISIONS**

### **A. NO SERVICE FEES**

1. SSA and DHS will not charge the Employer for verification services performed under this MOU. The Employer is responsible for providing equipment needed to make inquiries. To access E-Verify, an Employer will need a personal computer with Internet access.

## **ARTICLE V MODIFICATION AND TERMINATION**

### **A. MODIFICATION**

1. This MOU is effective upon the signature of all parties and shall continue in effect for as long as the SSA and DHS operates the E-Verify program unless modified in writing by the mutual consent of all parties.

2. Any and all E-Verify system enhancements by DHS or SSA, including but not limited to E-Verify checking against additional data sources and instituting new verification policies or procedures, will be covered under this MOU and will not cause the need for a supplemental MOU that outlines these changes.

### **B. TERMINATION**

1. The Employer may terminate this MOU and its participation in E-Verify at any time upon 30 days prior written notice to the other parties.

2. Notwithstanding Article V, part A of this MOU, DHS may terminate this MOU, and thereby the Employer's participation in E-Verify, with or without notice at any time if deemed necessary because of the requirements of law or policy, or upon a determination by SSA or DHS that there has been a breach of system integrity or security by the Employer, or a failure on the part of the Employer to comply with established E-Verify procedures and/or legal requirements. The Employer understands that if it is a Federal contractor, termination of this MOU by any party for any reason may negatively affect the

performance of its contractual responsibilities. Similarly, the Employer understands that if it is in a state where E-Verify is mandatory, termination of this by any party MOU may negatively affect the Employer's business.

3. An Employer that is a Federal contractor may terminate this MOU when the Federal contract that requires its participation in E-Verify is terminated or completed. In such cases, the Federal contractor must provide written notice to DHS. If an Employer that is a Federal contractor fails to provide such notice, then that Employer will remain an E-Verify participant, will remain bound by the terms of this MOU that apply to non-Federal contractor participants, and will be required to use the E-Verify procedures to verify the employment eligibility of all newly hired employees.

4. The Employer agrees that E-Verify is not liable for any losses, financial or otherwise, if the Employer is terminated from E-Verify.

## **ARTICLE VI PARTIES**

A. Some or all SSA and DHS responsibilities under this MOU may be performed by contractor(s), and SSA and DHS may adjust verification responsibilities between each other as necessary. By separate agreement with DHS, SSA has agreed to perform its responsibilities as described in this MOU.

B. Nothing in this MOU is intended, or should be construed, to create any right or benefit, substantive or procedural, enforceable at law by any third party against the United States, its agencies, officers, or employees, or against the Employer, its agents, officers, or employees.

C. The Employer may not assign, directly or indirectly, whether by operation of law, change of control or merger, all or any part of its rights or obligations under this MOU without the prior written consent of DHS, which consent shall not be unreasonably withheld or delayed. Any attempt to sublicense, assign, or transfer any of the rights, duties, or obligations herein is void.

D. Each party shall be solely responsible for defending any claim or action against it arising out of or related to E-Verify or this MOU, whether civil or criminal, and for any liability wherefrom, including (but not limited to) any dispute between the Employer and any other person or entity regarding the applicability of Section 403(d) of IIRIRA to any action taken or allegedly taken by the Employer.

E. The Employer understands that its participation in E-Verify is not confidential information and may be disclosed as authorized or required by law and DHS or SSA policy, including but not limited to, Congressional oversight, E-Verify publicity and media inquiries, determinations of compliance with Federal contractual requirements, and responses to inquiries under the Freedom of Information Act (FOIA).

F. The individuals whose signatures appear below represent that they are authorized to enter into this MOU on behalf of the Employer and DHS respectively. The Employer understands that any inaccurate statement, representation, data or other information provided to DHS may subject the Employer, its subcontractors, its employees, or its representatives to: (1) prosecution for false statements pursuant to 18 U.S.C. 1001 and/or; (2) immediate termination of its MOU and/or; (3) possible debarment or suspension.

G. The foregoing constitutes the full agreement on this subject between DHS and the

Employer.

To be accepted as an E-Verify participant, you should only sign the Employer's Section of the signature page. If you have any questions, contact E-Verify at 1-888-464-4218.

Approved by:

<b>E-Verify Employer</b>	
Name (Please Type or Print)	Title
Signature	Date
<b>Department of Homeland Security – Verification Division</b>	
Name (Please Type or Print)	Title
Signature	Date

<b>Information Required for E-Verify</b>	
Information relating to your Company:	
Company Name:	
Company Facility Address:	
Company Alternate Address:	
County or Parish:	

Employer Identification Number:														
North American Industry Classification Systems Code:														
Parent Company:														
Number of Employees:														
Number of Sites Verified for:														
<p>Are you verifying for more than one site?          If yes, please provide the number of sites verified for in each State:</p> <table border="1"> <thead> <tr> <th>State</th> <th>Number of sites</th> <th>Site(s)</th> </tr> </thead> <tbody> <tr> <td> </td> <td> </td> <td> </td> </tr> <tr> <td> </td> <td> </td> <td> </td> </tr> <tr> <td> </td> <td> </td> <td> </td> </tr> </tbody> </table>			State	Number of sites	Site(s)									
State	Number of sites	Site(s)												

Information relating to the Program Administrator(s) for your Company on policy questions or operational problems:	
Name:	
Telephone Number:	
Fax Number:	
E-mail Address:	

Name:	
Telephone Number:	
Fax Number:	
E-mail Address:	

**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.



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

(13) **SPECIAL PROVISIONS** *(Special Provisions may be inserted here, such as acceptance or rejection of unit prices. If Special Provisions are continued in an attachment, identify the attachment below):*

(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.

(15)

<b>APPROVAL</b>	<b>CONTRACTING PARTIES</b>
<div style="border: 1px solid black; padding: 10px; text-align: center;"> <p><b>ALABAMA STATE DEPARTMENT OF EDUCATION (SDE)</b> <i>(Required for locally-funded, SDE projects.)</i></p> <p>By _____ Date: _____ State Superintendent of Education</p> </div>	<div style="border: 1px solid black; padding: 10px;"> <p style="text-align: center;">_____ Contractor Company</p> <p>By _____ Signature Name &amp; Title _____</p> </div> <div style="border: 1px solid black; padding: 10px; margin-top: 10px;"> <p style="text-align: center;">_____ Owner Entity</p> <p>By _____ Signature Name(s) &amp; Title(s) _____</p> </div>

Review/Signature flow: Contractor (prepare and sign documents) > Architect/Engineer (review only) > Owner (review and sign) > SDE (review, sign and distribute the fully executed Contract to all parties, and forward a copy to the Alabama Division of Construction Management [DCM]). Note: DCM does not sign fully locally-funded SDE project contract documents.

# STANDARD ARTICLES

of the

## AGREEMENT BETWEEN OWNER AND ARCHITECT

### CONTENTS

1. Definitions
2. Relationship and Responsibilities
3. Basic Services
4. Basic Fee
5. Special Services and Extra Services
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7. Payments to the Architect
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9. Suspension & Termination of Agreement
10. Engineering Services
11. Design Schedule
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### Article 1

#### DEFINITIONS

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

- A. **DCM:** The Technical Staff of the Alabama Division of Construction Management.
- B. **BUDGET or PROJECT BUDGET:** The amount that is available to and allocated by the Owner for the Cost of the Work as defined in Article 8. It is stated in the Agreement form whether the Budget is fixed or is tentative pending development of design and cost estimates by the Architect. If the Budget is tentative, it shall be validated by the Architect or, based on the Architect's estimate(s), mutually adjusted by the Owner and Architect prior to advertising the Project for bids.
- C. **BULLETIN 1983 No. 26:** "Construction Requirements for County and City Public Schools, Bulletin 1983, Number 26" as currently published by the Alabama State Department of Education as of the date of the Agreement. References to "Bulletin 1983 No. 26" are not applicable if the Project does not involve a County or City Public School.
- D. **CONTRACTOR:** The Contractor is the person or persons, firm, partnership, joint venture, association, corporation, cooperative, limited liability company, or other legal entity to whom the Owner awards a Construction Contract for all or a part of the Work covered by the Agreement. The term "Contractor" is used in the Agreement as if singular in number.
- E. **GENERAL CONDITIONS of the CONTRACT:** DCM Form C-8 currently published for incorporation into DCM construction contracting documents.
- F. **MANUAL of PROCEDURES:** The "Manual of Procedures of the Alabama Division of Construction Management" currently published as of the date of the Agreement.

- G. SDE:** The Alabama State Department of Education. The SDE is represented by the State School Architect with respect to the Agreement. References to “SDE” are not applicable if the Project does not involve a County or City Public School.
- H. Terms** defined in the current edition of the General Conditions of the Contract (DCM Form C-8) shall have the same meaning when used in the Agreement.

**Article 2**  
**RELATIONSHIP and RESPONSIBILITIES of the PARTIES**

**A. RELATIONSHIP of OWNER and ARCHITECT**

The Architect is an independent contractor providing professional services to the Owner and not an agent or employee of the Owner and is not entitled to receive merit system or other employee benefits from the Owner.

**B. OWNER’S RESPONSIBILITIES**

**(1) Contracting Documents:** The Owner shall promptly inform the Architect of the source or sources of Project funding (state, local, federal, etc.) or of special requirements or regulations of the Owner which will require supplementation of DCM’s standard construction contracting documents, forms, or reporting.

**(2) Owner’s Planning Program.** As used in the Agreement, the term “Planning Program” shall mean a written description of the Project objectives, including intended use of facilities and site, design constraints and criteria, physical parameters, space requirements and relationships, and any requirements for special equipment, systems, or materials. The Owner shall furnish its Program to the Architect.

**(3) Project Schedule.** If not agreed between the parties upon executing the Agreement, the Owner will promptly establish its desired or required Date of Substantial Completion of the Project. The Owner will consider the Architect’s reasonable recommendations regarding Project schedule to facilitate the orderly performance of the services required under the Agreement and the cost-effective execution of the Work.

**(4) Owner’s Representative.** The Owner will designate an Owner’s Representative through whom the Architect shall communicate regarding the Project. The Owner will state the extent to which this representative is authorized to act on behalf of the Owner with respect to the Project. In response to documents, questions, or recommendations submitted by the Architect, the Owner’s Representative will render decisions, directions, and answers, or obtain them from the Owner, in a timely manner to avoid unreasonable delay in the orderly and sequential progress of the Architect’s services or performance of the Work by the Contractor.

**(5) Preparatory Surveys, Tests, and Consultants.** Unless otherwise stipulated in the Special Provisions of the Agreement, the Owner shall either furnish or reimburse the Architect pursuant to Article 6, Reimbursable Expenses, for obtaining surveys, tests, and consultants to the extent they are reasonably required and requested by the Architect for the preparation of Drawings and

Specifications of the Work. The Architect shall be entitled to rely upon the accuracy and completeness of information obtained from such preparatory surveys, tests, and consultants, but shall promptly notify the Owner in writing of any significant errors, omissions, or inconsistencies in the information recognized by the Architect. If the Owner instructs the Architect to obtain these services as Reimbursable Expenses, the Owner shall determine or approve the provider(s) and the prices, terms, and conditions of the agreements and shall be responsible to the Architect for the information obtained therefrom. Such preparatory surveys, tests, and consultants shall include the following:

- (a) A complete and accurate survey of the building site, giving the grades and lines of streets, pavements, and adjoining properties; the rights, restrictions, easements, boundaries, and contours of the building site; existing utilities, and full information as to sewer, water, gas and electrical services; and legal description of the property.
- (b) The services of geotechnical engineers, testing laboratories, and other consultants to provide professional evaluations and recommendations pertaining to conditions of the site and existing improvements, including, but are not limited to, tests and surveys required to ascertain and address surface and subsurface conditions, structural integrity of existing structures, the presence of Existing Hazardous Materials, and environmental issues.

**(6) In-progress Inspections, Tests, and Consultants.** Unless otherwise stipulated in the Special Provisions of the Agreement, the Owner shall either furnish or reimburse the Architect pursuant to Article 6, Reimbursable Expenses for obtaining the following inspections, tests, and consultants during or following the Contractor's performance of the Work:

- (a) The services of independent, professional testing firms and laboratories to perform tests and evaluations that are stipulated in the Contract Documents to be furnished by the Owner, such as structural, mechanical, and chemical tests, tests for air and water pollution, and tests for hazardous materials.
- (b) Inspections, tests, demonstrations, or approvals that are in addition to the Specified Inspections of the Contract Documents and that are reasonably recommended by the Architect, desired by the Owner, or determined necessary by public authorities having jurisdiction to verify that the Contractor's in-progress and completed Work is in conformance with the Contract Documents.

If the Owner instructs the Architect to obtain these services as Reimbursable Expenses, the Owner shall determine or approve the provider(s) and the prices, terms, and conditions of the agreements and shall be responsible to the Architect for the information obtained therefrom.

**(7) Hazardous Materials.** Unless otherwise provided in the Special Provisions of the Agreement, the Owner shall have responsibility for the presence and abatement of Existing Hazardous Materials that may be discovered at the Project site. If, at any time, the Owner has reason to believe that Existing Hazardous Materials are present at the Project site, or the Architect reasonably recommends that the Owner ascertain whether Existing Hazardous Materials are present at the Project site, or the Contractor encounters a suspected Existing Hazardous Material, the Owner shall obtain the services of an independent laboratory or professional consultant, appropriately licensed and qualified, to identify Hazardous Materials requiring abatement and to certify after their abatement that they have been rendered harmless. Any abatement of Existing Hazardous Materials will be the responsibility of the Owner. The Owner will advise the Architect and 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 Architect or Contractor has reasonable objection.

**(8) Priority of Alternates.** If bid alternates are to be used, the order in which they shall be listed in the Proposal Form and cumulatively considered for determination of the lowest bidder shall be determined by the Owner after consulting with the Architect.

**(9) Advertisement for Bids.** The Owner is responsible for the cost of publishing the Advertisement for Bids, but the Architect shall prepare it and arrange for its publication. The Architect shall obtain the Owner's approval regarding the number of newspapers in which the advertisement is to be published.

**(10) Advertisement of Completion.** If the Contract Sum is \$50,000 or less, the Owner is responsible for publishing the Advertisement of Completion of the Construction Contract. If the Contract Sum is greater than \$50,000, the Contractor is responsible for preparing and publishing the Advertisement of Completion of the Construction Contract.

**(11) Determination of Lowest Responsible and Responsive Bidder.** After receiving the Architect's certified Tabulation of Bids and recommendations, the Owner is responsible for the final determination of the lowest responsible and responsive bidder to whom the Construction Contract is awarded.

**(12) Legal, Accounting, and Insurance Counseling.** The Owner shall furnish all legal, accounting, and insurance counseling services required to protect the Owner's interests and meet its needs pertaining to the Project, including any auditing service.

**(13) Access to the Work.** The Owner shall insure that the Architect will have access to the Work whenever it is in preparation or progress.

**(14) Notification of Errors.** The Owner shall promptly notify the Architect in writing if the Owner becomes aware of any fault or defect in the Project, including any significant errors, omissions, or inconsistencies in the Drawings, Specifications, other Contract Documents, or instructions and information issued to the Contractor by the Architect.

## C. ARCHITECT'S RESPONSIBILITIES

**(1) Manual of Procedures and Bulletin 1983 No. 26.** In performing the services required by the Agreement the Architect shall adhere to the applicable procedures of the Manual of Procedures and Bulletin 1983 No. 26, utilizing the applicable DCM uniform documents and standard forms.

**(2) Standard of Performance.** The Architect shall perform the services of the Agreement with reasonable care and competence, applying the technical knowledge and skill which is ordinarily applied by architects of good standing with the Alabama Board for Registration of Architects (in the case of Engineers, the State Board of Licensure for Professional Engineers and Land Surveyors). The performance of these services shall be consistent with the Conditions of the Construction Contract, and in such a timely manner as will facilitate the orderly progress of the Project. (See Article 11 for the agreed design schedule.)

**(3) Full Professional Team.** For the performance of the services required by the Agreement the Architect will employ the services of consulting engineers so as to provide a full professional team

as dictated by the disciplines of architectural and engineering design involved in the Work. (See Article 10, Engineering Services.)

**(4) Quality of Documents.** In preparing the Drawings and Specifications and other Contract Documents, the Architect shall endeavor to:

- (a) review and comply with laws, codes, and regulations applicable to the design, incorporating requirements imposed by governmental authorities having jurisdiction over the Project;
- (b) consider and advise the Owner of the comparative values of alternative materials, building systems and equipment relative to construction, maintenance, and life-cycle costs to achieve a design that is appropriate for the Owner's Program and suitable for the Project Budget; and
- (c) coordinate the documents prepared by the Architect and the Architect's consultants, including checking the compatibility of specified equipment and systems with spaces provided for them.

**(5) Sole Source Specifications.** In preparing the Drawings and Specifications the Architect shall not specify the use of any sole source materials, products, systems, or services in violation of § 39-2-2(f), Code of Alabama, 1975 as amended.

**(6) Conflicts of Interests.** Except with the Owner's knowledge and consent, the Architect shall not engage in any activity, enter into other agreements, accept any employment, interest, or contribution, or specify any material, product, or system that would, or would appear to, create a conflict of interests compromising the Architect's professional judgement with respect to this Project.

**(7) Notification and Correction of Errors.** The Architect shall provide prompt written notice to the Owner and Contractor if the Architect becomes aware of any fault or defect in the Project, including any errors, omissions, or inconsistencies in the Drawings, Specifications, other Contract Documents or instructions and information issued to the Contractor by the Architect. At no cost to the Owner, the Architect will correct errors, omissions, or inconsistencies found in the Drawings, Specifications, or other Contract Documents.

### **Article 3** **BASIC SERVICES**

The Agreement includes Basic Services A, B, C, D, and E unless stated otherwise in the Special Provisions of the Agreement, and the Architect agrees to perform these professional services as they are defined below:

#### **A. SCHEMATIC DESIGN PHASE (Service A)**

**(1) Preliminary Evaluation.** The Architect shall provide preliminary evaluation of the Owner's Program, Project schedule, Project site, Budgeted Cost of the Work, and available surveys, tests, and reports to ascertain that each is consistent and comparable with the others and the requirements of the Project. If the Architect detects any inconsistencies or incompatibilities among the documents and information provided by the Owner, the Architect shall promptly recommend reasonable adjustments.

**(2) Schematic Drawings and Specifications.** Based on the Owner's Program, Project schedule and delivery method, Project site, Budgeted Cost of the Work, and preparatory surveys, tests, and consultants' reports, and any agreed adjustments thereto, the Architect shall prepare schematic drawings and other documents as prescribed in the Manual of Procedures and Bulletin 1983 No. 26 for Schematic Plan Submittal.

**(3) Submit for Approval.** The Architect shall submit the schematic design documents for the approval of the Owner, DCM, and SDE. The schematic design documents approved by the Owner shall constitute the Approved Project Program which can then be revised only by written agreement of the Architect and Owner.

**B. PRELIMINARY DESIGN PHASE (Service B)**

**(1) Preliminary Drawings and Specifications.** Based upon the schematic design documents approved by the Owner, DCM, and SDE and any adjustments then authorized by the Owner in budgeted Cost of the Work, Program, Project Schedule or delivery method, the Architect shall prepare preliminary drawings, outline specifications, and other documents as prescribed in the Manual of Procedures and Bulletin 1983 No. 26 for Preliminary Plan Submittal.

**(2) Submit for Approval.** The Architect shall submit the preliminary design documents for the approval of the Owner, DCM, and SDE.

**(3) Estimate of the Cost of the Work.** The Architect shall prepare and submit at the time of preliminary design documents submittal, an estimate of the Cost of the Work to the Owner (for approval) and to the DCM Project Architect, if assigned. The Architect shall have the discretion of determining the estimating method(s) and detail, but the estimate shall accommodate traceable, supportable revisions as may become required pursuant to Article 3.C(3).

**C. FINAL DESIGN PHASE (Service C)**

**(1) Authorization.** The Owner's approval of the Architect's estimate of the Cost of the Work and the preliminary drawings and outline specifications and DCM's and SDE's approval of the Preliminary Plan Submittal will constitute authority for the Architect to proceed with the completion of final plans and specifications.

**(2) Final Drawings and Specifications.** The Architect shall prepare final Drawings and Specifications as prescribed in the Manual of Procedures and Bulletin 1983 No. 26 for Final Plan Submittal.

**(3) Changes in Design or Costs.** If during the preparation of the Final Drawings and Specifications, unforeseen conditions should arise or the Owner requires changes from the approved preliminary Drawings and Specifications and such conditions or changes would affect the Cost of the Work or Project schedule, or could require changing the Approved Project Program to maintain budget, the Architect shall notify the Owner and the DCM Project Architect, if assigned, in writing immediately. The Architect shall submit to the Owner and to the DCM Project Architect, if assigned, a revised estimate of the affected Cost of the Work and/or Project schedule. Resulting agreements to revise the budgeted Cost of the Work and/or Project schedule shall be confirmed

through an Amendment to the Agreement. Owner requested revisions to Owner-approved Drawings or Specifications may be subject to Article 5, Extra Services.

**(4) Submit for Approval.** The Architect shall submit the final Drawings and Specifications for the approval of the Owner, DCM, SDE, and other approving authorities.

**(5) Bid Over-runs.** If the lowest responsible and responsive bid received by the Owner for the Work is greater than the budgeted Cost of the Work, the Architect will, upon instructions from the Owner, make revisions to the Drawings and Specifications, consistent with the Approved Project Program, as may be necessary to re-bid the Work within the budgeted Cost of the Work, or a higher amount as may be authorized by the Owner. The Owner will cooperate with the Architect in revising the scope and quality of the Work as necessary to reduce the Cost of the Work. Compensation for such revision of the Drawings and Specifications shall be determined as follows:

**(a)** If the bid over-run is not greater than 10% of the budgeted Cost of the Work, the Architect will be compensated under Article 5, or as otherwise agreed, for revising the Drawings and Specifications.

**(b)** If the bid over-run is greater than 10% of the budgeted Cost of the Work and **(i)** the Owner has received bids for the Work within 90 days after final approval of the Drawings and Specifications and **(ii)** the reason that the over-run exceeds 10% of the budgeted Cost of the Work is not attributable to a unique or unexpected market condition which the Architect would not have reasonably contemplated in its estimates, the Architect will revise the Drawings and Specifications to conform to the budgeted Cost of the Work, or a higher amount authorized by the Owner, at no cost to the Owner.

#### **D. CONSTRUCTION CONTRACT PROCUREMENT (Service D)**

After obtaining approval of the final Drawings and Specifications from the Owner, DCM, SDE, and other approving authorities and incorporating their review comments into the Drawings and Specifications, the Architect shall assist the Owner in procuring a Construction Contract for the Work.

**(1) Advertisement for Bids.** The Architect shall prepare the Advertisement for Bids, consult with the Owner regarding the number of locations in which it is to be published, and have it appropriately published. The Owner will either pay for the publication directly to the publisher(s) or reimburse the Architect for publication pursuant to Article 6, Reimbursable Expenses.

**(2) Distribution of Bid Documents.** The Architect shall furnish and distribute Bid Documents (Drawings and Project Manuals which shall also be the Contract Documents) to prospective bidders in accordance with the Advertisement for Bids and the Manual of Procedures.

**(a) Bid Document Deposit.** The Architect shall distribute sets of Bid Documents to bidders upon receipt of a deposit for each set. The amount of the deposit shall be determined by the Owner with the Architect's assistance, but, as prescribed by Title 39, Code of Alabama, 1975 as amended, the deposit shall not exceed twice the cost of printing, reproduction, handling, and distribution of each set.

**(b) Distribution and Refund of Deposits.** Two sets of Bid Documents shall be provided to General Contractor bidders upon receipt of the deposit and the deposit shall be refunded in full for each set returned in reusable condition within ten days after bid opening. Additional sets for General Contractor bidders and sets for subcontractors, vendors, and dealers shall be

provided upon receipt of the deposit and the deposit shall be refunded, less the cost of printing, reproduction, handling, and distribution, for each set returned in reusable condition within ten days after bid opening. All refunds due shall be paid within twenty days after opening of bids. Building exchanges and similar agencies may be provided Bid Documents without charge.

**(c) Reimbursement.** The Architect shall furnish sets of Bid Documents in sufficient number for bidding and prosecuting the Work upon award of a Construction Contract, but shall not furnish more than 25 sets without reimbursement for cost of printing, reproduction, handling, and distribution of each additional set. If additional sets are required, or authorized by the Owner, the Owner will reimburse the Architect, as a Reimbursable Expense, for the cost of printing, reproducing, handling, and distributing those sets in excess of 25 and for which these expenses were not paid by the recipient. The Owner's payment for additional Bid Documents shall be based upon:

- .1 the Architect's certified tabulation showing the number of sets reproduced, their disposition, and any payments received therefor, and
- .2 rates not exceeding those commercially available in the Architect's locale.

**(3) Pre-bid Conference.** If the Owner and Architect agree that a pre-bid conference will be advantageous to the Project, the Architect shall organize and conduct a pre-bid conference for prospective bidders. If pre-bid conference attendance is to be a prerequisite to bidding, the Architect shall state this fact in the Advertisement for Bids.

**(4) Addenda.** The Architect shall review and approve, or take other appropriate action upon, requests for substitutions submitted in accordance with the procedures for "Pre-bid Approval" prescribed in the Instructions to Bidders and prepare responses to questions from prospective bidders pertaining to the Drawings, Specifications, and other Contract Documents. All addenda when published must be submitted to DCM for review to confirm compliance with the State Building Code. Written response by the Technical Staff to these submittals will be made only in cases of violations of building codes or non-compliance with laws and regulations. The Architect shall prepare and distribute in a timely manner addenda to all prospective bidders identifying approved substitutions and providing clarifications and interpretations of the Contract Documents. All addenda must be approved by DCM before a construction contract will be reviewed.

**(5) Opening of Bids.** The Architect shall participate in or, at the Owner's request, shall conduct the opening of the bids.

**(6) Tabulation of Bids.** The Architect shall prepare a certified Tabulation of Bids and recommendations for award in accordance with the Manual of Procedures and furnish a copy to the Owner, DCM, and SDE.

**(7) Preparation of Construction Contract.** The Architect shall prepare the Construction Contract for acceptance and execution by the Contractor and Owner, delivering the Construction Contract with required bond forms for the Contractor's execution first. Upon receipt of the executed Construction Contract with bonds, evidence of required insurance, and other required attachments (if any) from the Contractor, the Architect shall verify that the documents are accurate, complete, and in order and then forward them to the Owner for appropriate approvals and execution.

## **E. CONSTRUCTION CONTRACT ADMINISTRATION (Service E)**

The Architect shall perform Construction Contract Administration consistent with the General Conditions of the Contract and in accordance with the applicable Manual of Procedures or Bulletin 1983 No. 26, using and preparing all standard forms and uniform documents prescribed therein.

**(1) Representative of the Owner.** The Architect will be a representative of the Owner during construction and in this capacity will endeavor to:

- (a)** guard the Owner against variances from the requirements of the Contract Documents by the Contractor,
- (b)** require the Contractor to complete the Work within the time specified in the Construction Contract or subsequently extended by the Owner,
- (c)** and guard the Owner against Defective Work. The Architect will advise and consult with the Owner regarding the performance and progress of the Contractor and regarding solutions to conditions or problems that may arise out of the design or construction. The Architect shall have authority to act on behalf of the Owner to the extent provided in the General Conditions of the Contract, which may only be modified in writing.

**(2) Limitation of Responsibilities.** The Architect does not guarantee the performance of the Contractor. The Architect shall not be responsible for or liable to the Owner, Contractor, or others for:

- (a)** supervising or coordinating the Contractor's performance of the Work, the Contractor's Construction Methods, or the safe execution of the Work, unless the Contract Documents give other specific instructions concerning these matters;
- (b)** acts or omissions of the Contractor, Subcontractors, or their agents or employees or any persons or entities performing portions of the Work, or
- (c)** the Contractor's failure to perform the Work in accordance with the requirements of the Contract Documents; however, it shall be a requirement of this Agreement that the Architect notify the Owner and Contractor of any Defective Work observed by the Architect.

**(3) Interpretations and Decisions.**

- (a)** In response to questions from the Contractor or Owner about the Contract Documents, or as the Architect deems appropriate, the Architect shall provide interpretations and clarifications of the Contract Documents that are consistent with the intent of and reasonably inferable from the Contract Documents. Interpretations and clarifications shall be in the form of written explanations or directions and/or supplementary details or drawings, whichever is required to complete, explain or make definite any of the provisions of the Drawings and Specifications and give them due effect.
- (b)** The Architect shall respond to questions about the Contract Documents in a timely manner consistent with the terms of the Contract Documents.
- (c)** 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 Architect shall be entitled to additional compensation pursuant to Article 5, but only to the extent that the Contractor is responsible to the Owner for such expenses.
- (d)** Upon written request of the Contractor or Owner, and as provided in the Conditions of the Construction Contract, the Architect shall render prompt, impartial decisions on claims, disputes, or other matters in question between the Contractor and Owner arising out of the

Construction Contract.

(e) Decisions by the Architect, including interpretations and clarifications of the Drawings, Specifications, or other Contract Documents, and directions or decisions regarding performance of the Work, shall be in writing and shall be advisory to the Contractor and Owner, except that 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.

**(4) Project Record.** The Architect shall maintain the Project Record consisting of Project-related correspondence, memoranda, notes, Statements for Services and related documents, Application and Certification for Payments and related documents, minutes of meetings, and inspection reports issued or received by the Architect. The Owner shall have access to the Project Record during the Architect's normal office hours. If requested to reproduce the Project Record, or significant portions of it, for the Owner, the Architect will do so as a Reimbursable Expense.

**(5) Communications.** So as to maintain continuity in the Architect's administration of the Construction Contract and performance of the Work by the Contractor, 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 with copy furnished to the Owner, unless direct communication is otherwise required to effect 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 a Contractor, communications by and with Subcontractors and material suppliers shall be through the Contractor.

**(6) Submittal Review:** The Architect shall review the Contractor's Submittals for conformance with requirements of, and the design concept expressed in, the Contract Documents and approve or take other appropriate action upon them.

(a) This review is not intended to verify the accuracy and completeness of details such as dimensions and quantities or to substantiate installation instructions or performance of equipment or systems, all of which shall be 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.

(b) As provided in the General Conditions of the Contract, the Architect is authorized to approve "minor" deviations from the requirements of the Contract Documents (see 10a for "minor" definition). Deviations which are not "minor" may be authorized only by the Owner through change order action.

(c) 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, the Architect shall specify all performance and design criteria that such services must satisfy. The Architect shall not approve such a Submittal if any of its drawings, calculations, specifications, or certifications do not bear the required Alabama seal of registration and signature of the registered/licensed design professional who prepared them or under whose supervision they were prepared. The Architect shall be entitled to rely upon the adequacy, accuracy and completeness of such a Submittal, provided the Architect has adequately specified all performance and design criteria that must be satisfied by the Submittal.

(d) 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.

(e) Within thirty days after Substantial Completion of the Work by the Contractor the Architect will furnish the Owner one complete set of the Contractor's approved Submittals,

organized in a logical manner.

**(7) Review of Construction Schedules.** The Architect shall review and approve/disapprove the Contractor's construction schedule, monitor the Contractor's progress, and consult with the Owner regarding appropriate action to be taken when it is apparent that the Contractor's progress is jeopardizing Substantial Completion of the Work within the Contract Time.

**(a)** 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, and such review and approval 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)** The Architect may specify any scheduling method and format that the Architect considers to be appropriate for the Project and which is acceptable to the Owner to use in lieu of DCM Form C-11, Progress Schedule and Report, in accordance with the General Conditions of the Contract. The Architect shall promptly deliver a copy of the Contractor's approved Progress Schedule and Report to the DCM Project Inspector at or before the Pre-Construction Conference, and send any revised Progress Schedules to the DCM Project Inspector.

**(c)** The Architect shall require the Contractor to update the Progress Schedule and Report with each monthly Application for Payment and shall otherwise monitor and keep the Owner apprised of the Contractor's progress.

**(d)** If, in the Architect's opinion, the Contractor's progress falls materially behind the approved construction schedule, the Architect shall consult with the Owner and, with the Owner's concurrence, issue the Contractor a Notice to Cure the condition.

**(8) Inspections.** The Architect shall coordinate, schedule, and conduct the Scheduled Inspections and Conferences defined in the Contract Documents and as are appropriate to the scope of the Work. The Architect shall perform Periodic Inspections defined in the Contract Documents and as enumerated below. The Architect shall attend Specified Inspections and Tests defined in the Contract Documents when attendance by the Architect is specified or is otherwise appropriate.

**(a) Definition.** The Architect's "inspections" means the service performed by the Architect through which the Architect:

.1 becomes generally familiar with the in-progress and completed Work and the quality of the Work,

.2 determines whether the Work is progressing in general accordance with the Contractor's schedule and is likely to be completed within the Contract Time,

.3 visually compares 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,

.4 endeavors to guard the Owner against Defective Work, but does not include making exhaustive investigations or examinations of the in-progress or completed portions of the Work to expose the presence of Defective Work,

.5 reviews and addresses with the Contractor any problems in implementing the requirements of the Contract Documents that the Contractor may have encountered, and

.6 keeps the Owner fully informed about the Project.

**(b) Coordination with DCM Project Inspector.** When scheduling Scheduled Inspections and Conferences the Architect shall first contact the DCM Project Inspector by telephone, establish with the Inspector a mutually acceptable date and time for the inspection or

conference, and confirm the agreed date and time in writing at least seven days prior to the date of the inspection or conference.

**(c) Frequency.** Unless the Special Provisions of the Agreement provides for the Architect's employment of an On-site Representative, the Architect is not required to provide continuous inspection. The Architect's Periodic Inspections shall be at intervals appropriate to the stage of the Contractor's operations and consistent with the size and nature of the Work, but not less than an average of one inspection per week while construction is ongoing. The performance of a Scheduled Inspection satisfies the weekly inspection requirement. The weekly inspection requirement may be waived during periods in which weather or other conditions delay progress, or during slow phases of construction, making weekly inspections unwarranted. (See Article 10 for required frequency of inspections by the Architect's consultants.)

**(d) Inspections by Registered Architect.** Inspections may be performed by a representative of the Architect to whom the Owner has no objection; however, the Architect or a member of the Architect's staff who is an Alabama registered architect shall perform an average of at least one Periodic Inspection each month during construction. This requirement for monthly inspection by an Alabama registered architect may be waived during periods in which weather or other conditions delay progress, or during slow phases of construction, making inspections during such period unwarranted.

**(e) Reporting.** Using the form prescribed in the Manual of Procedures, the Architect shall promptly prepare a complete report of each inspection by the Architect, Architect's representative, or consulting engineer and promptly furnish a copy of each report to the Owner, Contractor, DCM office, and DCM Project Inspector. The Architect shall prepare and distribute an inspection report weekly during construction; for weeks during which inspections are unwarranted, the Architect shall state in the report that no inspection was performed and why.

**(f) Notifications of Deficiencies.** The Architect shall promptly notify the Contractor and Owner in writing of any Defective Work, inadequate progress that may jeopardize timely completion of the Project, or other departures from the requirements of the Contract Documents observed by the Architect.

**(g) Stopping the Work.** 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.

**(h) Safety.** The duty of the Architect to visit the Project site to conduct 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 supervision, or any safety measure which the Contractor takes or fails to take in, on, or near the Project site.

**(9) Certifications for Payment.** The Architect shall review and approve as appropriate the Contractor's monthly and final Applications for Payment and issue Certifications for Payment in accordance with the General Conditions of the Contract.

**(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 inspections at the site 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.

(b) 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 not in compliance with the Contract Documents, the Architect shall determine an appropriate amount that will protect the Owner's interest against such noncompliance and:

.1 if payment has not been made against the Application for Payment first including the Work in question, notify the Owner and Contractor of the amount to be withheld from the payment until the Work is brought into compliance with the Contract Documents, or

.2 if payment has been made against the Application for Payment first including the Work in question, withhold the appropriate amount from the next Application for Payment submitted after the determination of noncompliance, such amount to then be withheld until the Work is brought into compliance with the Contract Documents.

(c) The Architect shall notify the Contractor in writing of any adjustments that the Architect may make to an Application for Payment in approving and certifying it.

(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.

(e) On each Application for Payment the Architect shall certify to the Owner that to the best of the Architect's knowledge and belief, the Work has progressed to the point indicated in the Application, the quality of the Work is in accordance with the Contract Documents, and the Contractor is entitled to payment of the amount approved.

**(10) Contract Change Orders.** The Architect shall administer the change order procedures provided in the General Conditions of the Contract.

(a) The Architect is authorized to make "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 through a Contract Change Order.

(b) The Architect shall prepare details, supplemental drawings, specifications, or other descriptive documents as necessary to sufficiently delineate, for Contractor pricing and performance, proposed changes in the Work directed or authorized by the Owner.

(c) The Architect shall advise the Owner regarding the method of implementing a change.

(d) The Architect (and the Architect's consultants, when appropriate) will review and evaluate change order proposals and claims for extra work as may be submitted by the Contractor.

(e) Using the form prescribed in the Manual of Procedures the Architect shall recommend, as applicable, the Contractor's proposals for acceptance by the Owner. Each recommendation of acceptance will be based upon the Architect's professional opinion that a proposal is complete, in conformance with the Contract Documents, represents fair and reasonable pricing, and justifies change order action in the case of claims for extra work, or does not warrant procurement by competitive bid in the case of added work. Determination of the legality of a change order shall be the responsibility of the Owner and its legal advisor. All change orders require DCM Form C-12: Contract Change Order and DCM Form B-11: Change Order

Justification. Cumulative 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.

(f) The Architect shall prepare Contract Change Orders for acceptance and execution by the Contractor and Owner. In either narrative form or attached and referenced details, supplemental drawings, specifications, or other descriptive documents, Construction Change Orders shall sufficiently describe the change(s) in Work so that the requirements of the Contract Documents are clearly determinable with reasonable ease.

(g) The extensive preparation of details, supplemental drawings, specifications, or other documents to describe a change in the Work may warrant adjustment of the Basic Fee pursuant to Article 4.D, Adjustment for Major Changes in Services.

**(11) "As-built" Documents.** Unless otherwise provided in the Special Provisions of the Agreement, "As-built" Documents shall be prepared and furnished by the Contractor in accordance with the General Conditions of the Contract. Prior to preparing bid documents, the Architect shall consult with the Owner to determine the Owner's requirements for "As-built" Documents and shall incorporate them into the Conditions of the Contract, if they differ from those of the General Conditions. The Architect shall administer the "As-built" Document requirements of the Contract Documents, periodically verifying the Contractor's compliance during construction and reviewing the Contractor's final documents for conformance to Contract requirements.

**(12) Architect's On-site Representative.** If an Architect's On-site Representative is included in Service E or as a separately compensable service under the Special Provisions of the Agreement, or if later authorized by the Owner by amendment to the Agreement, an Architect's On-site Representative acceptable to the Owner will be provided by the Architect. If so provided, the Architect's On-site Representative shall be stationed full-time at the Project site to endeavor to further guard the Owner against Defective Work on a daily basis. Specific authority and duties of the Architect's On-site Representative shall be stipulated in the Special Provisions of the Agreement.

**(13) Owner's On-site Representative.** If the Owner desires to have an Owner's On-site Representative (Clerk-of-the-Works), such individual shall be an employee or independent contractor of the Owner and all costs and expenses of this representative shall be the responsibility of the Owner.

#### **Article 4** **BASIC FEE**

The Basic Fee shall be the Architect's compensation in full for satisfactorily providing the Basic Services as defined in the Agreement. The Basic Fee shall be the Fixed Fee or the Basic Fee Rate as stated on Page 1 of the Agreement form.

##### **A. APPLICATION of the BASIC FEE RATE**

If the Basic Fee is to be determined by a Basic Fee Rate, and the Special Provisions of the Agreement or an amendment to the Agreement does not provide otherwise, the Basic Fee Rate shall be applied, without change, to: **(1)** the tentative Cost of the Work until opening of bids and then retroactively to the amount of the Construction Contract, including Change Orders and Sales Tax Savings and **(2)** the combined cost of all buildings or other Work covered by the Agreement. If the

Work is executed in any manner other than under one lump sum Construction Contract, or one lump sum Construction Contract for sitework and a second lump sum Construction Contract for building construction, the Basic Fee Rate shall be subject to adjustment.

**B. MAJOR RENOVATION WORK**

The Basic Fee agreed upon in the Agreement typically fully compensates the Architect for investigation, research, measuring, and drawing of the reasonably accessible conditions existing in the building or spaces to be renovated or altered to facilitate the production of Drawings and Specifications of the Work covered by the Agreement.

An increase of up to 25% in the Basic Fee Rate is allowed for major renovation projects as stated in Manual of Procedures Chapter 4 Supplement. The Schedule of Basic Fee Rates is structured for new construction and may not adequately cover additional work required of design professionals for renovation projects. A project is considered a major renovation if more than 50% of the construction cost involves renovations and alterations. This additional work required for renovation projects usually involves investigating and developing drawings of existing conditions before design can be developed. In general, exterior projects, including, but not limited to, re-roofing, re-coating, and landscape/hardscape are not to be considered as major renovations. If the Awarding Authority/Owner can provide the design professional with drawings of the existing conditions, this adjustment may be minimized or eliminated.

If the Awarding Authority/Owner and design professional agree to increase the Basic Fee Rate of the Schedule for Major Renovation, this must be stated in the spaces provided in the Agreement form. When stating the Basic Fee Rate on the form, state the increased rate.

**C. SUBSTANTIAL DUPLICATION**

If the Basic Fee is a Basic Fee Rate and the Work covered by the Agreement involves substantial duplication of buildings on the same or separate sites, the Basic Fee Rate will be adjusted for the duplicated buildings in accordance with Chapter 4-Supplement of the Manual of Procedures unless otherwise stated in the Special Provisions of the Agreement.

**D. SUBSEQUENT DUPLICATION**

It is agreed that if buildings covered by the Agreement are substantially duplicated under any subsequent Owner-Architect Agreement, the Basic Fee of the subsequent Owner-Architect Agreement will be paid in accordance with the terms detailed in Chapter 4-Supplement of the Manual of Procedures for substantial duplication, except that any change in the fee schedule in effect at the date of the subsequent Agreement will be applicable.

**E. ADJUSTMENT FOR MAJOR CHANGES IN SERVICES**

If changes in the Work or Project budget during design or construction result in major changes in the Basic Services and warrant an increase or decrease in the Basic Fee, the adjustment must be agreed upon in an amendment to the Agreement. Changes in the Work or Project budget that may result in "Major Changes in Services" include, but are not limited to, changes in Project size, complexity, usage, arrangement, schedule, delivery, or phasing of the Work and may or may not result in a

major, or significant, change in the Cost of the Work. A Major Change in Services may warrant adjustment of the Basic Fee if the change in the Work or Project budget is requested by the Owner and requires additional design, administrative, consultant, or other services not contemplated in the Agreement.

#### **F. PAYMENT SCHEDULE**

Payments to the Architect of the Basic Fee shall be allocated for the Basic Services as follows:

For Service A - Schematic Design Phase	Ten percent (10%)
For Service B - Preliminary Design Phase	Fifteen percent (15%)
For Service C - Final Design Phase	Fifty percent (50%)
For Service D - Construction Contract Procurement	Five percent (5%)
For Service E - Construction Contract Administration	Twenty percent (20%).

#### **G. BID ALTERNATE DESIGN FEE** (Not applicable to a Fixed Fee.)

Unless otherwise provided in the Special Provisions of the Agreement, the Architect shall be paid a Bid Alternate Design Fee for unaccepted additive Bid Alternates or accepted deductive Bid Alternates included in the Bid Documents at the Owner's request.. The Bid Alternate Design Fee covers Services A, B, and C rendered relative to Owner-requested additive or deductive Bid Alternates and, therefore, shall be equal to 75 percent of the Basic Fee Rate applied to the lowest responsible and responsive bid received for each unaccepted additive or accepted deductive Bid Alternate.

#### **H. SALES TAX SAVINGS**

Per Act 2013-205 as codified in Title 40, Chapter 9, Article 14.1, Section (h) of the Code of Alabama, 1975, as amended:

“The intent of this section is to lower the administrative cost for the governmental entity, contractor, and subcontractor for public works projects. It is not the intent of this section to change the basis for determining professional services from fair market value, which may include sales and use taxes.”

If the Basic Fee is determined by a Basic Fee Rate, unless otherwise provided in the Special Provisions of the Agreement, the Architect shall be paid a Basic Fee to be based on a Cost of Work to include Sales Tax Savings. Once the construction contract has been awarded, the Architect shall modify the Agreement through an Amendment to include the Sales Tax Savings per DCM Form C-3A as part of the Cost of the Work in order to correctly calculate the Basic Fee.

#### **I. ALLOWANCES**

If Allowances, including but not limited to general contingency, are used in the Construction Contract, any un-used Allowances shall be credited back to the Awarding Authority/Owner at the close of the project by Change Order. The Basic Services Fee shall be adjusted based on the final cost of the work.

**Article 5**  
**SPECIAL SERVICES and EXTRA SERVICES**

**A. SPECIAL SERVICES**

**(1) Definition.** Special Services are services in addition to Basic Services and are to be listed in Special Provisions of the Agreement or in an Amendment. Special Services can be a lump sum if negotiated, or a Not-To-Exceed [NTE] amount. If Special Services have an NTE, the NTE and hourly rates must be stated in Special Provisions of the Agreement or in an Amendment. Special Services include, but are not limited to:

**(a) Special Consultants.** The graduation of fee rates by five Building Groups in the Schedule of Basic Fee Rates is intended to compensate for the level of consultants' services required to design the buildings and improvements within each Building Group. Therefore, the Standard Articles state that the Basic Services and Basic Fee include the services of engineers and consultants required to design the Work covered by an Agreement unless the Work is to include features, equipment, or systems not normally included in such work. If, in the opinion of the design professional and the Awarding Authority/Owner, it is necessary that the design professional employ the services of a consultant in a specialized field not normally involved in such a design, these services can be added as "Special Services" or negotiated into the Basic Services and Basic Fee. Such items include but are not limited to security systems, detail cost estimating from outside companies, industrial hygienists for abatement services, feasibility/assessment studies.

**(b) Periodic Inspections by Consulting Engineers.** Standard Article 10, Engineering Services, obligates the primary design professional to require its consulting engineers and other consultants to perform, or to have their qualified representatives perform, inspections of the Work appropriate to their discipline of design and in keeping with the primary design professional's obligations to the Awarding Authority/Owner. The number of "periodic inspections" to be made by consulting engineers is not defined in the Standard Articles; therefore, the Awarding Authority/Owner may wish to establish a minimum number of "periodic inspections" to be performed by the various consultants.

**(c) Roofing Consultants.** Unless the design professional is knowledgeable of roofing systems and their details and specifications, the design professional should, as a Basic Service, employ the services of a roofing consultant during design. However, DCM encourages the employment of a qualified roofing consultant for not only the design stage of the project, but also for frequent inspections of the in-progress work. For re-roofing projects, the roofing consultant may be used to obtain information defining the existing conditions and exact procedure for code compliance in roof replacement or recovery. The specific scope and basis of payment for these services should be clearly defined in the agreement.

**(d) Architect's On-Site Representative.** For larger, more complex projects, continuous monitoring of the in-progress work may be necessary, which is a service that is not included in the Basic Services of the Standard Articles. If this service is to be included, it must be specifically provided for in the Special Provisions section of the Agreement form, or later authorized by an amendment to the agreement, with the scope of the service, authority of the

representative, and terms of payment for the service clearly stipulated.

**(2) Compensation.** Unless stipulated otherwise in the Special Provisions of the Agreement, the basis upon which the Architect shall be compensated for Special Services shall be the Architect's cost for the service or work and up to 15% mark-up.

## **B. EXTRA SERVICES**

**(1) Definition.** Extra Services are services in addition to Basic Services and Special Services which are not provided for in the provisions of the Agreement but are required by events or circumstances that are beyond the Architect's control. Extra Services include, but are not limited to:

**(a)** Revising, at the Owner's instruction, Drawings, Specifications, bid documents, or other documents which have been prepared in accordance with previous instructions or approval of the Owner, including revisions required to accommodate bid alternates not previously requested by the Owner.

**(b)** Revising Drawings, Specifications, or other documents to conform to codes, laws, or regulations enacted or revised subsequent to the preparation of the documents.

**(c)** Duplication of Basic Services, or other major expenses, required by errors committed by the Contractor, the Owner's failure to make timely decisions, or damage to Work caused by fire, storm, or other casualty.

**(d)** Extended performance of Service E required by the Contractor's failure to achieve Substantial Completion of the Work within the Contract Time.

**(e)** Extended performance or duplication of Services E required by the Contractor's failure to complete all "punch list" items within the time stated in a Certificate of Substantial Completion or, if no such time is stated, within 30 days after the respective Date of Substantial Completion.

**(f)** Services provided as a direct result of the Contractor's default, the Owner's termination of the Construction Contract, or the Owner's suspension of the Work.

## **(2) AUTHORIZATION**

Except in cases of emergency, the Contractor's failure to achieve Substantial Completion of the Work within the Contract Time, or the Contractor's delayed completion of "punch list" items, the Architect shall render Extra Service only upon the Owner's authorization through an amendment to the Agreement. If the Architect considers any instructions or request by the Owner to require Extra Services, the Architect shall give the Owner prompt written notice thereof and execute an appropriate amendment to the Agreement prior to performing Extra Services. No compensation for Extra Services shall be due in the absence of prior notice.

## **(3) EMERGENCIES**

In case of an emergency that causes the Architect to render Extra Services, the Architect shall, within five days of the occurrence of the emergency, notify the Owner in writing as to the nature of the emergency and Extra Services rendered or to be rendered. The Architect shall be equitably compensated for reasonable Extra Services rendered in good faith during the five days preceding the written notice and until the Owner notifies the Architect in writing to terminate the Extra Services. The Agreement shall be amended to provide for the agreed compensation for such Extra Services as soon as practical following the emergency.

#### **(4) CONTRACTOR DELAY**

If the Architect believes that compensable Extra Services are being, or will be, rendered due to the Contractor's failure to achieve Substantial Completion of the Work within the Contract Time or the Contractor's delayed completion of "punch list" items, the Architect shall notify the Owner in writing, but shall not suspend or otherwise alter services to the detriment of the Owner and Project. As a prerequisite to entitlement to compensation for such Extra Services, the Architect shall have fulfilled its obligations under the terms of the Agreement to issue timely Notice(s) to Cure to the Contractor and to have advised the Owner of the Contractor's inadequate progress and possible actions to be taken by the Owner. Unless otherwise stipulated in the Special Provisions of the Agreement or an amendment to the Agreement, the Architect shall be equitably paid for validated Extra Services to the extent that the Owner is entitled to recover same from the Contractor (or its Surety) under the terms of the Construction Contract.

#### **(5) CONTRACTOR DEFAULT, TERMINATION or SUSPENSION**

Default by the Contractor or the Owner's termination of the Construction Contract or suspension of the Work shall constitute a suspension of Services E from the effective date of the action until the date upon which Work is resumed. In the absence of other agreement confirmed by amendment to the Agreement at that time, all services requested by the Owner and provided by the Architect shall constitute Extra Services during the period in which Services E are suspended. The Architect's notification prior to providing Extra Services shall not be required during this period; however, in response to the Owner's requests for services, the Architect will advise the Owner if the Architect considers the requested service is not prudent or that it would be inappropriate for the Architect to perform the service. The Architect shall keep a complete accounting of all expenses incurred, each referenced to the respective request for service, and present them to the Owner in such format as the Owner may require to facilitate recovery from others.

#### **(6) COMPENSATION**

Unless the Special Provisions of the Agreement or an amendment to the Agreement contains compensation rates or another method of computing Extra Services, the amount to be paid for Extra Services shall be determined in accordance with this paragraph. Compensation for Extra Services performed by the Architect shall be based upon the Architect's records of actual cost, plus one-hundred-twenty-five percent (125%) markup for overhead and profit. Actual cost to the Architect shall include **(1)** actual salaries of all employees involved, **(2)** proration of supervisory time, **(3)** laboratory fees if authorized by Owner, **(4)** authorized travel, **(5)** cost of maintaining Project site office for the Architect's On-site Representative, if applicable, and **(6)** miscellaneous items such as long-distance telephone calls and extra printing. The markup for overhead and profit shall include such items as normal office expense (rent, utilities, janitorial service, use of equipment, insurance) and the costs of mandatory and customary benefits such as holidays, vacations, pensions, insurance, FICA, etc. Compensation for Extra Services performed by the Architect's consultants shall be based upon the reasonable amount charged by the consultant in accordance with its existing agreement with the Architect, plus up to fifteen percent (15%) markup for overhead and profit for the Architect.

**Article 6**  
**REIMBURSABLE EXPENSES**

**A. DEFINITION**

Reimbursable Expenses are expenses which are the Owner's responsibilities (see Article 2) but are incurred by the Architect, upon the request or authorization of the Owner. Such services or work are not included in the Basic Services and are not subject to payment as Special Services or Extra Services. Reimbursable Expenses shall include only expenses specifically identified with a Not-To-Exceed amount in the Special Provisions of the Agreement or in an Amendment, and may include but is not limited to:

- (1) Preparatory Surveys, Tests, and Consultants which are the responsibility of the Owner pursuant to Article 2.B(5), but which are obtained by the Architect.
- (2) In-progress Inspections, Tests, and Consultants which are the responsibility of the Owner pursuant to Article 2.B(6), but which are obtained by the Architect.
- (3) The cost of publishing the Advertisement for Bids which is the responsibility of the Owner pursuant to Article 2.B(9), but paid for by the Architect.
- (4) The cost of printing, reproducing, handling, and distributing additional Bid Documents (Contract Documents) pursuant to the condition stipulated in Article 3.D(2).
- (5) The cost of reproducing, assembling, and delivering the Project Record, or significant portions of it, pursuant to Article 3.E(4).
- (6) Providing renderings, models and mock-ups of the Work or portions of the Work.

**B. EXCLUDED EXPENSES**

In performing the Basic Services, any expenses incurred by the Architect or its consultants for postage (regular or overnight), telephone, facsimile transmittal, document or Submittal transmittal, plotting and printing drawings for the Architect's in-house use and review, transportation and travel (to the Project site, Owner's office, locations of Specified Inspections, and other locations necessary for the conduct of Project-related business) are deemed normal expense of doing business and are not reimbursable. Expenses that are not specifically identified as Reimbursable Expenses in the Special Provisions of the Agreement or added through an Amendment are deemed to be covered by the Basic Fee and excluded as Reimbursable Expenses.

**C. COMPENSATION**

Unless stipulated otherwise in the Special Provisions of the Agreement or an Amendment, the basis upon which the Architect shall be compensated for Reimbursable Expenses shall be the Architect's cost for the service or work plus up to 15% mark-up, except travel expenses cannot be marked-up.

**Article 7**  
**PAYMENTS to the ARCHITECT**

**A. GENERAL**

Payments shall be made to the Architect as services are rendered and approved by the Owner, DCM, and the final approving authority prescribed by law. The Architect's statements for services rendered shall be presented to the Owner monthly and in the format prescribed in the Manual of Procedures. The Owner shall notify the Architect in writing within 15 days of receiving a disputed statement for service. Unless stipulated otherwise in the Special Provisions of the Agreement, payments for services rendered shall be as stated below.

**B. BASIC SERVICES**

**(1) Payment Schedule.** Payments shall be made for Basic Services rendered, allocating the Basic Fee to each Service in accordance with Article 4.E.

**(2) Reconciliation of Payments upon Opening Bids.** (Not applicable to a Fixed Fee.) Payments for Basic Services A, B, and C shall be computed by applying the Basic Fee Rate to the lesser of the Tentative Budget and the agreed estimate of the Cost of the Work until the opening of bids and determination of the Contract Sum of the Construction Contract to be awarded. The Basic Fee allocable to Services A, B, and C shall then be computed on the basis of the Contract Sum and reconciled with previous payments in the Architect's next statement for services. The total of all payments for Basic Services shall not exceed the amount computed by applying the Basic Fee Rate to the Cost of the Work as defined in Article 8.

**(3) Service A.** The Basic Fee allocated to Service A shall become payable when the schematic drawings and related design documents have been completed and approved by the Owner, DCM, and the SDE.

**(4) Service B.** The Basic Fee allocated to Service B shall become payable when the preliminary drawings and related design documents have been completed and approved by the Owner, DCM, and the SDE and the Architect's preliminary estimate of the Cost of the Work has been approved by the Owner.

**(5) Service C:**

**(a) Basic Fee rate:** 90 percent of the Basic Fee allocated to Service C shall become payable when the final drawings and related design documents have been completed and approved by the Owner, DCM, and the SDE, but may be in monthly progress payments equal to the estimated percentage of Service C that has been completed by the Architect. The remaining 10 percent of the Basic Fee allocated to Service C shall become payable upon completion of Service D, at which time previous payments can be reconciled pursuant to Subparagraph (2) above.

**(b) Fixed Fee:** The Basic Fee allocated to Service C shall become payable when the final drawings and related design documents have been completed and approved by the Owner, DCM, and the SDE, but may be paid in monthly progress payments equal to the estimated percentage of Service C that has been completed by the Architect.

**(6) Services D:** The Basic Fee allocated to Service D shall become payable upon the Architect's preparation and distribution of the certified Tabulation of Bids and Construction Contract to the Owner, DCM, and/or the SDE.

**(7) Service E:** 90 percent of the Basic Fee allocated to Service E shall become payable as the Work progresses and shall be based upon a percent of Work completed not to exceed the percent of Total Completed Work and Stored Materials as approved on the Contractor's monthly Applications for Payment. The remaining 10 percent of the Service E fee shall be paid with the Final Payment under this Agreement and shall become payable pursuant to Article 7.G.

**C. BID ALTERNATE DESIGN FEE** (Not applicable to a Fixed Fee.)

The Bid Alternate Design Fee shall be payable at the same time as Service D, but shall be considered separate and distinct from payments made for Basic Services and shall be accounted for separately in the Architect's statements for services. If a Bid Alternate is subsequently incorporated into the Construction Contract by change order action, the Bid Alternate Design Fee shall be appropriately adjusted to avoid duplicating payment of Basic Services.

**D. SPECIAL SERVICES**

The Architect's billings for Special Services, if any, may be submitted monthly following inclusion in Special Provisions of the Agreement or in an Amendment and then as rendered. Provide back-up and/or receipts for all Special Services, attached to the design professional's Statement for Services. Provide breakdown of hourly rates charged including dates, tasks, and hours per task when a Special Services fee is a Not-To-Exceed amount (instead of a negotiated lump sum). If a mark-up is charged, show the cost of the item, the mark-up percent and amount, and the total amount of the item and mark-up. Mark-up on travel expenses is not allowed. Payment for Special Services shall be considered separate and distinct from payments made for Basic Services and shall be accounted for separately in the Architect's statements for services.

**E. REIMBURSABLE EXPENSES**

The Architect's billings for Reimbursable Expenses may be submitted monthly and shall be supported by documentation of the expense to the Owner's satisfaction and per the following: Provide back-up and/or receipts for all Reimbursable Expenses, attached to the design professional's Statement for Services. Provide breakdown of hourly rates charged including dates, tasks, and hours per task. If a mark-up is charged, show the cost of the item, the mark-up percent and amount, and the total amount of the item and mark-up. Mark-up on travel expenses is not allowed. Payment for Reimbursable Expenses shall be considered separate and distinct from payments made for Basic Services and shall be accounted for separately in the Architect's statements for services.

**F. EXTRA SERVICES**

Extra Services, if any, shall become payable after inclusion in an amendment to the Agreement and then as rendered. Extra Services may be billed monthly. Payment for Extra Services shall be considered separate and distinct from payments made for Basic Services and shall be accounted for separately in the Architect's statements for services.

## **G. FINAL PAYMENT**

Any unpaid balance of the amount due under the Agreement shall be payable and due 30 days after:

- (1) expiration of the period established in the last Certificate of Substantial Completion for completion of “punch list” items,
- (2) the Architect’s delivery to Owner of either the Contractor’s “as-built” documents, warranties, and other closeout documents required in the Construction Contract or evidence that the Architect has made a reasonable effort to obtain these items from the Contractor, and
- (3) the Architect’s delivery to Owner of the Submittal documents as required under Article 3.E.6.

## **Article 8** **DEFINITION of COST of the WORK**

### **A. DEFINITION**

For determination of the Architect’s Basic Fees, the Cost of the Work shall mean the cost to the Owner or, for any portion of the Project that is not completed, the agreed estimate of the cost to the Owner, of all elements of the Project designed or specified by the Architect.

### **B. EXCLUDED COSTS**

Unless otherwise provided in the Special Provisions of the Agreement, or an amendment to the Agreement, the Cost of the Work does not include:

- (1) The Architect’s Basic Fee, Bid Alternate Design Fee, fees for Extra Services, or Reimbursable Expenses.
- (2) The cost of an Architect’s On-site Representative.
- (3) The cost of furnishings, fixtures, or equipment, except those included in Drawings and Specifications at the Owner’s request.
- (4) Premium costs (for which the Architect is liable) included in Contract Change Orders, including those required to effect compliance with plan review comments of DCM, SDE, or other reviewing authorities.
- (5) Any costs, services, or work for which the Owner is responsible pursuant to Article 2.B.
- (6) Unaccepted Bid Alternates (see Article 4.G, Bid Alternate Design Fee).

### **C. PAYMENTS WITHHELD from the CONTRACTOR**

The Cost of the Work shall not be decreased nor shall deductions be made from the Basic Fee on account of liquidated damages or other sums withheld from payments to Contractors.

### **D. SELF-PERFORMANCE by OWNER**

When labor or material is furnished by the Owner below its fair market value, the Cost of the Work shall be computed upon its fair market value in determining the agreed estimate of the Cost of the Work. “Fair market value” shall mean the prevailing cost of applicable labor, materials, equipment,

and supervision in the locale of the Project and shall include a reasonable markup for overhead and profit as would be appropriate in competitively bidding the work.

**Article 9**  
**SUSPENSION and TERMINATION of AGREEMENT**

**A. SUSPENSION of the AGREEMENT**

**(1) Owner's Right to Suspend.** If the Owner determines that postponement or delay of the Project is in the Owner's best interest, the Owner may suspend performance of the Agreement upon written notice to the Architect. Upon receipt of such notice the Architect shall immediately suspend all services under the Agreement pending request by the Owner to resume them. Resumption of services may require accommodation of the Architect's workload and staff assignments.

**(2) Payment Due.** The Architect shall be entitled to payment in full for all services completed and reimbursable expenses incurred as of the effective date of suspension.

**(a)** The amount due for Basic Service shall be in accordance with Article 4 based upon percentage of completion of each service as mutually agreed by the Owner and Architect. Upon request by the Owner, the Architect shall deliver copies of all documents either completed or in progress to the Owner so that this determination can be made.

**(b)** The Cost of the Work as of the effective date of suspension shall be determined as follows:

**.1** For any portion of the Project for which bids have not yet been received, the Cost of the Work shall be the lesser of the budgeted Cost of the Work and the Architect's approved estimate of the Cost of the Work.

**.2** For any portion of the Project for which bids have been received, but no Construction Contract has been awarded, the Cost of the Work shall be the lowest responsible and responsive bid received, as may have been subsequently negotiated, and which is within the budgeted Cost of the Work or the Architect's approved estimate of the Cost of the Work. Service C and D shall be deemed 100% complete for such portions of the Project.

**.3** For any portion of the Project for which a Construction Contract has been awarded, the Cost of the Work shall be the current Contract Sum of the Construction Contract.

**(3) Suspension Expenses.** Upon resuming service at the Owner's instruction, the Architect shall be compensated pursuant to Article 5, Extra Services, for any reasonable, documented expenses directly attributable to the suspension for which the Architect is not otherwise compensated.

**B. OWNER'S RIGHT to TERMINATE**

**(1) Termination for Convenience.** In the event of the proration of the fund from which payments under this Agreement are to be made or determination by the Owner that termination is otherwise in the Owner's best interest, the Owner may terminate the Agreement, in whole or in part, upon written notice to the Architect. Upon receipt of the Owner's written notification of termination, the Architect shall immediately stop all Services under the Agreement as instructed by the Owner and the Architect shall be paid for Services rendered.

**(2) Termination for Cause.**

**(a) Notice to Cure:** If the Architect fails or refuses to comply with any provisions of the Agreement, the Owner may give the Architect written notice to cure the condition of noncompliance within a reasonable, stated time, but not less than ten days after the Architect receives the notice.

**(b) Notice of Termination:** If, at the expiration of the time stated in the Notice to Cure, the Architect has not proceeded and satisfactorily continued to cure the condition of noncompliance or provided the Owner 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 Architect written notice that the Agreement is terminated upon the Architect's receipt of the written Notice of Termination.

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

**(d)** Upon receipt of the Owner's written notification of termination, the Architect shall immediately stop all Services under the Agreement as instructed by the Owner and the Architect shall be entitled to be paid for Services rendered, subject to claims of the Owner for damages, loss, or expenses resulting from the Architect's default.

**C. ARCHITECT'S RIGHT to SUSPEND or TERMINATE**

**(1) Suspension by Owner.** Should the Owner postpone or delay the Project or otherwise suspend performance of this Agreement for a longer period than has been allowed in the Agreement form, the Architect may terminate the Agreement by written notice to the Owner and the Architect shall be paid for Services rendered.

**(2) Nonpayment.** The Owner's failure to pay the undisputed amount of any properly presented statement for the Architect's Basic, Special and Extra Services or Reimbursable Expenses within sixty days after receiving it shall be just cause for either of the following actions by the Architect:

**(a)** The Architect may give the Owner fourteen days' written notice that services under the Agreement will be suspended pending receipt of payment. If services are then suspended for nonpayment, the Architect will be entitled to compensation as if the suspension had been by the Owner pursuant to Paragraph A of this Article.

**(b)** The Architect may give a written Notice of Termination to the Owner which allows the Owner fourteen days after receiving the Notice in which to make such payment. Absent the Architect's receipt of payment, the Agreement shall terminate upon expiration of this fourteen day period and the Architect will be compensated by the Owner as if the termination had been for the Owner's convenience pursuant to Paragraph E of this Article.

**D. DELIVERY of FINAL DRAWINGS**

Should the Agreement be terminated upon completion of Services A, B, and C, the Architect shall, as instructed by the Owner, deliver printed or reproducible sets of the sealed final Drawings and Specifications in such quantity as the Owner requests. The Architect shall be paid the cost of printing, reproduction, handling, and delivery as Reimbursable Expenses, unless such costs are included in payments made for Service D.

## **E. FINAL PAYMENT UPON TERMINATION**

In the event of termination of the Agreement, final settlement of, and final payment under, the Agreement shall be determined as follows:

### **(1) Earned Basic Fee.**

(a) The percentage of completion of each Basic Service shall be determined in accordance with Article 4. Upon request by the Owner, the Architect shall deliver copies of all documents either completed or in progress to the Owner so that this determination can be made.

(b) The Cost of the Work as of the effective date of termination shall be determined as follows:

.1 For any portion of the Project for which bids have not yet been received, the Cost of the Work shall be the lesser of the budgeted Cost of the Work and the Architect's approved estimate of the Cost of the Work.

.2 For any portion of the Project for which bids have been received, but no Construction Contract has been awarded, the Cost of the Work shall be the lowest responsible and responsive bid received, as may have been subsequently negotiated, and which is within the budgeted Cost of the Work or the Architect's approved estimate of the Cost of the Work. Service C and D shall be deemed 100% complete for such portions of the Project.

.3 For any portion of the Project for which a Construction Contract has been awarded, the Cost of the Work shall be the current Contract Sum of the Construction Contract.

(2) **Termination Expenses.** Unless the Agreement is terminated by the Owner for cause, the Architect shall be compensated as Extra Services for any reasonable, documented expenses directly attributable to the termination for which the Architect is not otherwise compensated. Termination Expenses shall not include any amount for profit anticipated by the Architect to have been derived from the Services not performed.

(3) **Final Payment.** Upon determination of the Basic Fee earned and Termination Expenses incurred by the Architect, and accounting for any Extra Services performed or Reimbursable Expenses incurred in accordance with the Agreement, the Architect shall be paid any unpaid balance of the amount then due under the Agreement.

## **Article 10 ENGINEERING SERVICES**

### **A. FULL PROFESSIONAL TEAM**

For the performance of the services required by the Agreement the Architect will employ the services of consulting engineers so as to provide a full professional team as dictated by the disciplines of architectural and engineering design involved in the Work. The consultants to be employed by the Architect are named in Item (13) "Consultants" of the Agreement form. The Architect shall notify the Owner in writing of any intended change in consultants and the Owner shall have the right of approval of any replacement consultant.

## **B. BASIC and SPECIAL SERVICES**

The graduation of fee rates by Building Groups in the Schedule of Basic Fee Rates (Chapter 4 - Supplement, Manual of Procedures) is intended to compensate for the level of consultants' services required to design the buildings and improvements within each Building Group. Therefore, the Basic Services and Basic Fee include the services of engineers and consultants required to design the Work covered by this Agreement unless the Work is to include features, equipment, or systems not normally included in such work. The scope and terms of compensation for engineering or consulting services required for such special features, equipment, and systems shall be as stated in the Special Provisions of the Agreement or an amendment to the Agreement.

## **C. LICENSED ENGINEERS**

All engineering Drawings, Specifications, detail drawings, approvals, etc., pertaining to civil, structural, mechanical, electrical, and other specialized phases of engineering design will be performed by, or under the supervision of, Professional Engineers licensed in the State of Alabama and employed by the Architect for the particular work. If such engineering services can be justifiably classified as being of such minor nature as to be considered purely incidental to the architectural services required for the Project, then these services may be performed by persons regularly employed in the Architect's organization who are not registered Professional Engineers, but are particularly qualified by education, experience, and training to do this type of work. Any question as to whether or not these services are purely incidental to the Project will be resolved by decision of the Director of DCM.

## **D. INSPECTIONS**

If Construction Contract Administration (Service E) is included in the Agreement, the Architect shall require its consulting engineers and other consultants to perform, or to have their qualified representatives perform, inspections of the Work appropriate to their discipline of design and in keeping with the Architect's obligations to the Owner pursuant to Article 3.E(8).

**(1) Scheduled Inspections.** The Architect shall require its mechanical and electrical engineers and other appropriate engineers and consultants to perform, or to have their qualified representatives perform, Above Ceiling Inspection(s) and Final Inspection(s). If the Work includes complex mechanical, electrical, and/or other systems or equipment, the Architect shall require its respective engineers and consultants to perform, or have their qualified representative perform, a Year-End Inspection of the system or equipment. If repetitious occurrence of problems with a system or equipment is experienced during the Contractor's One-Year Warranty Period, the Architect shall require its respective engineer or consultant to perform, or have their qualified representative perform, a Year-End Inspection of the system or equipment.

**(2) Periodic Inspections.** The Architect shall require its engineers and other consultants to perform, or to have their qualified representatives perform, Periodic Inspections at intervals appropriate to the stage of construction and consistent with the size and nature of the Work.

**(3) Specified Inspections and Tests.** The Architect shall require its engineers and other consultants to attend, or to have their qualified representatives attend, Specified Inspections and Tests when their attendance is a stated requirement of the Contract Documents.

**Article 11**  
**DESIGN SCHEDULE**

The periods of the Design Schedule stated on Page 2 of the Agreement form are defined as follow:

**A. SCHEMATIC DRAWINGS**

The number of calendar days, following receipt of the Owner's Program and the Preparatory Surveys and Tests necessary for the development of the Schematic Drawings, within which the Architect shall furnish complete Schematic Drawings for review by the Owner, DCM, and the SDE.

**B. PRELIMINARY DRAWINGS**

The number of calendar days, following receipt of necessary approvals of the Schematic Drawings, within which the Architect shall furnish complete Preliminary Drawings and outline specifications for review by the Owner, DCM, and the SDE and shall furnish an estimate of the Cost of the Work for the Owner's approval.

**C. FINAL DRAWINGS**

The number of calendar days, after receipt of necessary approvals of Preliminary documents, within which the Architect shall furnish complete Final Drawings and Specifications for review by the Owner, DCM, the SDE, and other approving authorities.

**Article 12**  
**OWNERSHIP of DOCUMENTS**

**A. PROPERTY of the ARCHITECT**

Documents prepared by the Architect pursuant to this Agreement, including all Drawings and Specifications for the Project, are instruments of service and are the property of the Architect, whether the Work for which they are made be executed or not.

**B. NONEXCLUSIVE LICENSE GRANTED**

The Architect grants a nonexclusive license to the Owner to reproduce and use the Drawings, Specifications, and other documents prepared in whatever form for the Project solely for the purpose of constructing, using, and maintaining the Project, provided Architect is paid all amounts due it under the Agreement. The Architect retains and reserves all statutory, common law, or other rights to the instruments of service.

**C. UPON TERMINATION of AGREEMENT**

Should the Agreement be terminated upon completion of Services A, B, and C, the Architect shall, deliver the sealed final Drawings and Specifications to the Owner in accordance with Article 9. Upon making final payment to the Architect in accordance with Article 9, the Owner shall be entitled to use the Drawings and Specifications, for the construction of all or part of the entire

Project as planned and specified without further payment to the Architect. However, the Owner is not authorized to use the Drawings and Specifications for construction that is not administered by an Alabama registered architect.

**D. ELECTRONIC DOCUMENTS**

The Architect shall not be required to provide Drawings, Specifications, or other documents to the Owner in electronic form nor shall the Owner be required to provide preparatory drawings or information to the Architect in electronic form unless the specific conditions governing the format of the electronic documents, any special limitations or licenses that may apply to their use, and the terms of compensation, if any, are established in the Special Provisions of the Agreement or an amendment to the Agreement.

**Article 13**  
**ARCHITECT'S INSURANCE**

Prior to performing any services under this Agreement, the Architect shall procure the insurance coverages identified below at the Architect's own expense. In order to evidence that such insurance coverages are in effect, the Architect shall furnish as an attachment to the Agreement an insurance certificate(s) acceptable to the Owner and listing the Owner as the certificate holder.

**A. POLICY 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.

**B. 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 herein 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.

**C. INSURANCE CERTIFICATES**

Insurance certificate must provide the following information

- (1) Name and address of authorized agent of the insurance company
- (2) Name and address of insured
- (3) Name of insurance company or companies
- (4) Description of policies
- (5) Policy Number(s)
- (6) Policy Period(s)

- (7) Limits of liability
- (8) Name and address of Owner as certificate holder
- (9) Project Name and Number, if any
- (10) Signature of authorized agent of the insurance company
- (11) Telephone number of authorized agent of the insurance company
- (12) Mandatory thirty day notice of cancellation / non-renewal / change

**D. ARCHITECT'S INSURANCE COVERAGES**

Unless otherwise provided in the Special Provisions of the Agreement, the Architect shall purchase the types of insurance coverages with liability limits not less than as follows:

(1) **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 Architect qualifies to pay its own worker's compensation claims.

- (2) **Employer's Liability Insurance** limits shall be at least:
- (a) Bodily Injury by Accident - \$1,000,000 each accident
  - (b) Bodily Injury by Disease - \$1,000,000 each employee

(3) **Commercial General Liability Insurance**, written on an ISO Occurrence Form (current edition as of the date of this Agreement) or equivalent, which 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, personal injury liability and contractual liability.

(a) The Commercial General Liability Insurance shall provide, at minimum, the following limits:

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

(b) The Commercial General Liability Insurance policy shall name the Owner and its agents and employees as additional insureds and shall state that this coverage shall be primary insurance for the additional insureds.

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

(5) **Professional Liability (Errors & Omissions) Insurance** shall be carried in an amount not less than \$1,000,000. The policy deductible shall not exceed \$25,000.00.

#### **E. ARCHITECT'S CONSULTANTS' INSURANCE COVERAGES**

**(1) Workers' Compensation and Employer's Liability Insurance.** The Architect shall require each of its consultants who will perform services at the Project site to obtain and maintain Workers' Compensation and Employer's Liability Insurance coverages as described in preceding Paragraph D.

**(2) Automobile and General Liability Insurance.** The Architect shall require each of its consultants who will perform services at the Project site to obtain and maintain Automobile and General Liability, Insurance coverages with the limits described in preceding Paragraph D.

**(3) Professional Liability Insurance.** The Architect shall require each of its consultants to obtain and maintain Professional Liability Insurance with coverage as described in preceding Paragraph D.

**(4) Enforcement Responsibility.** The Architect shall have responsibility to enforce its consultants' compliance with these insurance requirements; however, the Architect shall, upon request, provide the Owner acceptable evidence of insurance for any consultant.

#### **F. TERMINATION of OBLIGATION to INSURE**

Unless otherwise expressly provided in the Special Provisions of the Agreement, the obligation of the Architect and its consultants to insure as provided herein shall continue as follows:

**(1) Professional Liability (Errors & Omissions) Insurance** shall be carried for two years after the last Date of Substantial Completion of the Construction Contract(s).

**(2) Other Insurance.** The obligation to carry the other insurance coverages of preceding Paragraph D or coverages equal to them, shall remain in effect after the last Date of Substantial Completion of the Construction Contract at any time the Architect, its consultants, anyone directly or indirectly employed by them or anyone for whose acts they may be liable, returns to the Project to perform services required of this Agreement.

#### **G. WAIVERS of SUBROGATION**

To the extent that loss or damage is covered by property insurance during construction, the Owner and Architect waive all rights against each other and against the contractors, consultants, agents and employees of the other for damages, except such rights as they may have to proceeds of such insurance held by the Owner, Architect, or Contractor as fiduciary. The Owner or Architect, as appropriate, shall require of the contractors, consultants, agents and employees of any of them similar waivers in favor of the other parties enumerated herein. This waiver shall not be applicable to loss or damage that occurs after final acceptance of the Work

### **Article 14**

#### **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

Architect or Owner arising out of or related to the Agreement, or its breach, including without limitation claims seeking equitable adjustment of amounts payable or time of performance under the Agreement and claims and disputes arising between the Architect and Owner regarding interpretation or breach of the Agreement.

(2) "Resolution" addressed in this Article applies only to Claims and Disputes arising between the Architect and Owner and asserted after execution of the Agreement and prior to the date upon which final payment is made. Upon making application for final payment the Architect 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 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 Architect to fail or refuse to proceed diligently with performance of the services of the Agreement or for the Owner to fail or refuse to continue to make payments in accordance with the Agreement.

#### **C. GOOD FAITH EFFORT to SETTLE**

The Architect and Owner agree that, upon the assertion of a Claim by the other, they will make a good faith effort to achieve mutual resolution of the Claim. If mutually agreed, the Architect 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 AGREEMENTS**

(1) If the Agreement is funded in whole or in part with state funds, the final Resolution of Claims and Disputes which cannot be resolved by the Architect and Owner shall be by the Director, Alabama Division of Construction Management, whose decision shall be final, binding, and conclusive upon the Architect 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 Architect shall be submitted through the Owner. Should the Owner fail or refuse to submit the Architect's request within ten days of receipt of same, the Architect 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 AGREEMENTS**

If the Agreement is funded in whole with funds provided by a city or county board of education or other local governmental authority and the Agreement does not stipulate a binding alternative

dispute resolution method, the final resolution of Claims and Disputes which cannot be resolved by the Architect and Owner may be by any legal remedy available to the parties. Alternatively, upon the written agreement of the Architect 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 15**  
**MISCELLANEOUS PROVISIONS**

**A. ENTIRE AGREEMENT**

The AGREEMENT BETWEEN OWNER AND ARCHITECT, including the Standard Articles (DCM Form B-2A) incorporated therein and any documents cited and identified in the Special Provisions of the Agreement as “Attachments”, represents the entire agreement between the Owner and the Architect, superseding any and all prior written or oral negotiations, representations, or agreements. The Agreement may be amended only by an Amendment executed by the Architect, Owner, and other signatories to the Agreement.

**B. SUCCESSORS and ASSIGNMENTS**

The Owner and the Architect each bind themselves, and their partners, successors, executors, administrators, heirs, and assigns, to the other party to the Agreement, and to the partners, successors, executors, administrators, heirs, and assigns of such other party in respect of all covenants of the Agreement.

**C. CONFLICTS with LAWS**

It is agreed that if any provision of the Agreement shall contravene any statute or constitutional provision or amendment, either now in effect or which may, during the course of the Agreement, be enacted, then that conflicting provision in the Agreement shall be deemed null and void without affecting the remaining provisions of the Agreement.

**D. PROMOTIONAL USE**

Unless otherwise stipulated in the Special Provisions of the Agreement, the Architect may include photographs or artistic representations of the Project among the Architect’s promotional and professional materials.

**E. 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.

**F. ALABAMA BOYCOTT LAW**

Per Act 2016-312 as 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.

**G. ACCOUNTING OF SALES TAX**

Per Act 2013-205 as codified in Title 40, Chapter 9, Article 1 of the Code of Alabama, 1975, as amended. (Section 40-9-14.1).

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

END of STANDARD ARTICLES

**PREPARATION AND APPROVAL OF  
CONSTRUCTION CONTRACTS  
and BONDS**

**CHECKLIST**

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

<p><b>CONSTRUCTION CONTRACT - DCM Form C-5 or DCM Form 9-A (PSCA Projects)</b> 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><b>PROJECT NUMBER(S):</b> Insert the DCM (BC) Project Number in the block provided.</p> <ul style="list-style-type: none"> <li>On DCM Form 9-A, also insert the PSCA Project Number in the block provided.</li> </ul>
(2)	<p><b>DATE:</b> Insert the date upon which the Contractor will sign the contract.</p>
(3)	<p><b>OWNER:</b> Insert the full, legal name of the Owner (Awarding Authority).</p> <ul style="list-style-type: none"> <li>On DCM Form 9-A, insert the name of the Local Education Authority (city or county school board, college, university, etc.) after "Alabama Public School and College Authority"</li> </ul>
(4)	<p><b>CONTRACTOR:</b> Insert the Contractor's full, legal company name and correct mailing address. 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"> <li>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.</li> </ul>
(5)	<p><b>The WORK:</b> Insert the complete name of the Project; same as in the Bid Documents.</p>
(6)	<p><b>CONTRACT DOCUMENTS:</b> Insert the date of the Bid Documents</p>
(7)	<p><b>ADDENDA:</b> 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><b>ARCHITECT:</b> Insert the full, legal name of the Project Architectural or Engineering firm.</p>
(9)	<p><b>CONTRACT SUM:</b> 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><b>BID ALTERNATE PRICES:</b> 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><b>The CONTRACT TIME:</b> State the Contract Time in words and in figures.</p>
(12)	<p><b>LIQUIDATED DAMAGES:</b> 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><b>SPECIAL PROVISIONS:</b> 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"> <li>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 Education Authority are to be stated. Obtain these amounts from DCM and insert them in the spaces provided. Other Special Provisions, such as disposition of Unit Prices, may be inserted below this provision.</li> </ul>
(14)	<p><b>STATE GENERAL CONTRACTOR'S LICENSE:</b> Insert the Contractor's current state general contracting license number, bid limit, and classification in the spaces provided.</p>

<b>(15)</b>	<b>SIGNATURES - APPROVING and CONTRACTING PARTIES</b> Signature spaces vary for State Agency projects, fully locally-funded Alabama Community College System (ACCS) projects and partially or fully PSCA-funded projects. Download the appropriate document per Owner/funding type from <a href="http://www.dcm.alabama.gov/forms.aspx">www.dcm.alabama.gov/forms.aspx</a> . Original signatures required; copies of signatures will not be accepted.
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<b>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)</b>	
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.	
<b>(1)</b>	<b>SURETY'S BOND NUMBER</b> should be inserted in the block provided.
<b>(2)</b>	<b>PRINCIPAL:</b> The Contractor's name and address is to be the same as appears in the Construction Contract.
<b>(3)</b>	<b>SURETY:</b> The full, legal name and address of the bonding company.
<b>(4)</b>	<b>OWNER:</b> The Owner's name and address is to be the same as appears in the Construction Contract.
<b>(5)</b>	<b>PENAL SUM:</b> 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.
<b>(6)</b>	The <b>Date</b> of the Construction Contract: The date that appears on the Construction Contract.
<b>(7)</b>	The <b>PROJECT:</b> The same name or description as appears in the Construction Contract.
<b>(8)</b>	<b>DATE:</b> After "SIGNED AND SEALED" is to appear the date upon which Contractor and Surety sign the Bond. <b>THIS DATE MUST NOT PRECEDE THE DATE OF THE CONSTRUCTION CONTRACT.</b>
<b>(9)</b>	<b>CONTRACTOR'S SIGNATURE:</b> 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.
<b>(10)</b>	<b>SURETY'S SIGNATURE:</b> <b>a.</b> 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.
<b>(11)</b>	<b>ATTACHED POWER OF ATTORNEY:</b> 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. <b>THE DATE OF THE POWER OF ATTORNEY MUST NOT PRECEDE THE DATE OF THE BOND.</b>

**ATTACHMENTS** - The following attachments are required to be submitted with Construction Contracts:

- Insurance Certificate: It is the responsibility of the design professional to ensure all insurance requirements are discussed with bidders prior to a bid and that they have provided the requirements to their insurance provider. Contractor must obtain all insurance coverage specified in Article 37 of the General Conditions of the Contract.
- Performance Bond (not required for contracts under \$50,000.00)
- Payment Bond (not required for contracts under \$50,000.00)
- Certified Tabulation of Bids (required for all projects including those with informal proposal bids).
- DCM Form C-3: Proposal Form
- DCM Form C-3A: Accounting of Sales Tax (form must be the executed C-3A from bid documents).
- EVerify Memorandum of Understanding
- Alabama Disclosure Statement

**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 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 fee has been paid.

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.

Fees may be paid online at [www.dcm.alabama.gov](http://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](http://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](mailto:jennie.jones@realproperty.alabama.gov).

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.

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

(1) **PERFORMANCE 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** (*Entity 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:**

\_\_\_\_\_  
Company Name

By \_\_\_\_\_  
Signature

\_\_\_\_\_  
Name and Title

\_\_\_\_\_  
Company Name

By \_\_\_\_\_  
Signature

\_\_\_\_\_  
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.



ALABAMA DEPARTMENT OF FINANCE  
 REAL PROPERTY MANAGEMENT  
 Division of Construction Management

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

Revised August 2020

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 \_\_\_\_\_

Awarded Contract Sum \_\_\_\_\_

Select ONE of the following:                      Basic Permit Fee                      Permit Re-Inspection Fee

Email address(es) for Payment Receipt: \_\_\_\_\_

**BASIC PERMIT FEE CALCULATION:**

**Awarded Contract Sum is less than \$1,000**      N/A

**Awarded Contract Sum is \$1,001 - \$50,000**

Contract Sum less \$1,000= \_\_\_\_\_ /1,000 x \$5.00= \_\_\_\_\_ +\$15.00= \_\_\_\_\_

**Awarded Contract Sum is \$50,001 - \$100,000**

Contract Sum less \$50,000= \_\_\_\_\_ /1,000 x \$4.00= \_\_\_\_\_ +\$260.00= \_\_\_\_\_

**Awarded Contract Sum is \$100,001 - \$500,000**

Contract Sum less \$100,000= \_\_\_\_\_ /1,000 x \$3.00= \_\_\_\_\_ +\$460.00= \_\_\_\_\_

**Awarded Contract Sum is \$500,001 and up**

Contract Sum less \$500,000= \_\_\_\_\_ /1,000 x \$2.00= \_\_\_\_\_ +\$1,660.00= \_\_\_\_\_

**PERMIT RE-INSPECTION FEE:**

**Flat fee of \$1,500.00 per occurrence**

<b>TOTAL DUE:</b> _____
-------------------------

Basic Permit Fee: Covers all required inspections by the DCM Inspector during construction. 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.

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 is subject to the Final Reconciliation of Fees at the close of construction.

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, same as appears in the Construction Contract)

Name:

Address:

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

Name:

Address:

(4) The **OWNER(s)** (Entity 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:**

\_\_\_\_\_  
Company Name

\_\_\_\_\_  
Company Name

By \_\_\_\_\_  
Signature

By \_\_\_\_\_  
Signature

\_\_\_\_\_  
Name and Title

\_\_\_\_\_  
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.



# SUBSTITUTION REQUEST

(After the Bidding/Negotiating Phase)

Project: \_\_\_\_\_ Substitution Request Number: \_\_\_\_\_  
 \_\_\_\_\_ From: \_\_\_\_\_  
 To: \_\_\_\_\_ Date: \_\_\_\_\_  
 \_\_\_\_\_ A/E Project Number: \_\_\_\_\_  
 Re: \_\_\_\_\_ Contract For: \_\_\_\_\_

Specification Title: \_\_\_\_\_ Description: \_\_\_\_\_  
 Section: \_\_\_\_\_ Page: \_\_\_\_\_ Article/Paragraph: \_\_\_\_\_

Proposed Substitution: \_\_\_\_\_  
 Manufacturer: \_\_\_\_\_ Address: \_\_\_\_\_ Phone: \_\_\_\_\_  
 Trade Name: \_\_\_\_\_ Model No.: \_\_\_\_\_  
 Installer: \_\_\_\_\_ Address: \_\_\_\_\_ Phone: \_\_\_\_\_

History:  New product  1-4 years old  5-10 years old  More than 10 years old

Differences between proposed substitution and specified product: \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_

Point-by-point comparative data attached — REQUIRED BY A/E

Reason for not providing specified item: \_\_\_\_\_  
 \_\_\_\_\_

Similar Installation:  
 Project: \_\_\_\_\_ Architect: \_\_\_\_\_  
 Address: \_\_\_\_\_ Owner: \_\_\_\_\_  
 \_\_\_\_\_ Date Installed: \_\_\_\_\_

Proposed substitution affects other parts of Work:  No  Yes; explain \_\_\_\_\_  
 \_\_\_\_\_

Savings to Owner for accepting substitution: \_\_\_\_\_ (\$ \_\_\_\_\_).

Proposed substitution changes Contract Time:  No  Yes [Add] [Deduct] \_\_\_\_\_ days.

Supporting Data Attached:  Drawings  Product Data  Samples  Tests  Reports  \_\_\_\_\_

# SUBSTITUTION REQUEST

(After the Bidding/Negotiating Phase — Continued)

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The Undersigned certifies:

- Proposed substitution has been fully investigated and determined to be equal or superior in all respects to specified product.
  - Same warranty will be furnished for proposed substitution as for specified product.
  - Same maintenance service and source of replacement parts, as applicable, is available.
  - Proposed substitution will have no adverse effect on other trades and will not affect or delay progress schedule.
  - Cost data as stated above is complete. Claims for additional costs related to accepted substitution which may subsequently become apparent are to be waived.
  - Proposed substitution does not affect dimensions and functional clearances.
  - Payment will be made for changes to building design, including A/E design, detailing, and construction costs caused by the substitution.
  - Coordination, installation, and changes in the Work as necessary for accepted substitution will be complete in all respects.
- 

Submitted by: \_\_\_\_\_

Signed by: \_\_\_\_\_

Firm: \_\_\_\_\_

Address: \_\_\_\_\_

Telephone: \_\_\_\_\_

Attachments:

---

### A/E's REVIEW AND RECOMMENDATION

- Approve Substitution - Make submittals in accordance with Specification Section 01 25 00 Substitution Procedures.
- Approve Substitution as noted - Make submittals in accordance with Specification Section 01 25 00 Substitution Procedures.
- Reject Substitution - Use specified materials.
- Substitution Request received too late - Use specified materials.

Signed by: \_\_\_\_\_ Date: \_\_\_\_\_

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### OWNER'S REVIEW AND ACTION

- Substitution approved - Make submittals in accordance with Specification Section 01 25 00 Substitution Procedures. Prepare Change Order.
- Substitution approved as noted - Make submittals in accordance with Specification Section 01 25 00 Substitution Procedures. Prepare Change Order.
- Substitution rejected - Use specified materials.

Signed by: \_\_\_\_\_ Date: \_\_\_\_\_

---

Additional Comments:     Contractor     Subcontractor     Supplier     Manufacturer     A/E

## CONTRACT CHANGE ORDER

Change Order No. \_\_\_\_\_ Date \_\_\_\_\_ DCM (BC) No. \_\_\_\_\_

<b>TO: (Contractor)</b> Co. Name: Address:	<b>PROJECT:</b>
--	-----------------

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

\_\_\_\_\_  
Architectural/Engineering Firm

Recommended By \_\_\_\_\_

Name & Title \_\_\_\_\_

**CONTRACTING PARTIES**

\_\_\_\_\_  
Contractor Company

By \_\_\_\_\_

Name & Title \_\_\_\_\_

\_\_\_\_\_  
Awarding Authority/Owner Entity

By \_\_\_\_\_

Name & Title \_\_\_\_\_

**APPROVAL**

**ALABAMA STATE DEPARTMENT OF EDUCATION**  
**(SDE)**  
*(Required for locally-funded, SDE projects.)*

By \_\_\_\_\_ Date: \_\_\_\_\_  
State Superintendent of Education

**CONSENT OF SURETY** (for additive \$ change orders only)

\_\_\_\_\_  
Surety Company

By \_\_\_\_\_

(Attach current Power of Attorney)

Name & Title \_\_\_\_\_

Review/Signature flow: Contractor (prepare and sign documents) (> Surety for additive \$ change orders only [sign]) > Architect/Engineer (review and sign) > Owner (review and sign) > SDE (review, sign, distribute the fully executed Change Order to all parties and forward a copy to the Alabama Division of Construction Management [DCM]). Note: DCM does not sign fully locally-funded SDE project contract documents.

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.*

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

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.** \_\_\_\_\_

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

**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.**

<b>RECOMMENDED BY</b> ( <i>signature and email address required</i> ):	
ARCHITECT/ENGINEER: _____	DATE: _____
<b>CONTRACTING PARTIES:</b>	
CONTRACTOR: _____	DATE: _____
OWNER: _____	DATE: _____
_____	DATE: _____
<b>APPROVALS:</b>	
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](http://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](http://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.**



*Do not staple this form and/or attachments; use clips.*

# GENERAL CONTRACTOR'S ROOFING GUARANTEE

DCM (BC) Project No. _____
----------------------------

Project Name & Address	Project Owner Entity(ies) Name(s) & Address(es)
------------------------	---

General Contractor's Company Name, Address, & Telephone Number	<b>EFFECTIVE DATES OF GUARANTEE</b>
	Date of Acceptance:
	Date of Expiration:

1. The General Contractor does hereby certify that the roofing work included in this contract was installed in strict accordance with all requirements of the plans and specifications and in accordance with approved roofing manufacturers recommendations.
2. The General Contractor does hereby guarantee the roofing and associated work including but not limited to all flashing and counter flashing both composition and metal, roof decking and/or sheathing; all materials used as a roof substrate or insulation over which roof is applied; promenade decks or any other work on the surface of the roof; metal work; gravel stops and roof expansion joints to be absolutely watertight and free from all leaks, due to faulty or defective materials and workmanship for a period of five (5) years, starting on the date of substantial completion of the project. This guarantee does not include liability for damage to interior contents of building due to roof leaks, nor does it extend to any deficiency which was caused by the failure of work which the general contractor did not damage or did not accomplish or was not charged to accomplish.
3. Subject to the terms and conditions listed below, the General Contractor also guarantees that during the Guarantee Period he will, at his own cost and expense, make or cause to be made such repairs to, or replacements of said work, in accordance with the roofing manufacturers standards as are necessary to correct faulty and defective work and/or materials which may develop in the work including, but not limited to: blisters, delamination, exposed felts, ridges, wrinkles, splits, warped insulation and/or loose flashings, etc. in a manner pursuant to the total anticipated life of the roofing system and the best standards applicable to the particular roof type in value and in accordance with construction documents as are necessary to maintain said work in satisfactory condition, and further, to respond on or within three (3) calendar days upon proper notification or leaks or defects by the Owner or Architect.

- A. Specifically excluded from this Guarantee are damages to the work, other parts of the building and building contents caused by: (1) lightning, windstorm, hailstorm and other unusual phenomena of the elements; and (2) fire. When the work has been damaged by any of the foregoing causes, the Guarantee shall be null and void until such damage has been repaired by the General Contractor, and until the cost and expense thereof has been paid by the Owner or by the responsible party so designated.
- B. During the Guarantee Period, if the Owner allows alteration of the work by anyone other than the General Contractor, including cutting, patching and maintenance in connection with penetrations, and positioning of anything on the roof, this Guarantee shall become null and void upon the date of said alterations. If the owner engages the General Contractor to perform said alterations, the Guarantee shall not become null and void, unless the General Contractor, prior to proceeding with the said work, shall have notified the Owner in writing, showing reasonable cause for claim that said alterations would likely damage or deteriorate the work, thereby reasonably justifying a termination of this Guarantee.
- C. Future building additions will not void this guarantee, except for that portion of the future addition that might affect the work under this contract at the point of connection of the roof areas, and any damage caused by such addition. If this contract is for roofing of an addition to an existing building, then this guarantee covers the work involved at the point of connection with the existing roof.
- D. During the Guarantee period, if the original use of the roof is changed and it becomes used for, but was not originally specified for, a promenade, work deck, spray cooled surface, flooded basin, or other use of service more severe than originally specified, this Guarantee shall become null and void upon the date of said change.
- E. The Owner shall promptly notify the General Contractor of observed, known or suspected leaks, defects or deterioration, and shall afford reasonable opportunity for the General Contractor to inspect the work, and to examine the evidence of such leaks, defects or deterioration.

IN WITNESS THEREOF, this instrument has been duly executed this \_\_\_\_\_ day  
of \_\_\_\_\_, \_\_\_\_\_.

---

General Contractor's Authorized Signature

---

Typed Name and Title

**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.

# GENERAL CONDITIONS of the CONTRACT

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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, "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 when the Total Completed Work and Stored Materials is less than fifty percent of the Total Contract to date. Owner shall retain two and a half percent of the Total Contract to date after Total Completed Work and Stored Materials has reached fifty percent of the Total Contract to date. Retainage shall be released upon completion of all close-out requirements per Article 34 and the review, approval and processing of contractor's final Application for Payment.

**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 a Release of Claims 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.

**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 BOYCOT 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**

(Not required for fully locally-funded SDE projects.)

If the Contract Sum (as awarded) is \$100,000.00 or more, the Contractor shall furnish and erect a project sign as shown in "Detail of Project Sign" (DCM Form C-15) bound in the Project Manual. 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 sign is required, which shall be erected on one of the sites in a location selected by the Architect and Owner.

END of  
GENERAL CONDITIONS of the CONTRACT

**WAIVER AND RELEASE OF LIEN (SAMPLE)**

FROM:  
TO: City of Orange Beach, Orange Beach, Alabama (Owner)  
PROJECT: Orange Beach High School Field House

KNOW ALL MEN BY THESE PRESENTS:

1. The undersigned, having been employed by the **City of Orange Beach** to furnish labor and/or materials for the referenced project, does hereby waive and release any and all lien and claim or right to lien and claim against the **City of Orange Beach** on the referenced project on account of labor, services, equipment, materials, etc. furnished for the referenced project.
2. The undersigned further certifies that to the best of his knowledge and belief, there are no unsatisfied or outstanding claims of any character arising out of the furnishing of labor, equipment, services, and/or materials for the referenced project.
3. The undersigned further agree that, after execution of this document, it will indemnify, defend at its expense, and save the **City of Orange Beach** harmless from any and all claims or liens arising out of the undersigned's furnishing of labor, equipment, services, and/or materials for the referenced project.
4. The undersigned has executed this document in order to induce the **City of Orange Beach** to make final payment to and in no way acts as a release of any claim the undersigned may have against parties other than the **City of Orange Beach** arising out of the furnishing of labor and/or materials for the referenced project.

IN WITNESS WHEREOF, the undersigned has signed and sealed this instrument this \_\_\_\_\_ day of \_\_\_\_\_, 2020.

\_\_\_\_\_

STATE OF ALABAMA  
COUNTY OF BALDWIN

Personally appeared before me the undersigned Notary Public in and for said County and State, \_\_\_\_\_, who is known to me and who, after being duly sworn, deposes and says that the facts stated in the above affidavit are true.

\_\_\_\_\_

## SECTION 00 7300 SUPPLEMENTARY CONDITIONS

### PART 1 GENERAL

#### 1.1 SUMMARY

- A. These Supplementary Conditions amend and supplement the General Conditions defined in Document 00 7200 - General Conditions and other provisions of the Contract Documents as indicated below. Provisions that are not so amended or supplemented remain in full force and effect.
- B. The terms used in these Supplementary Conditions that are defined in the General Conditions have the meanings assigned to them in the General Conditions.

#### 1.2 RELATED SECTIONS

Section 00 5000 - Contracting Forms and Supplements.

#### 1.3 MODIFICATIONS TO GENERAL CONDITIONS ARTICLE 1.1 -

##### BASIC DEFINITIONS

After Section 1.1.8, add the following definitions:

##### 1.1.9 Miscellaneous Definitions

- .1 The term "product" includes materials, systems, and equipment.
- .2 The term "furnish" means to supply and deliver to project site.
- .3 The term "install" means to place in position for service or use.
- .4 The term "provide" includes furnishing and installing a product, complete in place, tested and approved.
- .5 The term "building code" and the term "code" refer to regulations of governmental agencies having jurisdiction.
- .6 The terms "approved", "required", and "as directed" refer to and indicate the work or materials that may be approved, required, or directed by the Architect acting as the agent of the Owner.
- .7 The term "similar" means in its general sense and not necessarily identical.
- .8 The terms "shown", "indicated", "detailed", "noted", "scheduled", and terms of similar import, refer to requirements contained in the Contract Documents.
- .9 Project Manual: The Project Manual is the volume usually assembled for the Work which includes the Bid Documents, Contract Documents, and Specifications.

#### 1.4 ARTICLE 3 - CONTRACTOR

Delete Paragraph 3.6 and replace with the following;

##### 3.6 TAXES

- 3.6.1 Contractor shall not include sales and use taxes in the Contract Amount. The Base Bid and all Alternate Bids submitted on the proposal form will NOT INCLUDE the cost of taxes including sales taxes and use taxes. See section 00 7323 ADOR.
- 3.6.2 After selection of successful contract bidder, Owner and Contractor will enter into a purchasing agency agreement. Contractor shall act as agent of the Owner for the purpose of purchasing materials relating to the Work of this Contract. Payment for such materials shall be made directly by Owner.
  - 3.6.2.1 Owner will provide necessary agreement and forms at the time when Agreement is executed.

#### ARTICLE 5 - SUBCONTRACTORS

Add the following subparagraph:

5.2.5 Not later than 15 days after the date of commencement of the Work, the Contractor shall furnish in writing to the Owner through the Architect the names of persons or entities proposed as manufacturers or fabricators for certain products, equipment and systems identified in the General Requirements (Division 1 of the Specifications) and, where applicable, the name of the installing Subcontractor.

#### ARTICLE 7 - CHANGES IN THE WORK

Add the following subparagraphs:

7.1.5 The combined overhead and profit included in the total cost to the Owner for a change in the Work shall be based on the following schedule:

.1 For the Contractor, for Work performed by the Contractor's own forces, 20 percent of the cost.

.2 For the Contractor, for Work performed by the Contractor's Subcontractors, 10 percent of the amount due the Subcontractors.

.3 For each Subcontractor involved, for Work performed by that Subcontractor's own forces, 15 percent of the cost.

.4 For each Subcontractor involved, for Work performed by the Subcontractor's Sub-subcontractors, 10 percent of the amount due the Sub-subcontractor.

.5 Cost to which overhead and profit is to be applied shall be determined in accordance with Section 7.3.7.

.6 In order to facilitate checking of quotations for extras or credits, all proposals, except those so minor that their propriety can be seen by inspection, shall be accompanied by a complete itemization of costs including labor, materials and Subcontracts. Labor and materials shall be itemized in the manner prescribed above.

Where major cost items are Subcontracts, they shall be itemized also. In no case will a change involving over \$5,000.00 be approved without such itemization.

#### ARTICLE 8 - TIME

Add the following subparagraph:

8.1.5: Contract Time commences at the time indicated in a written Notice To Proceed. The Work shall be Substantially Complete on or before November 18, 2020 at 5:00 pm CST on that day. See Section 01 1000 - Summary, 1.02 D. for other pertinent dates.

#### ARTICLE 9 - PAYMENTS AND COMPLETION

Add the following subparagraph:

9.3.1.3 Until Substantial Completion, the Owner shall pay 90 percent of the amount due the Contractor on account of progress payments.

9.3.1.4 Until all work is satisfactorily completed in accordance with this agreement and all closeout requirements have been provided, less five percent (5%) of the amount of such estimate which is to be retained by the Owner.

Add the following section:

9.11: Liquidated Damages:

9.11 Liquidated Damages shall be \$500 per day.

ARTICLE 11 - INSURANCE AND BONDS

ARTICLE 11.1 - CONTRACTORS LIABILITY INSURANCE

Contractors Liability Insurance: Add the following Section 11.1.1.9:

11.1.1.10 If the General Liability coverages are provided by a Commercial General Liability Policy on a claims-made basis, the policy date or Retroactive Date shall predate the Contract; the termination date of the policy or applicable extended reporting period shall be no earlier than the termination date of coverages required to be maintained after final payment, certified in accordance with Subparagraph 9.10.1 and 9.10.2.

Add the following Clause 11.1.2.1 to 11.1.2:

11.1.2.1 Insurance coverage required by Section 11.1.1 shall be written for not less than the following amounts, or greater if required by law:

1. Workers Compensation and Employer's liability:

- a) State: Statutory
- b) Applicable Federal: Statutory
- c) Employer's Liability:
  - (1) \$1,000,000.00 per accident.
  - (2) \$1,000,000.00 Disease, Policy Limit.
  - (3) \$1,000,000.00 Disease, Each Employee.

2. Comprehensive or Commercial General Liability (including Premises-Operations; Independent Contractors' Protective; Products and Completed Operations; Broad Form Property Damage):

- a. a) Each Occurrence: \$1,000,000.00
- b. General Aggregate: \$2,000,000.00
- c. Personal and advertising injury: \$1,000,000.00
- d. Products completed operations aggregate: \$2,000,000.00
  - b) Policy shall be endorsed to have the general aggregate per project. in the amount of \$2,000,000.00.
  - c) Products and Completed Operations to be maintained ONE (1) year after either 90 days after Substantial Completion or final payment, whichever is earlier.
  - d) Automobile Liability Insurance (including owned, non-owned and hired vehicles):  
Each Occurrence: \$1,000,000.00
  - e) Umbrella Excess Liability:
    - 1) \$1,000,000.00 over primary

insurance. Add the following Section 11.1.2.2:

11.1.2.2 All Contractors insurance policies shall name the Architect and Owner as additional insureds.

Add to Section 11.1.3:

Notice of Insurance shall be filed with all named insureds including written notice of cancellation. In addition of Notice of Cancellation, notify named insureds within Ten (10) days for nonpayment of premium. Add Section 11.1.3.1:

11.1.3.1 Certificates of insurance shall be in the form of Acord Form 25-S, supplemented by AIA Document G715, "Supplemental Attachment", or otherwise 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:

- 1) Name and address of authorized agent of the insurance company
- 2) Name and address of insured and additional insureds.
- 3) Name of insurance company or companies
- 4) Description of policies
- 5) Policy Number(s)
- 6) Policy Period(s)
- 7) Limits of liability
- 8) Name and address of Owner as certificate holder
- 9) Project Name and Number, if any
- 10) Signature of authorized agent of the insurance company
- 11) Mandatory thirty (30) day notice of cancellation / non-renewal / change

#### ARTICLE 11.4 - PERFORMANCE BOND AND PAYMENT BOND

11.4.3: The bond value requirements are as follows:

Provide bonds on City of Orange Beach Forms.

Provide a 100 percent Performance Bond.

Provide a 100 percent Payment Bond.

1. Deliver bonds with the Construction Contract and Certificate of Insurance for final approval and execution of the Contract.

#### ARTICLE 15.3 - MEDIATION

Add the following at the beginning of the first sentence in 15.3.1:

15.3.1 With the mutual agreement of the parties to the claim or dispute,

#### ARTICLE 15.4 - ARBITRATION

Delete Article 15.4 in its entirety. The parties may, by mutual agreement of all parties involved, submit claims to binding arbitration.

PART 2 PRODUCTS - NOT USED

PART 3 EXECUTION - NOT USED

END OF DOCUMENT



ALABAMA DEPARTMENT OF REVENUE  
SALES AND USE TAX DIVISION

P.O. Box 327710 • Montgomery, AL 36132-7710

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) <input type="checkbox"/> Exempt Entity <input type="checkbox"/> General Contractor <input type="checkbox"/> Sub-Contractor		NAICS CODE
APPLICANT'S LEGAL NAME		FEIN
DBA		CONSUMER'S USE TAX ACCOUNT NUMBER
MAILING ADDRESS		
CONTACT PERSON		BUSINESS TELEPHONE NUMBER (    )
ESTIMATED START DATE	ESTIMATED COMPLETION DATE	
REASON EXEMPTION IS CLAIMED		
JOB DESCRIPTION		
WILL ANY POLLUTION CONTROL EXEMPTION BE APPLICABLE? <input type="checkbox"/> Yes <input type="checkbox"/> No		ESTIMATED POLLUTION CONTROL COST \$
TOTAL BID AMOUNT \$	LABOR COST \$	MATERIAL COST \$

PROJECT NAME	PROJECT OWNER'S FEIN (EXEMPT ENTITY)
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FORM OF OWNERSHIP:

- Individual     Partnership     Corporation     Multi member LLC     Single member LLC

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.

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NAME (PLEASE PRINT) \_\_\_\_\_

SIGNATURE \_\_\_\_\_

TITLE \_\_\_\_\_

DATE \_\_\_\_\_

**REVENUE DEPARTMENT USE ONLY**

Examiner's Remarks \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

Examiner \_\_\_\_\_ Date \_\_\_\_\_

Supervisor's Recommendation \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

Supervisor \_\_\_\_\_ Date \_\_\_\_\_

# Instructions For Preparation of Form ST: EXC-01

## Sales and Use Tax Certificate of Exemption for Government Entity Project

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 and/or Letter of Intent

### General Contractor:

1. Signed Application
2. Copy of Executed/Signed Contract and/or Letter of Intent
3. List of Sub-Contractors
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

### Sub-Contractor:

1. 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 Sub-Contractors (if any)

### General contractors and sub-contractors:

Any updates regarding the sub-contractors working on a project, additions and/or deletions, 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, numbers, or emails listed below.

**THERE IS A FILING REQUIREMENT IF YOUR APPLICATION IS APPROVED.** The return will be filed through the Consumer's Use Tax account. If you do not currently have a Consumer's Use Tax account, one will be opened for you. The return should be filed every filing period that the Contractor's Exemption Certificate is active/open and should include the Project No., Exemption No., and the total amount of purchases for the filing period. If there is no product purchased with the exemption certificate, then a zero return must be filed for the period. There is a requirement of one entry for each exemption certificate that is active for each filing period. The information associated with the Contractor's Exemption Certificates is input at the bottom of the return.

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

**Fax:** (334) 353-7867

**Emails:** [amber.hartley@revenue.alabama.gov](mailto:amber.hartley@revenue.alabama.gov) [brenda.wallace@revenue.alabama.gov](mailto:brenda.wallace@revenue.alabama.gov)

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

## SECTION 00 7323.22 SALES AND USE TAX SAVINGS

### PART 1 GENERAL

#### 1.1 PURPOSE

The Local Owner, City of Orange Beach, is a Tax-Exempt Instrumentality of the State of Alabama. The contractor will purchase material for the project tax free under a tax exempt certificate.

#### 1.2 SALES AND USE TAXES ARE NOT INCLUDED IN THE CONTRACT AMOUNT

The Base Bid (and all Alternate Bids) submitted on the proposal form WILL NOT INCLUDE the cost of all required taxes, including sales and use taxes; therefore, sales and use taxes will not be included in the Contract amount. The tax savings shall be listed on the proposal form attachment with each bid proposal.

### PART 2 GENERAL PROVISIONS

#### 2.1 PRECEDENCE

The provisions of this Section take precedence over the printed forms, "Instructions to Bidders", "General Conditions of the Contract", as modified and "Supplementary General Conditions". Unaltered provisions of these documents remain intact.

#### 2.2 BID PROPOSALS

The Contractor shall submit its proposal for Base Bid and proposals for each Alternate Bid, if any, with the inclusion of all required taxes noted on the bid proposal attachment.

#### 2.3 ADMINISTRATION

- A. ADOR shall issue certificates of exemption from sales and use tax to governmental entities for each tax exempt project. Both the governmental entity and the contractor shall apply for certificates of exemption.
- B. Certificates shall only be issued to contractors licensed by the State Licensing Board for General Contractors or any subcontractor working under the same contract.
- C. Items eligible for exemption from sales and use tax are building materials, construction materials and supplies and other tangible personal property that become part of the structure per the written construction contract.
- D. ADOR will handle the administration of certificates of exemption and the accounting of exempt purchases. ADOR will have the ability to levy fines and may bar the issuance or use of certificates of exemption upon determination of willful misuse by the contractor or a subcontractor.

#### 2.4 CONTRACTOR ADMINISTRATIVE COSTS

Any and all costs incurred by the Contractor's administration of purchases pursuant to the provisions of this Section shall be considered to be included in the Contract Amount. No additional costs shall be added to the Contract amount because of the service provided by the Contractor in the purchase of materials for this project in the name of the Local Owner.

#### 2.5 EFFECT OF PAYMENTS

In preparing monthly requests for payment, the Contractor will determine the value of stored materials in accordance with the procedures and forms contained herein. The calculation of the amount to be retained from the contractor's monthly payments will be the percentage of the retainage specified in the General Conditions of the Contract applied against the sum of the value of completed work plus the value of stored materials.

#### 2.6 SUBCONTRACTORS AND SUPPLIERS

The Contractor shall include provisions in all subcontractors and purchase orders requiring subcontractors and suppliers and their subcontractors and sub-suppliers to also effect the sales and use tax savings procedures set forth therein, fully utilizing the applicable forms bound herein.

#### 2.7 FAILURE TO ADMINISTER

In the event that Contractor, or any of its subcontractors or suppliers at any tier, arbitrarily pays for materials that should have been purchased tax free per the tax exemption certificate, the Local Owner may, at its discretion, reduce the amount to be paid. A decision by the Contractor to waive these procedures in order to expedite delivery of materials in emergency or critical situations will not be deemed a failure to administer.

#### 2.8 DISCOUNTS

In the event there is entitlement to a discount because of timely payments for purchases made pursuant to this Section, such discount shall be equally divided between the Contractor and Local Owner.

#### 2.9 RESPONSIBILITY FOR MATERIALS

Notwithstanding this special purchase arrangement, the Contractor shall be responsible for all materials purchased hereunder, the same as would have been the case if these tax savings procedures were not implemented. Such responsibility of the Contractor shall include, but not be limited to, selecting, describing, ordering, obtaining approvals, submitting samples, coordinating, processing, preparing shop drawings, expediting deliveries, receiving and unloading, inspecting, properly storing and protecting, insuring, and guaranteeing the materials.

## 2.10 WARRANTIES

The purchase of materials pursuant to this Section shall not relieve the Contractor of its obligation to provide warranties specified elsewhere in these project specifications in full force and effect, the same as if these procedures were not implemented. If the purchase of an item in accordance with these procedures will invalidate the warranty offered and/or required for that item, the Contractor shall notify the Architect and Local Owner of the condition prior to purchasing the item so that the Local Owner may evaluate its option to waive these procedures for that purpose. If materials purchase pursuant to this Section fail to meet the requirements of the plans and specifications, the Contractor, as agent of the Local Owner or its assigns, will be responsible to enforce and pursue, at Contractor's cost and expense, including attorney's fees, all warranty actions against vendors or others responsible for the furnishing of such defective or non-complying materials to Local Owner.

## 2.11 TAX EXEMPT CERTIFICATE

The contractor must apply for a certificate of tax exemption from ADOR. See Document 00 7323.44 - Form ST: EXC-01 and instructions.

## PART 3 – PROCEDURES

### 3.01 MATERIAL PURCHASES

A certificate of tax exemption provided by ADOR and applied for by the contractor.

END OF SECTION



Name of Person	Responsibility for QAP

Signed on this date, \_\_\_\_\_, 20\_\_\_\_.

\_\_\_\_\_  
Contractor Company

By: \_\_\_\_\_  
Signature of Contractor

Name and Title: \_\_\_\_\_

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- 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 Executed Form:** The completed and signed form must be submitted to the DCM Inspector at the pre-construction conference for:
- All new buildings to be constructed on the grounds of new public K-12 schools awarded after July 1, 2010.
  - All new buildings containing classrooms or dorm rooms to be constructed on the grounds of all public 2-year or 4-year institutions of higher education awarded on or after August 1, 2012.

# 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.)

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

YES	N/A	Select "YES" or "N/A" as applicable.
<input type="checkbox"/>	<input type="checkbox"/>	APPLICATION FOR FINAL PAYMENT: Attach one copy to the FPC. The application must include original signatures of all parties and include all application attachments.
<input type="checkbox"/>	<input type="checkbox"/>	CERTIFICATE OF SUBSTANTIAL COMPLETION: Attach one fully-executed copy to the FPC.
<input type="checkbox"/>	<input type="checkbox"/>	• GENERAL CONTRACTOR'S ROOFING GUARANTEE 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"/>	ADVERTISEMENT FOR COMPLETION: Attach one copy of the affidavit of publication (including the advertisement) to the FPC.
<input type="checkbox"/>	<input type="checkbox"/>	RELEASE OF CLAIMS: Attach one copy to the FPC.
<input type="checkbox"/>	<input type="checkbox"/>	CONSENT OF SURETY TO FINAL PAYMENT, if any, TO CONTRACTOR: Consent is required for projects with P&P Bonds. Original 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"/>	<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:

<b>SUBMITTED BY:</b>	_____	_____
	Architectural / Engineering Firm	
_____	_____	_____
Signature	Printed Name and Title	Date

**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.



**SCHEDULE OF VALUES**

Project: \_\_\_\_\_ DCM Form C-10SOV  
Revised July 2020

DCM (BC) No.: \_\_\_\_\_  
PSCA projects: PSCA No.: \_\_\_\_\_  
Application No.: \_\_\_\_\_  
Application Date: \_\_\_\_\_

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. 2.5% of C is retained when G Total is 50% or more of C Total. 0 is retained on final payment application.

A Item No.	B Description of Work	C Scheduled Value (including fully executed change orders)	D Work Completed		E This Period	F Materials Presently Stored (Not in D or E)	G Completed Work & Stored Materials to Date (D+E+F)	H Balance to Finish (C-G)	I Retainage (Variable Rate)
			From Previous Application (D+E)						
1.									\$ -
2.									\$ -
3.									\$ -
4.									\$ -
5.									\$ -
6.									\$ -
7.									\$ -
8.									\$ -
9.									\$ -
10.									\$ -
11.									\$ -
12.									\$ -
13.									\$ -
14.									\$ -
15.									\$ -
16.									\$ -
17.									\$ -
18.									\$ -
19.									\$ -
20.									\$ -
21.									\$ -
22.									\$ -
23.									\$ -
24.									\$ -
25.									\$ -
26.									\$ -
27.									\$ -
28.									\$ -
29.									\$ -
30.									\$ -
<b>TOTALS:</b>							\$ -	\$ -	\$ -

**INVENTORY OF STORED MATERIALS**

Project:		DCM (BC) No.:			
Contractor:		PSCA projects: PSCA No.:			
		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 \_\_\_\_

# 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.*

<input type="checkbox"/>	*1. Name and relationship to job of local Owner personnel
<input type="checkbox"/>	2. Public officials involved
<input type="checkbox"/>	3. Names of architect/engineer personnel involved
<input type="checkbox"/>	4. Provide e-mail addresses on Pre-Construction Sign-in sheet
<input type="checkbox"/>	5. Construction sets of plans available to contractor
<input type="checkbox"/>	6. Verify alternates accepted, etc.
<input type="checkbox"/>	7. Approved list of sub-contractors
<input type="checkbox"/>	8. Approved cost breakdown & Progress Schedule
<input type="checkbox"/>	9. Method of approving monthly payment requests
<input type="checkbox"/>	10. Change Orders - Documentation - no prior work, <b>unless authorized in writing</b>
<input type="checkbox"/>	11. Shop drawings, time to process
<input type="checkbox"/>	12. 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.
<input type="checkbox"/>	13. 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 <ul style="list-style-type: none"> <li>• Fully-executed construction contract and Notice to Proceed</li> <li>• Verification of payment of permit fee</li> <li>• Contractor's statement of responsibility and quality assurance plan (storm shelter)</li> <li>• Fire alarm contractor and fire sprinkler contractor certification (from State Fire Marshal)</li> <li>• ADEM permit, if more than one acre of land is disturbed</li> </ul> <u>Pre-Construction Conference for Storm Shelter:</u> Required Attendees: Contractor, Owner, Architect, Structural Engineer, Major Subs, Special Inspections Representative <ul style="list-style-type: none"> <li>• DCM Inspector must have received the contractor's statement of responsibility and quality assurance plan.</li> </ul>

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

<input type="checkbox"/>	26. Routine job cleanup
<input type="checkbox"/>	27. O.S.H.A. - Report all accidents - safety General Contractor's responsibility
<input type="checkbox"/>	28. Contractor is reminded of obligation to comply with the Alabama Child Labor Law and E-verify
<input type="checkbox"/>	29. Project limits
<input type="checkbox"/>	30. Building location relative to critical property line, easement, setback, etc.
<input type="checkbox"/>	31. Locating property line, corners, etc.
<input type="checkbox"/>	32. Verify sanitary outfall before committing floor level
<input type="checkbox"/>	33. ADEM land disturbance permits shall be required if site is over 1-acre.
<input type="checkbox"/>	34. Procedure if bad soil or rock is encountered: Geotech and special inspections
<input type="checkbox"/>	35. Stockpiling topsoil
<input type="checkbox"/>	36. Protecting trees
<input type="checkbox"/>	37. Soil compaction, type soil, lab tests, etc.
<input type="checkbox"/>	38. Soil Treatment, mix on site in presence of Job Superintendent
<input type="checkbox"/>	39. Surveyor to check foundation wall if location critical
<input type="checkbox"/>	40. Ready mix plant, file delivery tickets, slump tests, cylinders
<input type="checkbox"/>	41. Quality of concrete work; concrete testing
<input type="checkbox"/>	42. Inspections before pouring concrete
<input type="checkbox"/>	43. What is expected of masonry work, mortar additive
<input type="checkbox"/>	44. Problems with hollow metal - install proper fire labels
<input type="checkbox"/>	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.
<input type="checkbox"/>	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
<input type="checkbox"/>	47. Potential conflict of mechanical and electrical equipment; shop drawings
<input type="checkbox"/>	48. Return air plenums (no combustibles)
<input type="checkbox"/>	49. Fire damper installation issues
<input type="checkbox"/>	50. Certificate of Substantial Completion/Final Inspection
<input type="checkbox"/>	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.
<input type="checkbox"/>	52. Elevators/Pressure Vessels must be inspected and approved by the State of AL Dept. of Labor prior to final inspection.
<input type="checkbox"/>	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.
<input type="checkbox"/>	54. Comply with ADA requirements: plumbing fixture heights, toilet partition widths, turnaround, signage, parking lot striping, etc.

<input type="checkbox"/>	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.
<input type="checkbox"/>	56. Light gauge metal roof framing and/or wood truss framing to be inspected by the structural engineer.
<input type="checkbox"/>	57. Comply with fire hydrant requirement; coordinate with local Fire Authority or State Fire Marshal.
<input type="checkbox"/>	58. Craft-faced insulation is not to be installed exposed.
<input type="checkbox"/>	59. Fire alarm contractor and fire sprinkler contractor must be certified through State Fire Marshal's Office. Provide certifications.
<input type="checkbox"/>	60. All sprinkler system valves must be electrically supervised
<input type="checkbox"/>	*61. Fire alarm monitoring requirements
<input type="checkbox"/>	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.
<input type="checkbox"/>	63. Third-party inspections/special inspections
<input type="checkbox"/>	64. Release of retainage – 30 days to complete punch list and closeout
<input type="checkbox"/>	*65. Sales tax savings (Alabama Department of Revenue)
<input type="checkbox"/>	66. Project Closeout - precedes Final Payment a. Warranties b. Operating and Maintenance Manuals c. As-built Drawings d. Other requirements
<input type="checkbox"/>	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
<input type="checkbox"/>	68. Time Extensions
<input type="checkbox"/>	69. Final Payment Application checklist

## SECTION 01 1000 - SUMMARY

## PART 1 - GENERAL

## 1.1 SUMMARY OF WORK

- A. Project: Orange Beach High School Field House
- B. Owner: City of Orange Beach  
4099 Orange Beach Blvd  
Orange Beach, AL 36561
- C. Architect: McCollough Architecture, Inc.  
4790 Main Street, Suite F209  
Orange Beach, Alabama 36561
- D. The work consists of an addition to an existing building of approximately 3,777 square feet for a new workout area with related locker facilities. The existing building of approximately 4,080 square feet requires no work except the large room that will connect to the new addition to create a large workout room.

The addition will be load bearing concrete masonry walls with wood trusses and concrete slab. Sitework will be limited to striping for new parking spaces on the existing paved areas.

## 1.2 WORK RESTRICTIONS

- A. Contractor's Use of Premises: During construction, Contractor will have limited use of area indicated. Contractor's use of premises is limited only by Owner's right to perform work or employ other contractors on portions of Project and as follows:
  - 1. Perform construction only during normal working hours (8 AM to 5 PM Monday thru Friday, other than holidays), unless otherwise agreed to in advance by Owner. Clean up work areas and return to a useable condition at the end of each work period.

## SECTION 01 2000 - PRICE AND PAYMENT PROCEDURES

## PART 1 - GENERAL

## 1.1 ALLOWANCES

- A. Allowances shall include cost to Contractor of specific products and materials ordered by Owner under allowance and shall include taxes, freight, and delivery to Project site. Include the following allowances in the Contract Sum:
- B. Advise Architect of the date when selection and purchase of each product or system described by an allowance must be completed to avoid delaying the Work.
- C. Submit invoices to show cost of products furnished under each allowance. Reconciliation of Allowance amounts with actual costs will be by Change Order.

## 1.2 ALTERNATES

- A. An alternate is an amount proposed by bidder for certain work that may be added to or deducted from the Base Bid amount if Owner accepts the Alternate. The cost or credit for each alternate is the net addition to or deduction from the Contract Sum to incorporate the Alternate into the Work. No other adjustments are made to the Contract Sum.
- B. Indicate on the Bid Form amounts to be deducted from or added to the Contract Sum for the following alternates if applicable.

## 1.3 CONTRACT MODIFICATION PROCEDURES

- A. On Owner's approval of a proposal from Contractor on AIA Document G709, Architect will issue a Change Order on AIA Document G701, for all changes to the Contract Sum or the Contract Time.
- B. When Owner and Contractor disagree on the terms of a proposal, Architect may issue a Construction Change Directive on AIA Document G714, instructing Contractor to proceed with the change, for subsequent inclusion in a Change Order. Construction Change Directive will contain a description of the change and designate the method to be followed to determine changes to the Contract Sum or the Contract Time.

## 1.4 PAYMENT PROCEDURES

- A. Submit a Schedule of Values at least ten (10) days before the initial Application for Payment. Break down the Contract Sum into at least one-line item for each Specification Section in the Project Manual table of contents. Coordinate the Schedule of Values with Contractor's Construction Schedule.
  - 1. Round amounts to nearest whole dollar; total shall equal the Contract Sum.

2. Provide separate line items in the Schedule of Values for initial cost of materials and for total installed value of that part of the Work.
- B. Submit three (3) copies of each application for payment on AIA Document G702/703, according to the schedule established in Owner/Contractor Agreement.
1. With each Application for Payment, submit waivers of mechanic's liens from subcontractors, sub-subcontractors, and suppliers for construction period covered by the previous application.
  2. Submit final Application for Payment after completion of Project closeout procedures with release of liens and supporting documentation.
    - a. Include consent of surety to final payment on AIA Document G707 and insurance certificates.
    - b. Submit final meter readings for utilities, a record of stored fuel, and similar data as of the date of Substantial Completion.

PART 2 - PRODUCTS (Not Applicable)

PART 3 - EXECUTION (Not Applicable)

END OF SECTION 01 2000

## SECTION 01 3000 - ADMINISTRATIVE REQUIREMENTS

## PART 1 - GENERAL

## 1.1 PROJECT MANAGEMENT AND COORDINATION

- A. Coordinate construction to ensure efficient and orderly installation of each part of the Work.
- B. Schedule and conduct progress meetings at Project site at weekly intervals. Notify Owner and Architect of meeting dates and times. Require attendance of each subcontractor or other entity concerned with current progress or involved with planning or coordination of future activities.
  - 1. Record minutes and distribute to everyone concerned, including Owner and Architect.

## 1.2 SUBMITTAL PROCEDURES

- A. Coordinate each submittal with fabrication, purchasing, testing, delivery, other submittals, and related activities that require sequential activity.
  - 1. No extension of the Contract Time will be authorized because of failure to transmit submittals enough in advance of the Work to permit processing, including resubmittals.
  - 2. Submit three (3) copies of each submittal. Architect will return one copy.
  - 3. Architect will discard submittals received from sources other than Contractor.
- B. Place a permanent label or title block on each submittal for identification. Provide a space approximately 6 by 8 inches (150 by 200 mm) on label or beside title block to record Contractor's review and approval markings and action taken by Architect. Include the following information on the label:
  - 1. Project name.
  - 2. Date.
  - 3. Name and address of Contractor.
  - 4. Name and address of subcontractor or supplier.
  - 5. Number and title of appropriate Specification Section.
- C. Identify deviations from the Contract Documents on submittals.
- D. Contractor's Construction Schedule Submittal Procedure: Submit two (2) copies of schedule within five (5) days after date established for Commencement of the Work.

## PART 2 - PRODUCTS

## 2.1 ACTION SUBMITTALS

- A. Product Data: Mark each copy to show applicable products and options. Include the following:
  - 1. Manufacturer's written recommendations, product specifications, and installation instructions.

2. Wiring diagrams showing factory-installed wiring.
  3. Printed performance curves and operational range diagrams.
  4. Testing by recognized testing agency.
  5. Compliance with specified standards and requirements.
- B. Shop Drawings: Prepare Project-specific information, drawn accurately to scale. Do not base Shop Drawings on reproductions of the Contract Documents or standard printed data. Submit on sheets at least 8-1/2 by 11 inches (215 by 280 mm) but no larger than 30 by 42 inches (762 by 1067 mm). Include the following:
1. Dimensions and identification of products.
  2. Fabrication and installation drawings and roughing-in and setting diagrams.
  3. Wiring diagrams showing field-installed wiring.
  4. Notation of coordination requirements.
  5. Notation of dimensions established by field measurement.
- C. Samples: Submit Samples for review of kind, color, pattern, and texture and for a comparison of these characteristics between submittal and actual component as delivered and installed. Include name of manufacturer and product name on label.
1. If variation is inherent in material or product, submit at least three (3) sets of paired units that show variations.

## 2.2 INFORMATION SUBMITTALS

- A. Qualification Data: Include lists of completed projects with project names and addresses, names and addresses of architects and owners, and other information specified.
- B. Product Certificates: Prepare written statements on manufacturer's letterhead certifying that product complies with requirements in the Contract Documents.

## 2.3 DELEGATED DESIGN

- A. Performance and Design Criteria: Where professional design services or certifications by a design professional are specifically required of Contractor by the Contract Documents, provide products and systems complying with specific performance and design criteria indicated.
1. If criteria indicated are not sufficient to perform services or certification required, submit a written request for additional information to Architect.
- B. Delegated-Design Submittal: In addition to Shop Drawings, Product Data, and other required submittals, submit three (3) copies of a statement, signed and sealed by the responsible design professional, for each product and system specifically assigned to Contractor to be designed or certified by a design professional.
1. Indicate that products and systems comply with performance and design criteria in the Contract Documents. Include list of codes, loads, and other factors used in performing these services.

## 2.4 CONTRACTOR'S CONSTRUCTION SCHEDULE

- A. Gantt-Chart Schedule: Submit a comprehensive, fully developed, horizontal Gantt-chart-type schedule within thirty 30 days of date established for the Notice to Proceed.
- B. Preparation: Indicate each significant construction activity separately. Identify first workday of each week with a continuous vertical line.

## PART 3 - EXECUTION

### 3.1 SUBMITTAL REVIEW

- A. Review each submittal and check for coordination with other Work of the Contract and for compliance with the Contract Documents. Note corrections and field dimensions. Mark with approval stamp before submitting to Architect.
- B. Architect will review each action submittal, make marks to indicate corrections or modifications required, stamp and mark as appropriate to indicate action taken, and return copies less those retained.

### 3.2 CONTRACTOR'S CONSTRUCTION SCHEDULE

- A. Distribute copies of approved schedule to Owner, Architect, subcontractors, testing and inspecting agencies, and parties identified by Contractor with a need-to-know schedule responsibility. When revisions are made, distribute updated schedules to the same parties.
- B. Updating: At monthly intervals, update schedule to reflect actual construction progress and activities. Issue schedule one week before each regularly scheduled progress meeting.
  - 1. As the Work progresses, indicate Actual Completion percentage for each activity.

END OF SECTION 013000

## SECTION 01 5000 - TEMPORARY FACILITIES AND CONTROLS

## PART 1 - GENERAL

## 1.1 SECTION REQUIREMENTS

- A. Use Charges: Cost or use charges for temporary facilities shall be included in the Contract Sum.
- B. Use water from Owner's existing system without metering and without payment of use charges.
- C. Electrical Service: Comply with NEMA, NECA, and UL standards and regulations for temporary electric service. Install service to comply with NFPA 70.

## PART 2 - PRODUCTS

## 2.1 EQUIPMENT

- A. Heating Equipment: Unless Owner authorizes use of permanent heating system, provide vented, self-contained heaters with thermostatic control.
  - 1. Use of gasoline-burning space heaters, open-flame heaters, or salamander-type heating units is prohibited.
  - 2. Heating Units: Listed and labeled, by a testing agency acceptable to authorities having jurisdiction, and marked for intended use.

## PART 3 - EXECUTION

## 3.1 TEMPORARY UTILITIES

- A. General: Arrange with utility company, Owner, and existing users for time when service can be interrupted, if necessary, to make connections for temporary services.
- B. Sanitary Facilities: Provide temporary toilets, wash facilities, and drinking-water fixtures. Comply with regulations and health codes for type, number, location, operation, and maintenance of fixtures and facilities. Use of Owner's existing toilet facilities will not be permitted.
- C. Heating and Cooling: Provide temporary heating and cooling required for curing or drying of completed installations or for protecting installed construction from adverse effects of low temperatures or high humidity. Select equipment that will not have a harmful effect on completed installations or elements being installed.
- D. Provide temporary lighting with local switching that provides adequate illumination for construction operations, observations, inspections, and traffic conditions.

### 3.2 TEMPORARY SUPPORT FACILITIES

- A. Provide field offices, storage and fabrication sheds, and other support facilities as necessary for construction operations.
- B. Provide waste-collection containers in sizes adequate to handle waste from construction operations. Collect waste daily and, when containers are full, legally dispose of waste off-site. Comply with requirements of authorities having jurisdiction.
- C. Install project identification and other signs in locations approved by Owner to inform the public and persons seeking entrance to Project.

### 3.3 TEMPORARY SECURITY AND PROTECTION FACILITIES

- A. Provide temporary environmental protection, operate temporary facilities, and conduct construction in ways and by methods that comply with environmental regulations and that minimize possible air, waterway, and subsoil contamination or pollution or other undesirable effects.
- B. Provide measures to prevent soil erosion and discharge of soil-bearing water runoff and airborne dust to adjacent properties and walkways, according to requirements of authorities having jurisdiction.
- C. Provide temporary enclosures for protection of construction and workers from inclement weather and for containment of heat.
- D. Comply with requirements of authorities having jurisdiction for erecting structurally adequate barricades, including warning signs and lighting.
- E. Furnish and install site enclosure fence in a manner that will prevent people and animals from easily entering site except by entrance gates.
- F. Install and maintain temporary fire-protection facilities. Comply with NFPA 241.

### 3.4 TERMINATION AND REMOVAL

- A. Temporary Utilities: At earliest feasible time, when acceptable to Owner, change over from use of temporary service to use of permanent service.
- B. Remove temporary facilities and controls no later than Substantial Completion. Personnel remaining after Substantial Completion will be permitted to use permanent facilities, under conditions acceptable to Owner.

END OF SECTION 015000

## SECTION 01 6000 - PRODUCT REQUIREMENTS

## PART 1 - GENERAL

## 1.1 SECTION REQUIREMENTS

- A. The term "product" includes the terms "material," "equipment," "system," and terms of similar intent.
- B. Product Substitutions: Substitutions include changes in products, materials, equipment, and methods of construction from those required by the Contract Documents and proposed by Contractor after award of the Contract.
  - 1. Submit three (3) copies of each request for product substitution.
  - 2. Submit requests within 10 days after the Notice to Proceed.
  - 3. Do not submit unapproved substitutions on Shop Drawings or other submittals.
  - 4. Identify product to be replaced and show compliance with requirements for substitutions. Include a detailed comparison of significant qualities of proposed substitution with those of the Work specified, a list of changes needed to other parts of the Work required to accommodate proposed substitution, and any proposed changes in the Contract Sum or the Contract Time should the substitution be accepted.
  - 5. Architect will review the proposed substitution and notify Contractor of its acceptance or rejection.
- C. Comparable Product Requests:
  - 1. Submit three (3) copies of each request for comparable product. Do not submit unapproved products on Shop Drawings or other submittals.
  - 2. Identify product to be replaced and show compliance with requirements for comparable product requests. Include a detailed comparison of significant qualities of proposed substitution with those of the Work specified.
  - 3. Architect will review the proposed product and notify Contractor of its acceptance or rejection.
- D. Deliver, store, and handle products using means and methods that will prevent damage, deterioration, and loss, including theft. Comply with manufacturer's written instructions.
  - 1. Schedule delivery to minimize long-term storage at Project site and to prevent overcrowding of construction spaces.
  - 2. Deliver products to Project site in manufacturer's original sealed container or packaging, complete with labels and instructions for handling, storing, unpacking, protecting, and installing.
  - 3. Inspect products on delivery to ensure compliance with the Contract Documents and to ensure that products are undamaged and properly protected.
  - 4. Store materials in a manner that will not endanger Project structure.
  - 5. Store products that are subject to damage by the elements, under cover in a weathertight enclosure above ground, with ventilation adequate to prevent condensation.

- E. Warranties specified in other Sections shall be in addition to, and run concurrent with, other warranties required by the Contract Documents. Manufacturer's disclaimers and limitations on product warranties do not relieve Contractor of obligations under requirements of the Contract Documents.

## PART 2 - PRODUCTS

### 2.1 PRODUCT OPTIONS

- A. Provide products that comply with the Contract Documents, are undamaged, and are new at the time of installation.
  - 1. Provide products complete with accessories, trim, finish, and other devices and components needed for a complete installation and the intended use and effect.
  - 2. Descriptive, performance, and reference standard requirements in the Specifications establish "salient characteristics" of products.
- B. Product Selection Procedures:
  - 1. Where Specifications name a single product or manufacturer, provide the item indicated that complies with requirements.
  - 2. Where Specifications include a list of names of products or manufacturers, provide one of the items indicated that complies with requirements.
  - 3. Where Specifications include a list of names of products or manufacturers, accompanied by the term "available products" or "available manufacturers," provide one of the named items that complies with requirements. Comply with provisions for "comparable product requests" for consideration of an unnamed product.
  - 4. Where Specifications name a product as the "basis-of-design" and include a list of manufacturers, provide the named product. Comply with provisions for "comparable product requests" for consideration of an unnamed product by the other named manufacturers.
  - 5. Where Specifications name a single product as the "basis-of-design" and no other manufacturers are named, provide the named product. Comply with provisions for "comparable product requests" for consideration of an unnamed product by another manufacturer.
- C. Unless otherwise indicated, Architect will select color, pattern, and texture of each product from manufacturer's full range of options that includes both standard and premium items.

## PART 3 - EXECUTION (Not Applicable)

END OF SECTION 01 6000

## SECTION 017000 - EXECUTION REQUIREMENTS

## PART 1 - GENERAL

## 1.1 CLOSEOUT SUBMITTALS

- A. Record Drawings: Maintain a set of Contract Drawings as Record Drawings. Mark to show installation that varies from the Work originally shown.
- B. Record Specifications: Maintain one copy of the Project Manual, including addenda, as Record Specifications. Mark to show variations in Work performed in comparison with the text of the Specifications and modifications.
- C. Operation and Maintenance Data: Organize data into three-ring binders, with pocket folders for folded sheet information. Mark identification on front and spine of each binder. Include the following:
  - 1. Emergency instructions.
  - 2. Spare parts list.
  - 3. Copies of warranties.
  - 4. Wiring diagrams.
  - 5. Shop Drawings and Product Data.

## PART 2 - PRODUCTS (Not Applicable)

## PART 3 - EXECUTION

## 3.1 EXAMINATION AND PREPARATION

- A. Examine substrates and conditions for compliance with manufacturer's written requirements including, but not limited to, surfaces that are sound, level, and plumb; substrates within installation tolerances; surfaces that are smooth, clean, and free of deleterious substances; and application conditions within environmental limits. Proceed with installation only after unsatisfactory conditions have been corrected.
- B. Prepare substrates and adjoining surfaces according to manufacturer's written instructions, including, but not limited to, filler and primer application.
- C. Where Drawings indicate dimensions of existing construction verify by field measurement. Where fabricated products are to be fitted to other construction verify dimensions by field measurement before fabricating and, when possible, allow for fitting and trimming during installation.

### 3.2 CUTTING AND PATCHING

- A. Do not cut structural members without prior written approval of Architect.
- B. For patching, provide materials whose installed performance will equal or surpass that of existing materials. For exposed surfaces, provide or finish materials to visually match existing adjacent surfaces to the fullest extent possible.

### 3.3 INSTALLATION

- A. Comply with manufacturer's written instructions for installation. Anchor each product securely in place, accurately located and aligned. Clean exposed surfaces and protect from damage. If applicable, prepare surfaces for field finishing.
- B. Comply with NFPA 70 for installation of electrically operated equipment and electrical components and materials.

### 3.4 FINAL CLEANING

- A. Clean each surface or item as follows before requesting inspection for certification of Substantial Completion:
  - 1. Remove labels that are not permanent.
  - 2. Clean transparent materials, including mirrors. Remove excess glazing compounds. Replace chipped or broken glass.
  - 3. Clean exposed finishes to a dust-free condition, free of stains, films, and foreign substances. Leave concrete floors broom clean.
  - 4. Vacuum carpeted surfaces and wax resilient flooring.
  - 5. Wipe surfaces of mechanical and electrical equipment. Remove excess lubrication. Clean plumbing fixtures. Clean light fixtures and lamps.
  - 6. Clean the site. Sweep paved areas; remove stains, spills, and foreign deposits. Rake grounds to a smooth, even-textured surface.

### 3.5 CLOSEOUT PROCEDURES

- A. Request Substantial Completion inspection once the following are complete:
  - 1. Advise Owner of pending insurance changeover requirements.
  - 2. Submit Record Drawings, maintenance manuals, warranties, and similar record information.
  - 3. Deliver spare parts, extra materials, and similar items.
  - 4. Changeover locks and transmit keys to Owner.
  - 5. Complete startup testing of systems and instruction of operation and maintenance personnel.
  - 6. Remove temporary facilities and controls.
  - 7. Complete final cleanup.
  - 8. Touch up, repair, and restore marred, exposed finishes.

9. Obtain final inspections from authorities having jurisdiction.
  10. Obtain certificate of occupancy.
- B. On receipt of a request for inspection, Architect will proceed with inspection or advise Contractor of unfilled requirements. Architect will prepare the Certificate of Substantial Completion after inspection or advise Contractor of items that must be completed or corrected before the certificate will be issued.
- C. Arrange for each installer of equipment that requires operation and maintenance to provide instruction to Owner's personnel. Include a detailed review of the following:
1. Startup and shutdown.
  2. Emergency operations and safety procedures.
  3. Noise and vibration adjustments.
  4. Maintenance manuals.
  5. Spare parts, tools, and materials.
  6. Lubricants and fuels.
  7. Identification systems.
  8. Control sequences.
  9. Hazards.
  10. Warranties and bonds.
- D. Request inspection for certification of final acceptance, once the following are complete:
1. Submit a copy of the Substantial Completion inspection list stating that each item has been completed or otherwise resolved for acceptance.
  2. Submit final meter readings for utilities, a record of stored fuel, and similar data as of the date of Substantial Completion.
- E. Architect will reinspect the Work on receipt of notice that the Work has been completed.
1. On completion of reinspection, Architect will prepare a certificate of final acceptance. If the Work is incomplete, Architect will advise Contractor of the Work that is incomplete or obligations that have not yet been fulfilled.

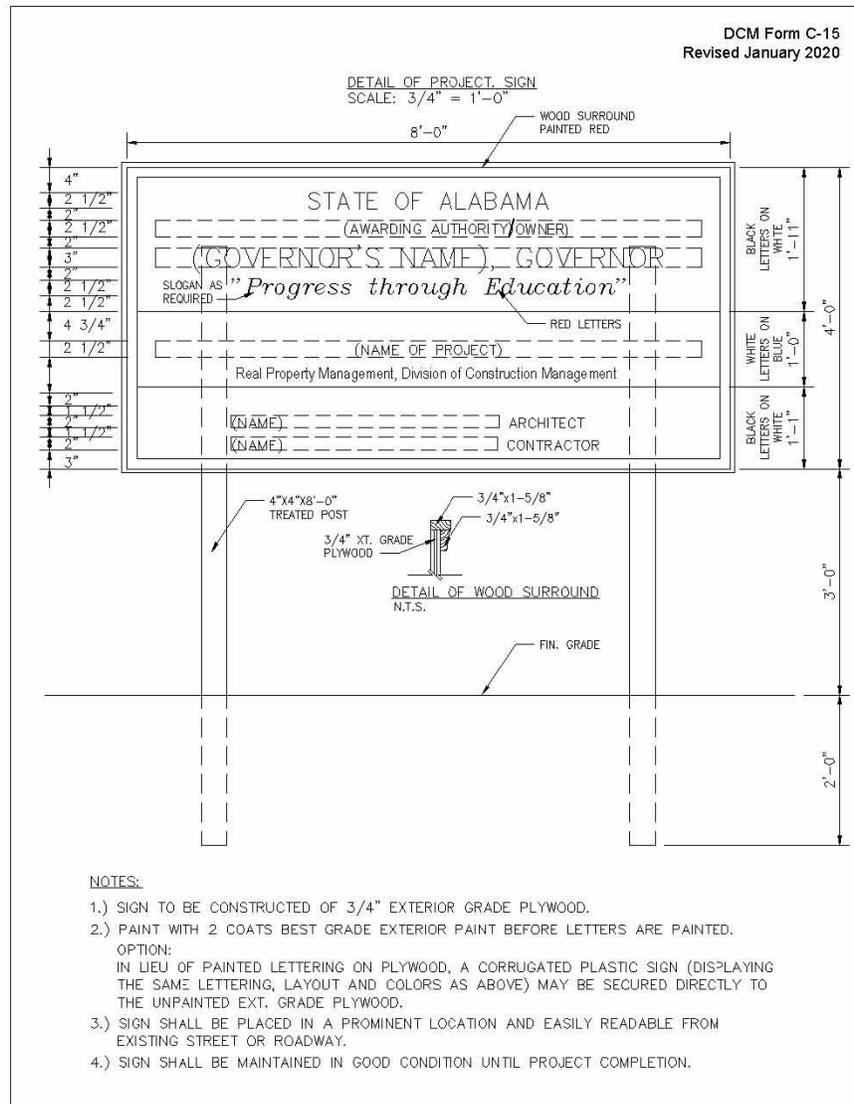
END OF SECTION 017000

SECTION 01 8000 – PROJECT CONSTRUCTION SIGN

PART 1 - GENERAL

1.1 SECTION REQUIREMENTS

Provide a project sign for the project as located by the Owner in accordance with the following drawing.



END OF SECTION 01 8000



## Report of Geotechnical Exploration

**Proposed Building Expansion for  
Orange Beach High School  
Orange Beach, Alabama**

GeoCon Project No. DL 2358-20

Prepared For:

McCollough Architecture  
Mr. Sted McCollough  
Post Office Box 6310  
Gulf Shores, Alabama 36547

Date: September 11, 2020

Prepared By:  
GeoCon Engineering & Materials Testing, Inc.  
22885 McAuliffe Drive  
Robertsdale, Alabama 36567

# GeoCon

Engineering & Materials Testing, Inc.

September 11, 2020

Mr. Sted McCollough  
**McCollough Architecture**  
Post Office Box 6310  
Gulf Shores, Alabama 36547

RE: **Report of Geotechnical Exploration**  
Proposed Building Expansion for  
Orange Beach High School  
Orange Beach, Alabama  
GeoCon Project No. DL 2358-20

Dear Mr. McCollough,

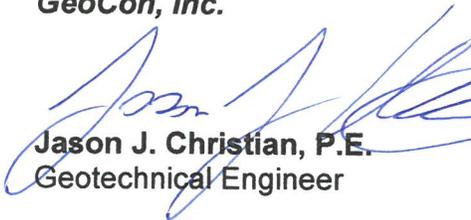
GeoCon Engineering & Materials Testing, Inc. is pleased to submit this report of geotechnical exploration for the above referenced project. Included in this report is a summary of our understanding of the project, results of the field exploration, and our recommendations for site preparation and pile foundation design. This testing has been performed in general accordance with our signed proposal.

Enclosed please find our report with evaluations and recommendations followed by an Appendix which includes a Site Location Map, Test Location Plan, graphical logs of the sounding and borings, important notes about your Geotechnical Report and the Terms & Conditions that govern our work.

We appreciate the opportunity to have provided you with our geotechnical engineering services. If you have any questions concerning this report, or if we can be of any further assistance, please contact our office.

Sincerely,

**GeoCon, Inc.**

  
**Jason J. Christian, P.E.**  
Geotechnical Engineer



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## **1.0 Project Description**

The project subject to this report is the construction of a new building expansion at the Orange Beach High School campus in Orange Beach, Alabama. Specifically, the expansion is located on the southwest section of the campus and will include a single-story addition to an existing structure. The site is shown on the attached Site Location Map (Figure 1). During our September 2020 field exploration, the majority of the new construction area includes concrete or asphalt pavement. A small area adjacent to the existing building exhibited grass ground cover. Elevations in the proposed construction area appeared to diminish towards the south and west.

Based on the provided information, the new structure will include CMU load bearing walls with wood-framing and a concrete floor slab. We understand that the finished floor elevation (FFE) of the expansion will match the FFE of the existing building. Based on the existing elevations, several feet of fill will be required to achieve final subgrade elevations on the west side of the existing building and up to 4 or 5 feet on the south side of the existing building.

Note: If our understanding of the above project information differs from the actual project plans and specifications or if revisions to the project plans are made after this report, we should be contacted for analysis and comment as needed.

## **2.0 Geotechnical Exploration**

Soil conditions were investigated by pushing one (1) Cone Penetration Test (CPT) sounding to a depth of about 32 feet below the existing ground surface. Several attempts were made to push an additional CPT sounding, however, due to heavy organic debris, an additional sounding was not reasonably possible. Two (2) hand auger borings were located in the locations that the additional sounding was attempted and encountered refusal at depths of about 2½ to 3½ feet due to organic debris. The test points were located based on the provided site plan sketch. The approximate sounding and boring locations are shown on the attached Test Location Plan (Figure 2).

CPT testing was performed in accordance with ASTM D-5778 using a Vertek S4 electronic CPT rig. CPT testing includes pushing an electronic cone on a series of rods into the ground at a constant rate. The electronic cone collects continuous measurements of the resistance to penetration of the cone tip and side friction sleeve. Correlations between Cone Resistance values and Standard Penetration Test (SPT) "N" values were performed using methods developed by Robertson, Campanella and Wightman. The CPT log attached in the appendix shows the cone tip friction, sleeve friction, pore pressure, friction ratio, correlated "N" value and the soil behavior type (SBT).

### **3.0 Soil Conditions Encountered**

The sounding initially penetrated about 4 inches of organic topsoil followed by about 24 inches of silty sand soils described as fill material. Below the fill material, the sounding generally penetrated sandy clay and silty clay soils intermixed with organic debris to a depth of about 9 feet below the existing ground surface. Below a depth of about 9 feet, the sounding generally penetrated clayey sand soils to a depth of about 19 feet followed by sand soils with varying amounts of silt to sounding termination at a depth of about 32 feet below the existing ground surface.

Based on the cone tip friction and correlated N-values, the soils penetrated in the upper 9 feet of the soil profile were generally in a very soft to loose condition. The deeper soils penetrated across the soil profile were in a firm condition. The soil conditions penetrated are described in more detail on the CPT Log attached in the Appendix.

### **4.0 Ground Water Conditions Encountered**

Ground water was encountered at depths of about 3 to 4 feet below the existing ground surface at the sounding locations at the time of the field exploration. Ground water conditions are subject to seasonal variations and are expected to fluctuate in response to tidal movements, local variations in precipitation and drainage conditions. Considering the relatively short time frame of the field exploration, ground water levels may not have had sufficient time to stabilize. Therefore, actual depths to ground water may vary.

### **5.0 Evaluation of Subsurface Soils Encountered and General Comments**

The very soft clay and silty clay soils intermixed with heavy organic material encountered to a depth of about 9 feet are weak in nature. These weak soils are considered compressible and are susceptible to unacceptable long-term consolidation under the loads imposed by the anticipated fill required to achieve final subgrade elevations and the structural loadings of the structure. In our opinion, a structure similar to the proposed expansion building supported on typical shallow foundations over these compressible soils would be subject to settlements and related cracking and distress.

There are several subgrade improvement and/or foundation options that would limit the potential settlements. These options include installing timber piles, installing helical anchors or undercutting the new building pad to remove the unsuitable material.

Considering that the new structure connects to the existing building, we recommend that the new expansion be supported on helical anchors. Helical anchor installation produces much less vibration than does the installation of driven timber piles. Excessive vibration during pile driving has the potential to damage adjacent structures. Recommendations for helical anchors are provided in Section 6.0 of this report.

An alternate option would be to undercut the building pad for the new expansion by a depth of about 9 feet below the existing ground surface to remove the debris and poor/weak soils. We understand that the City of Orange Beach performed the site grading for the existing building several years ago. We also understand that the building pad was undercut by a depth of approximately 7 feet and extended several feet beyond the footprint of the building and that the undercut was replaced with structural fill. The undercut for the new expansion would need to extend to the face of the old undercut/backfill. The exact distance from this undercut excavation to the foundation edge of the existing building is unknown at this time. Care should be taken not to undermine the bearing soils supporting the existing building.

The City of Orange Beach, the design team and the site grading contractor should understand that there is a risk of potentially undermining the bearing soils supporting the existing building. To help limit the risk, the undercut along the existing building should be excavated in small sections and backfilled immediately in a cut/fill manor. Recommendations for the full depth undercut option are provided in Section 7.0 of this report.

### **6.0 Helical Anchor Option**

Our primary recommendation is to support the new expansion building on helical anchors. Due to heavy organic and debris material at this site, the helical installer should account for and be prepared to remove organic debris if individual anchor(s) cannot be advanced through the debris. Another design consideration is that the concrete floor slab would need to be designed as a “self-supporting” structural slab that does not depend on the underlying soils for support.

Helical anchor foundations are typically proprietary systems with engineered designs provided by the specific helical anchor vendor. Due to the different capabilities and configurations of the available helical anchor systems, the final design including final embedment depths and allowable capacities should be designed by the company providing the helical anchor system for the project. We anticipate that helical anchors would need to be embedded into the firm sand strata below a depth of 20 feet. Our test sounding was terminated at a depth of 32 feet; however, we could return to the site and perform a deeper test sounding if required and requested.

The weak soils encountered in the upper 9 feet of the soil profile should be considered with regard to lateral capacity of the anchors. Load capacity for helical anchors can be analyzed by the helical designer using the estimated soil properties in the below table.

Soil Type	Layer Elevation (ft.)	Soil Modulus (pci)	Effective Unit Weight (pci)	Cohesion (psi)	Friction Angle (deg)
Soft Clay/Organic Material	0 to 9	-	-	-	-
Clayey Sand	9 to 19	30	0.030	0.25	26
Sand	19 to 28	40	0.030	0	30

Soils properties not provided for the upper 9 feet of the soil-profile due to the amount of heavy organic debris within this layer.

### **7.0 Building Pad Undercut Option**

If this option is chosen by the City of Orange Beach, we recommend that areas beneath and 5 feet beyond the footprint of the building be designated as the building pad (except for adjacent to the existing structure). The building pad should be undercut to a depth of 9 feet below the existing ground surface to remove the heavy organic debris and unsuitable soils. GeoCon, as the Geotechnical Engineer of Record, should be engaged to observe the undercut to verify that the unsuitable soils have been removed and also to perform compaction testing during the backfilling process.

The owner and contractor should be aware that construction activities can potentially cause settlement of near-by structures due to vibrations (especially during undercutting, backfilling and compacting operations). Construction activities should stop immediately if excessive vibration occurs or if any damage to existing structures occurs and GeoCon and the project Structural Engineer should be contacted for evaluation and comment.

Excavation safety is the responsibility of the contractor and not within GeoCon's expertise or scope of work to monitor. Current OSHA regulations should be followed with respect to excavations for this project. Heavy construction traffic and stockpiling of excavated earth should not be permitted near the top of open unsupported excavations.

We recommend that the structural fill used to backfill the undercut excavation consist of select sand fill that should include "clean" coarse sand and exhibit less than 5% passing the No. 200 sieve (fines) with no clay ball or silt pockets. The initial lift of select sand fill could be placed in a 3 foot thick lift and compacted by "smartly" wetting the sand fill layer. Following placement of the initial select sand fill layer, structural fill can be placed in 24 inch thick lifts up to an elevation of 2 feet below the original ground surface. The 24 inch thick lifts of structural fill should be compacted to 95% ASTM D-698 standard density by "tracking" the material in.

The remaining lifts of structural fill required to achieve final subgrade elevations should be placed in 8 to 12 inch loose lifts and compacted to at least 98% ASTM D-698 standard compaction. Once the surface of each lift of structural fill is ready for the next lift, the exposed soil should be maintained at the placed moisture content until the next lift of fill is placed. Structural fill should meet the city or county color requirements and also the following minimum requirements:

- 1) Exhibit SP-SM or SM classification according to the Unified Soil Classification System
- 2) Have a maximum of 15% soil fines passing the No. 200 sieve
- 3) Have a maximum Liquid Limit (LL) of 20%
- 4) Have a Plasticity Index (PI) of 0% (Non-Plastic)
- 5) Have a minimum standard Proctor (ASTM D-698) maximum dry density of 98 pcf

### **7.1 Unit Costs**

Considering the amount of debris to be undercut and potential for varying undercut depths, we recommend that the contract documents establish a unit cost (per cubic yard) for undercutting and replacing unsuitable soils.

### **7.2 Testing Requirements**

GeoCon should monitor and document the results of the debris removal, correction of weak soil conditions and the conditions of the final subgrades, foundation construction, and floor slab bearing soils.

During fill placement, field density testing should be performed to confirm that the specified compaction criteria is being achieved. We recommend that a sufficient amount of compaction tests be performed for each lift of fill in the building pad. Sufficient samples of on-site soils should be collected for Proctor compaction tests to provide the moisture-density relationships needed for compaction control. Sufficient samples of structural fill materials should be submitted by the contractor for classification and Proctor density tests to show substantial compliance with the specifications and to provide the moisture-density relationships needed for compaction control. It is important that proper quality assurance testing be performed during site grading.

## **8.0 Shallow Foundation Recommendations**

**Foundation Design.** Provided the building pad is prepared in accordance with this report, the proposed building can be supported by typical reinforced concrete spread foundations bearing at shallow depths in properly compacted structural fill. Foundations can be designed using a net allowable soil bearing pressure up to 1,500 psf. The allowable soil bearing pressure applies to dead loads plus design live loads. The allowable soil bearing pressure may be increased by one-third when considering total loads that include transient loads such as wind and seismic.

Perimeter wall foundations should bear at a minimum depth of 18 inches below finished subgrade levels. The bottom of interior foundations should bear at a minimum depth of 12 inches below the top of the concrete floor slabs. The project structural engineer can determine the final foundation sizes based on the actual design loads, building code requirements, and other structural considerations.

Lateral and uplift loads can be resisted by passive pressure of the soil acting against the side of the individual footings and/or the friction developed between the base of the footings and the underlying soil. For compacted backfill and firm native soils, the passive pressure may be taken as the equivalent to the pressure exerted by a fluid weighing 350 pounds per cubic foot (pcf). A coefficient of friction equal to 0.32 may be used for calculating the frictional resistance at the base of spread footings. These lateral resistance values are based on the assumption that the foundations can withstand horizontal movements on the order of ¼ inch. Spread foundation depths can be increased for uplift resistance as required. A soil unit weight of 110 pcf can be used for backfill atop foundations.

Provided foundations bear atop firm compacted structural fill we anticipate that total settlements will be less than about one inch. We anticipate that differential settlements will be less than about ½ inch. The "frost penetration" depth in the area of this project is generally taken to be less than 10 inches. Provided our recommendations for foundations and floor slabs are followed, we do not expect that the "frost penetration" will have any detrimental effects on the performance of foundations or floor slabs.

Foundation Construction. Following foundation excavation, the footing bearing soils should be thoroughly compacted with mechanical compaction equipment prior to placement of reinforcing steel (rebar) and concrete. Footing bearing soils should be compacted to at least 95% standard density. Proper compaction of footing bearing soils is important to help limit excessive foundation settlement.

GeoCon, Inc. should be called to observe and perform compaction testing on the footing excavations prior to the placement of reinforcing steel (rebar) and concrete to determine if the bearing soils are satisfactory for support of the foundations. Excessively loose footing bearing soils will require re-compaction or stabilization as per the recommendations of GeoCon's geotechnical engineer.

We recommend that all footing excavations be extended to final grade and the footings constructed as soon as possible to reduce the potential for disturbance of the bearing soils. The foundation bearing area should be level or suitably benched and be free of loose soil, ponded water, mud and debris.

Soils exposed in the bottom of all satisfactory excavations should be protected against disturbance, excessive drying, freezing or rain. Surface runoff should be drained away from excavations and not allowed to pond. The saturation of soils at the footing bearing elevation level can reduce their strength and load carrying ability. Foundation concrete should not be placed on soils that have been disturbed by ground water seepage or rain water. If the footing bearing soils are exposed to rain or become wet, the footings will require being undercut by a minimum depth of 12 inches below the planned bottom of footing excavation. The resulting

excavation should be replaced with a clean open-graded crushed aggregate (similar to No. 57 or 67 stone). The initial 6 inches of stone should be “choked” into the subgrade soils. The remaining stone should be placed in 6 inch lifts and be seated in-place with a mechanical compactor.

Concrete for foundations should be placed as soon after completion of the excavations as possible. If a delay in concrete placement is expected or if exposed to wet weather, a 2 to 3 inch “mud mat” consisting of lean concrete should be placed in the footing excavations to protect the bearing soils.

### **9.0 Ground Floor Slabs**

The subgrade soil beneath all ground supported floor slabs should consist of properly compacted structural fill as described in the Grading Section of this report. A plastic vapor barrier should be installed over the subgrade prior to installation of the floor slabs. The plastic vapor barrier should be properly lapped and all joints and intrusions properly taped and sealed. Special attention should be given to properly compacting utility trenches in the building area. Utility trenches below the slab areas should be compacted to 95% ASTM D-698 standard density.

### **10.0 Closure and Limitations**

This report has been prepared for the exclusive use of McCollough Architecture, the City of Orange Beach and their project design professionals for specific application to the above referenced project in accordance with generally accepted current standards of geotechnical engineering practices common to the local area.

The comments and recommendations of this report provide manageable and reasonable solutions to the advancement of the project based on the collected test data and the provided design information. Significant changes in site conditions or project design may result in alternative solutions to the design required or may permit more manageable and economical construction techniques. Should such significant changes occur, we will be available to offer supplemental comment.

The comments and recommendations of this report are based upon our interpretation of the information supplied by the client, the data collected at the one (1) CPT sounding, two (2) shallow hand auger borings and the site conditions observed at the time of testing. A significant amount of interpolation was necessary. Because it is not possible to know or predict detailed conditions hidden beneath the ground surface, our comments and recommendations are presented as opinions and judgements, as opposed to statements of fact.

Improper site preparation, extremes in climatic conditions, significant changes in grade, time, etc., can affect the ground water, surface and subsurface conditions. If conditions are encountered as the construction advances which vary significantly from those described by this report, we should be contacted for additional comment. Again, we recommend that GeoCon be retained to provide undercut observations and materials testing for this project.

# **APPENDIX**

- A-1 Site Location Map
- A-2 Test Location Plan
- A-3 Graphical Logs of the Sounding and Borings
- A-4 Important Notes About Your Geotechnical Report
- A-5 Terms & Conditions Sheet



Figure 1

NOT TO SCALE

**SITE LOCATION MAP**

Proposed Building Expansion  
 William Silvers Parkway  
 Orange Beach, AL  
 DL 2358-20

Date

8/25/2020

**GECON, INC.**

22885 McAuliffe Drive  
 Robertsdale, Alabama 36567

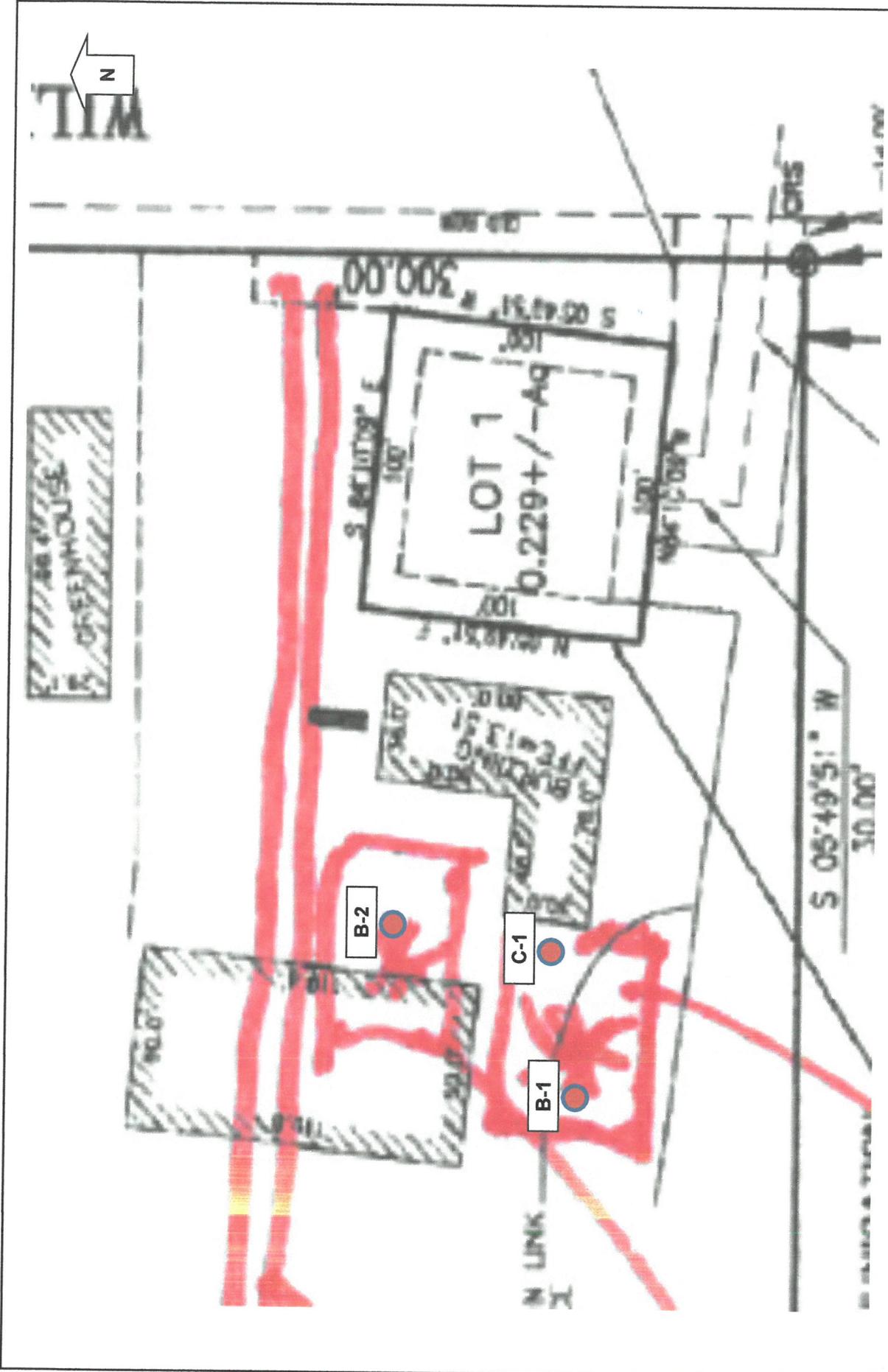


Figure 2

NOT TO SCALE  
**TEST LOCATION PLAN**

Proposed Building Expansion  
 William Silvers Parkway  
 Orange Beach, AL  
 DL 2358-20

**GECON, INC.**

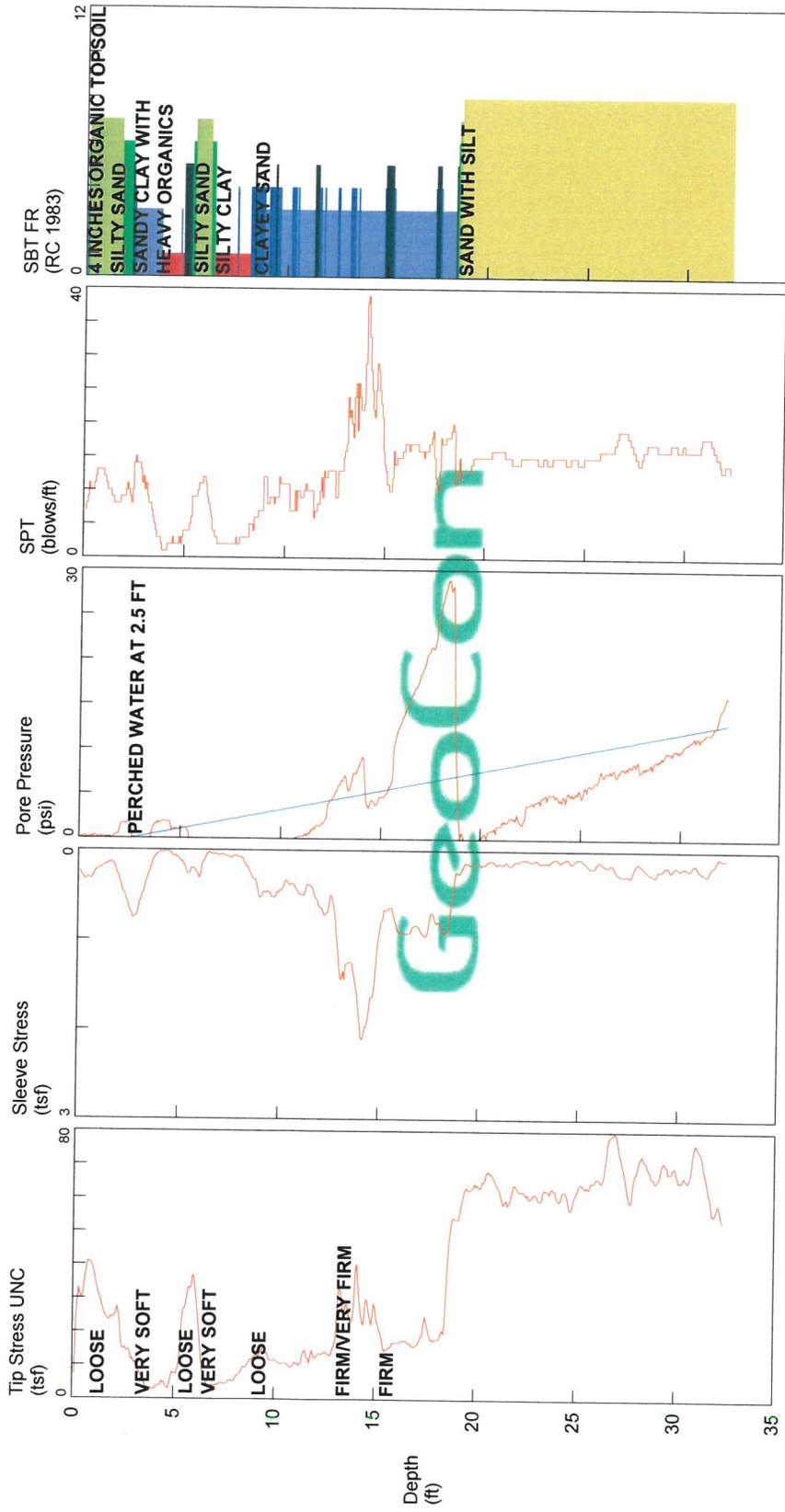
22885 McAuliffe Drive  
 Robertsdale, AL 36567

Date  
 9/2/2020

# C-1

CPT Testing Done By: GeoCon  
 Proposed : Orange Beach High School Field House Addition  
 CUSTOMER: City of Orange Beach  
 LOCATION: Orange Beach, AL  
 HOLE NUMBER: C-1

JOB NUMBER: DL 2358-20  
 TEST DATE: 9/1/2020  
 OPERATOR: Chris Rea



- 1 sensitive fine grained
  - 2 organic material
  - 3 clay
  - 4 silty clay to clay
  - 5 clayey silt to silty clay
  - 6 sandy silt to clayey silt
  - 7 silty sand to sandy silt
  - 8 sand to silty sand
  - 9 sand
  - 10 gravelly sand to sand
  - 11 very stiff fine grained (\*)
  - 12 sand to clayey sand (\*)
- \*SBT/SPT CORRELATION: UBC-1983

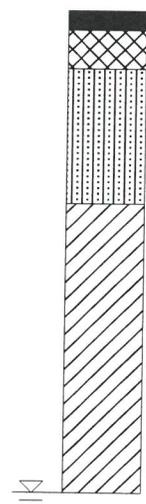
# DRILL HOLE LOG

BORING NO.: B-1

PROJECT: Proposed Orange Beach High School Field House Addition  
 CLIENT: City of Orange Beach  
 LOCATION: Orange Beach, AL  
 DRILLER: Chris Rea  
 DRILL RIG:  
 DEPTH TO WATER> INITIAL  $\nabla$  : 2.5

PROJECT NO.: DL 2358-20  
 DATE: 9/2/2002  
 ELEVATION:  
 LOGGED BY: Jason Christian

AT COMPLETION  $\nabla$  :

ELEVATION/ DEPTH	WELL DETAIL	SOIL SYMBOLS, SAMPLERS AND TEST DATA	USCS	Description	NM	DD	STANDARD PENETRATION TEST			
							DEPTH	N	CURVE	
								10	30	50
0										
			SM	2.5 Inches Asphalt Paving 2 Inches Crushed Aggregate Innermixed with Sandy Fill Black Silty Sand with Organics						
1			CL	Dark Gray Sandy Clay						
2										
3			SM	Black Silty Sand with Heavy Organics Perched Water at 2.5 ft Large Organic Debris Encountered Boring Terminated at 2.5 ft						
4										
5										
6										
7										

This information pertains only to this boring and should not be interpreted as being indicative of the site.

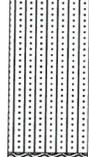
# DRILL HOLE LOG

BORING NO.: B-2

PROJECT: Proposed Orange Beach High School Field House Addition  
 CLIENT: City of Orange Beach  
 LOCATION: Orange Beach, AL  
 DRILLER: Chris Rea  
 DRILL RIG:  
 DEPTH TO WATER> INITIAL  $\nabla$  : 3

PROJECT NO.: DL 2358-20  
 DATE: 9/2/2002  
 ELEVATION:  
 LOGGED BY: Jason Christian

AT COMPLETION  $\nabla$  :

ELEVATION/ DEPTH	WELL DETAIL	SOIL SYMBOLS, SAMPLERS AND TEST DATA	USCS	Description	NM	DD	STANDARD PENETRATION TEST		
							DEPTH	N	CURVE
									10   30   50
0				2.5 Inches Asphalt Paving 3 Inches Crushed Aggregate 3 Inches Sandy Fill					
1			SM	Brown Silty Sand					
2				Brown Peat					
3				Perched Water at 3 ft					
4				Large Organic Debris Encounterd Boring Terminated at 3.5 ft					
5									
6									
7									

This information pertains only to this boring and should not be interpreted as being indicative of the site.

# Important Information about Your Geotechnical Engineering Report

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

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

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

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

## **Read the Full Report**

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

## **A Geotechnical Engineering Report Is Based on A Unique Set of Project-Specific Factors**

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

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

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

- the function of the proposed structure, as when it's changed from a parking garage to an office building, or from a light industrial plant to a refrigerated warehouse,

- elevation, configuration, location, orientation, or weight of the proposed structure,
- composition of the design team, or
- project ownership.

As a general rule, *always* inform your geotechnical engineer of project changes—even minor ones—and request an assessment of their impact. *Geotechnical engineers cannot accept responsibility or liability for problems that occur because their reports do not consider developments of which they were not informed.*

## **Subsurface Conditions Can Change**

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

## **Most Geotechnical Findings Are Professional Opinions**

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

## **A Report's Recommendations Are *Not* Final**

Do not overrely on the construction recommendations included in your report. *Those recommendations are not final*, because geotechnical engineers develop them principally from judgment and opinion. Geotechnical engineers can finalize their recommendations only by observing actual

subsurface conditions revealed during construction. *The geotechnical engineer who developed your report cannot assume responsibility or liability for the report's recommendations if that engineer does not perform construction observation.*

### **A Geotechnical Engineering Report Is Subject to Misinterpretation**

Other design team members' misinterpretation of geotechnical engineering reports has resulted in costly problems. Lower that risk by having your geotechnical engineer confer with appropriate members of the design team after submitting the report. Also retain your geotechnical engineer to review pertinent elements of the design team's plans and specifications. Contractors can also misinterpret a geotechnical engineering report. Reduce that risk by having your geotechnical engineer participate in prebid and preconstruction conferences, and by providing construction observation.

### **Do Not Redraw the Engineer's Logs**

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

### **Give Contractors a Complete Report and Guidance**

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

### **Read Responsibility Provisions Closely**

Some clients, design professionals, and contractors do not recognize that geotechnical engineering is far less exact than other engineering disciplines. This lack of understanding has created unrealistic expectations that

have led to disappointments, claims, and disputes. To help reduce the risk of such outcomes, geotechnical engineers commonly include a variety of explanatory provisions in their reports. Sometimes labeled "limitations" many of these provisions indicate where geotechnical engineers' responsibilities begin and end, to help others recognize their own responsibilities and risks. *Read these provisions closely.* Ask questions. Your geotechnical engineer should respond fully and frankly.

### **Geoenvironmental Concerns Are Not Covered**

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

### **Obtain Professional Assistance To Deal with Mold**

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

### **Rely on Your ASFE-Member Geotechnical Engineer for Additional Assistance**

Membership in ASFE/THE BEST PEOPLE ON EARTH exposes geotechnical engineers to a wide array of risk management techniques that can be of genuine benefit for everyone involved with a construction project. Confer with your ASFE-member geotechnical engineer for more information.

## **ASFE THE GEOPROFESSIONAL BUSINESS ASSOCIATION**

8811 Colesville Road/Suite G106, Silver Spring, MD 20910  
Telephone: 301/565-2733 Facsimile: 301/589-2017  
e-mail: [info@asfe.org](mailto:info@asfe.org) [www.asfe.org](http://www.asfe.org)

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## TERMS AND CONDITIONS

**SERVICES TO BE PROVIDED.** GeoCon Engineering & Material Testing, Inc. (hereinafter GeoCon) is an independent consultant and agrees to provide Client, for its sole benefit and exclusive use, consulting services set forth in our proposal.

**PAYMENT TERMS.** Client agrees to pay our Invoice upon receipt. If payment is not received within 30 days from the invoice date, Client agrees to pay a service charge on the past due amount at a rate of 1.5% per month, and GeoCon reserves the right to suspend all work until payment is received. No deduction shall be made from our invoice on account of liquidated damages or other sums withheld from payments to contractors or others.

**TERMINATION.** Either party may terminate this Agreement without cause upon 20 days advance notice in writing. In the event Client requests termination prior to completion of the proposed services, Client agrees to pay GeoCon for all costs incurred plus reasonable charges associated with termination of the work.

**PROFESSIONAL LIABILITY.** Notwithstanding any other provision of this Agreement, the Engineer's and GeoCon's total liability to the Owner for any loss or damages from claims arising out of or in connection with this Agreement from any cause including the Engineer's strict liability, breach of contract, or professional negligence, errors and omissions (whether claimed in tort, contract, strict liability, nuisance, by statute or otherwise) shall not exceed the lesser of the total contract price of this Agreement or the proceeds paid under Engineer's liability insurance in effect at the time such claims are made. The Owner hereby releases the Engineer from any liability exceeding such amount. In no event shall either party to this Agreement be liable to the other for special, indirect, incidental or consequential damages, whether or not such damages were foreseeable at the time of the commencement of the work under this Agreement.

**SITE OPERATIONS.** Client will arrange for right-of-entry to all applicable properties for the purpose of performing studies, tests and evaluations pursuant to the agreed services. Client represents that it possesses necessary permits and licenses required for its activities at the site.

**OWNERSHIP AND USE OF PROJECT DOCUMENTS.** All documents are instruments of service in respect to the Services, and Engineer shall retain an ownership and proprietary property interest therein (including the right of reuse at the discretion of the Engineer) whether or not the Services are completed. Client may make and retain copies of documents for information and reference in connection with the services by Client. Such documents are not intended or represented to be suitable for reuse by Client or others on extensions of the services or on any other project. Any such reuse or modification without written verification or adaptation by Engineer, as appropriate for the specific purpose intended, will be at Client's sole risk and without liability or legal exposure to Engineer or to Engineer's consultants. Client shall indemnify and hold harmless Engineer and Engineer's consultants from all claims, damages, and expenses including attorneys' fees arising out of or resulting therefrom.

**ADDITIONAL SERVICES OF CONSULTANT.** If authorized in writing by the Client, GeoCon shall furnish additional services that are not considered as an integral part of the Scope of Services outlined in the Proposal Acceptance Sheet. Under this Agreement, all costs for additional services will be negotiated as to activities and compensation. In addition, it is possible that unforeseen conditions may be encountered that could substantially alter the original scope of services. If this occurs, GeoCon will promptly notify and consult with Client and any additional services will be negotiated.

**ASSIGNABILITY.** GeoCon shall not assign any interest on this Agreement, and shall not transfer any interest in the same (whether by assignment or novation), without the prior written consent of the Client; provided, however, that claims for money by GeoCon against Client under this Agreement may be assigned to a bank, trust company, or other financial institution without such approval. Written notice of any such assignment or transfer shall be promptly furnished to the Client.

**SERVICES TO BE CONFIDENTIAL.** All services, including opinions, designs, drawings, plans, specifications, reports and other services and information, to be furnished by GeoCon under this Agreement are confidential and shall not be divulged, in whole or in part, to any person, other than to duly authorized representatives of the client, without prior written approval of the Client, except by testimony under oath in a judicial proceeding or as otherwise required by law. GeoCon shall take all necessary steps to ensure that no member of its organization divulges any such information except as may be required by law.

**CLAIMS.** The parties agree to attempt to resolve any dispute without resort to litigation. However, in the event a claim is made that results in litigation, and the claimant does not prevail at trial, then the claimant shall pay all costs incurred in defending the claim, including reasonable attorney's fees. The claim will be considered proven if the judgment obtained and retained through any applicable appeal is at least ten percent greater than the sum offered to resolve the matter prior to the commencement of trial.

**SEVERABILITY.** It is understood and agreed by the parties hereto, that if any part, term or provision of this Agreement is held by any court of competent jurisdiction to be illegal or in conflict with any applicable law, the validity of the remaining portion or portions of this Agreement shall not be affected and the rights and obligations of the parties shall be construed and enforced as if the Agreement did not contain the particular part, term or provision held to be invalid.

**SURVIVAL.** All obligations arising prior to the termination of this Agreement and all provisions of this Agreement allocating responsibility or liability between Client and GEOCON shall survive the completion of the services and the termination of this Agreement.

**INTEGRATION.** This Agreement, the attached documents and those incorporated herein constitute the entire Agreement between the parties and cannot be changed except by a written instrument signed by both parties.

**GOVERNING LAW.** This Agreement shall be governed in all respects by the laws of the State of Alabama and venue shall be in Baldwin County, Alabama.

## SECTION 023610 - TERMITE CONTROL

## PART 1 - GENERAL

## 1.1 SECTION REQUIREMENTS

- A. Submittals: Product Data and product certificates for each type of product indicated. Include the EPA-Registered Label.
- B. Installer Qualifications: A specialist who is licensed according to regulations of authorities having jurisdiction to apply termite control treatment and products in jurisdiction where Project is located, and who employs workers trained and approved by bait-station system manufacturer to install manufacturer's products.
- C. Regulatory Requirements: Formulate and apply termiticides according to the EPA-Registered Label.
- D. Continuing Service: Provide 12 months' continuing service including monitoring, inspection, and re-treatment for occurrences of termite activity.

## PART 2 - PRODUCTS

## 2.1 TERMITE CONTROL PRODUCTS

- A. Soil Treatment Termiticide: Provide an EPA-registered termiticide complying with requirements of authorities having jurisdiction, in an aqueous solution.
- B. Wood Treatment with Borate: Provide an EPA-registered borate complying with requirements of authorities having jurisdiction.
- C. Bait Station System: Provide bait stations and monitoring stations based on the dimensions of building perimeter indicated on Drawings, according to manufacturer's EPA-Registered Label for product, manufacturer's written instructions, and the following:
  - 1. Not less than 1 station per 8 linear feet (2.4 linear meters).
  - 2. Not less than 1 cluster of stations per 20 linear feet (6.1 linear meters), consisting of not less than 3 stations per cluster.

## PART 3 - EXECUTION

## 3.1 INSTALLATION

- A. General: Comply with the most stringent requirements of authorities having jurisdiction and with manufacturer's EPA-Registered Label for products.
- B. Soil Treatment Application: Provide quantity required for application at the label volume and rate for the maximum specified concentration of termiticide, according to manufacturer's EPA-Registered Label, to the following so that a continuous horizontal and vertical termiticidal barrier or treated zone is established around and under building construction.
  - 1. At foundations.
  - 2. Under concrete floor slabs on grade.
  - 3. Under basement floor slabs.
  - 4. At hollow masonry.
  - 5. At expansion and control joints and slab penetrations.
  - 6. At crawlspaces; treat soil under and adjacent to foundations. Treat adjacent areas including around entrance platform, porches, and equipment bases.
- C. Post warning signs in areas of soil treatment application.
- D. Reapply soil termiticide treatment solution to areas disturbed by subsequent excavation or other construction activities following application.
- E. Wood Treatment Application: Provide quantity of borate solution required for application at the label volume and rate for the maximum specified concentration of borate, according to manufacturer's EPA-Registered Label, so that wood framing, sheathing, siding, and structural members subject to infestation receive treatment.
- F. Installing Bait Station Systems: Place bait stations and, if applicable, monitoring stations, according to the EPA-Registered Label for the product and manufacturer's written instructions.
  - 1. Inspect and service bait stations during time specified for continuing service, according to the EPA-Registered Label for product and manufacturer's written instructions.

END OF SECTION 023610

## SECTION 02 9200 - TURF AND GRASSES

## 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. Sodding.

- B. Related Requirements:

- 1. Section "Plants" for trees, shrubs, ground covers, and other plants as well as border edgings and mow strips.
  - 2. Section "Subdrainage" for below-grade drainage of landscaped areas.

## 1.3 DEFINITIONS

- A. Finish Grade: Elevation of finished surface of planting soil.
- B. Pesticide: A substance or mixture intended for preventing, destroying, repelling, or mitigating a pest. Pesticides include insecticides, miticides, herbicides, fungicides, rodenticides, and molluscicides. They also includes substances or mixtures intended for use as a plant regulator, defoliant, or desiccant.
- C. Pests: Living organisms that occur where they are not desired or that cause damage to plants, animals, or people. Pests include insects, mites, grubs, mollusks (snails and slugs), rodents (gophers, moles, and mice), unwanted plants (weeds), fungi, bacteria, and viruses.
- D. Planting Soil: Existing, on-site soil; imported soil; or manufactured soil that has been modified with soil amendments and perhaps fertilizers to produce a soil mixture best for plant growth. See Section 329113 "Soil Preparation" and drawing designations for planting soils.
- E. Subgrade: The surface or elevation of subsoil remaining after excavation is complete, or the top surface of a fill or backfill before planting soil is placed.

## 1.4 PREINSTALLATION MEETINGS

- A. Preinstallation Conference: Conduct conference at Project site.

### 1.5 INFORMATIONAL SUBMITTALS

- A. Qualification Data: For landscape Installer.
- B. Certification of Grass Seed: From seed vendor for each grass-seed monostand or mixture, stating the botanical and common name, percentage by weight of each species and variety, and percentage of purity, germination, and weed seed. Include the year of production and date of packaging.
  - 1. Certification of each seed mixture for turfgrass sod. Include identification of source and name and telephone number of supplier.
- C. Product Certificates: For fertilizers, from manufacturer.
- D. Pesticides and Herbicides: Product label and manufacturer's application instructions specific to Project.

### 1.6 CLOSEOUT SUBMITTALS

- A. Maintenance Data: Recommended procedures to be established by Owner for maintenance of turf during a calendar year. Submit before expiration of required maintenance periods.

### 1.7 QUALITY ASSURANCE

- A. Installer Qualifications: A qualified landscape installer whose work has resulted in successful turf establishment.
  - 1. Professional Membership: Installer shall be a member in good standing of either the Professional Landcare Network or the American Nursery and Landscape Association.
  - 2. Experience: Five years' experience in turf installation in addition to requirements in Section 014000 "Quality Requirements."
  - 3. Installer's Field Supervision: Require Installer to maintain an experienced full-time supervisor on Project site when work is in progress.
  - 4. Pesticide Applicator: State licensed, commercial.

### 1.8 DELIVERY, STORAGE, AND HANDLING

- A. Seed and Other Packaged Materials: Deliver packaged materials in original, unopened containers showing weight, certified analysis, name and address of manufacturer, and indication of compliance with state and Federal laws, as applicable.
- B. Sod: Harvest, deliver, store, and handle sod according to requirements in "Specifications for Turfgrass Sod Materials" and "Specifications for Turfgrass Sod Transplanting and Installation" sections in TPI's "Guideline Specifications to Turfgrass Sodding." Deliver sod within 24 hours of harvesting and in time for planting promptly. Protect sod from breakage and drying.

## C. Bulk Materials:

1. Do not dump or store bulk materials near structures, utilities, walkways and pavements, or on existing turf areas or plants.
2. Accompany each delivery of bulk materials with appropriate certificates.

## 1.9 FIELD CONDITIONS

- A. Weather Limitations: Proceed with planting only when existing and forecasted weather conditions permit planting to be performed when beneficial and optimum results may be obtained. Apply products during favorable weather conditions according to manufacturer's written instructions.

## PART 2 - PRODUCTS

## 2.1 TURFGRASS SOD

- A. Turfgrass Sod: Certified, complying with "Specifications for Turfgrass Sod Materials" in TPI's "Guideline Specifications to Turfgrass Sodding." Furnish viable sod of uniform density, color, and texture that is strongly rooted and capable of vigorous growth and development when planted.
- B. Turfgrass Species: As indicated on Drawings..

## 2.2 PESTICIDES

- A. General: Pesticide, registered and approved by the EPA, acceptable to authorities having jurisdiction, and of type recommended by manufacturer for each specific problem and as required for Project conditions and application. Do not use restricted pesticides unless authorized in writing by authorities having jurisdiction.
- B. Pre-Emergent Herbicide (Selective and Nonselective): Effective for controlling the germination or growth of weeds within planted areas at the soil level directly below the mulch layer.
- C. Post-Emergent Herbicide (Selective and Nonselective): Effective for controlling weed growth that has already germinated.

## PART 3 - EXECUTION

## 3.1 EXAMINATION

- A. Examine areas to be planted for compliance with requirements and other conditions affecting installation and performance of the Work.

1. Verify that no foreign or deleterious material or liquid such as paint, paint washout, concrete slurry, concrete layers or chunks, cement, plaster, oils, gasoline, diesel fuel, paint thinner, turpentine, tar, roofing compound, or acid has been deposited in soil within a planting area.
2. Suspend planting operations during periods of excessive soil moisture until the moisture content reaches acceptable levels to attain the required results.
3. Uniformly moisten excessively dry soil that is not workable or which is dusty.

B. Proceed with installation only after unsatisfactory conditions have been corrected.

C. If contamination by foreign or deleterious material or liquid is present in soil within a planting area, remove the soil and contamination as directed by Architect and replace with new planting soil.

### 3.2 PREPARATION

A. Protect structures; utilities; sidewalks; pavements; and other facilities, trees, shrubs, and plantings from damage caused by planting operations.

1. Protect grade stakes set by others until directed to remove them.

### 3.3 TURF AREA PREPARATION

A. General: Prepare planting area for soil placement and mix planting soil according to Section 329113 "Soil Preparation."

B. Placing Planting Soil: Blend planting soil in place.

1. Reduce elevation of planting soil to allow for soil thickness of sod.

C. Moisten prepared area before planting if soil is dry. Water thoroughly and allow surface to dry before planting. Do not create muddy soil.

D. Before planting, obtain Architect's acceptance of finish grading; restore planting areas if eroded or otherwise disturbed after finish grading.

### 3.4 SODDING

A. Lay sod within 24 hours of harvesting unless a suitable preservation method is accepted by Architect prior to delivery time. Do not lay sod if dormant or if ground is frozen or muddy.

B. Lay sod to form a solid mass with tightly fitted joints. Butt ends and sides of sod; do not stretch or overlap. Stagger sod strips or pads to offset joints in adjacent courses. Avoid damage to soil or sod during installation. Tamp and roll lightly to ensure contact with soil, eliminate air pockets, and form a smooth surface. Work sifted soil or fine sand into minor cracks between pieces of sod; remove excess to avoid smothering sod and adjacent grass.

1. Lay sod across slopes exceeding 1:3.
  2. Anchor sod on slopes exceeding 1:6 with wood pegs spaced as recommended by sod manufacturer but not less than two anchors per sod strip to prevent slippage.
- C. Saturate sod with fine water spray within two hours of planting. During first week after planting, water daily or more frequently as necessary to maintain moist soil to a minimum depth of 1-1/2 inches below sod.

### 3.5 TURF MAINTENANCE

- A. General: Maintain and establish turf by watering, fertilizing, weeding, mowing, trimming, replanting, and performing other operations as required to establish healthy, viable turf. Roll, regrade, and replant bare or eroded areas and remulch to produce a uniformly smooth turf. Provide materials and installation the same as those used in the original installation.
1. Fill in as necessary soil subsidence that may occur because of settling or other processes. Replace materials and turf damaged or lost in areas of subsidence.
  2. Apply treatments as required to keep turf and soil free of pests and pathogens or disease. Use integrated pest management practices whenever possible to minimize the use of pesticides and reduce hazards.
- B. Watering: Install and maintain temporary piping, hoses, and turf-watering equipment to convey water from sources and to keep turf uniformly moist to a depth of 4 inches .
1. Schedule watering to prevent wilting, puddling, erosion, and displacement of seed or mulch. Lay out temporary watering system to avoid walking over muddy or newly planted areas.
  2. Water turf with fine spray at a minimum rate of 1 inch per week unless rainfall precipitation is adequate.
- C. Mow turf as soon as top growth is tall enough to cut. Repeat mowing to maintain specified height without cutting more than one-third of grass height. Remove no more than one-third of grass-leaf growth in initial or subsequent mowings. Do not delay mowing until grass blades bend over and become matted. Do not mow when grass is wet. Schedule initial and subsequent mowings to maintain the following grass height:
1. Mow bermudagrass to a height of 1/2 to 1 inch .
  2. Mow St. Augustine grass to a height of 2 to 3 inches .
- D. Turf Postfertilization: Apply Insert type after initial mowing and when grass is dry.
1. Use fertilizer that provides actual nitrogen of at least 1 lb/1000 sq. ft. to turf area.

### 3.6 SATISFACTORY TURF

- A. Turf installations shall meet the following criteria as determined by Architect:

1. Satisfactory Sodded Turf: At end of maintenance period, a healthy, well-rooted, even-colored, viable turf has been established, free of weeds, open joints, bare areas, and surface irregularities.

- B. Use specified materials to reestablish turf that does not comply with requirements, and continue maintenance until turf is satisfactory.

### 3.7 PESTICIDE APPLICATION

- A. Apply pesticides and other chemical products and biological control agents according to requirements of authorities having jurisdiction and manufacturer's written recommendations. Coordinate applications with Owner's operations and others in proximity to the Work. Notify Owner before each application is performed.

- B. Post-Emergent Herbicides (Selective and Nonselective): Apply only as necessary to treat already-germinated weeds and according to manufacturer's written recommendations.

### 3.8 CLEANUP AND PROTECTION

- A. Promptly remove soil and debris created by turf work from paved areas. Clean wheels of vehicles before leaving site to avoid tracking soil onto roads, walks, or other paved areas.

- B. Remove surplus soil and waste material, including excess subsoil, unsuitable soil, trash, and debris, and legally dispose of them off Owner's property.

- C. Erect temporary fencing or barricades and warning signs as required to protect newly planted areas from traffic. Maintain fencing and barricades throughout initial maintenance period and remove after plantings are established.

### 3.9 MAINTENANCE SERVICE

- A. Turf Maintenance Service: Provide full maintenance by skilled employees of landscape Installer. Maintain as required in "Turf Maintenance" Article. Begin maintenance immediately after each area is planted and continue until acceptable turf is established, but for not less than the following periods:

1. Sodded Turf: 30 days from date of Substantial Completion.

END OF SECTION

# STRUCTURAL SPECIFICATIONS

03 00 00

04 00 00



Concrete Forming and Accessories

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Reason for Issue: Issued for Pricing

Lead Engineer: XXXXXXXX

Submittal Date: XX/XX/2017

Revision	Date	Reviewed By	Checked By



## SECTION 03 1000 - CONCRETE FORMING AND ACCESSORIES

## PART 1 GENERAL

## 1.1 SUMMARY

- A. Section Includes:
1. Formwork for cast-in-place concrete.
  2. Shoring, bracing, and anchorage.
  3. Architectural form liners.
  4. Form accessories.
  5. Form stripping.

## 1.2 REFERENCES

- A. American Concrete Institute:
1. ACI 117 - Standard Specifications for Tolerances for Concrete Construction and Materials.
  2. ACI 301 - Specifications for Structural Concrete.
  3. ACI 318 - Building Code Requirements for Structural Concrete.
  4. ACI 347 - Guide to Formwork for Concrete.
- B. American Forest and Paper Association:
1. AF&PA - National Design Specifications for Wood Construction.
- C. The Engineered Wood Association:
1. APA/EWA PS 1 - Voluntary Product Standard for Construction and Industrial Plywood.
- D. American Society of Mechanical Engineers:
1. ASME A17.1 - Safety Code for Elevators and Escalators.
- E. ASTM International:
1. ASTM D1751 - Standard Specification for Preformed Expansion Joint Filler for Concrete Paving and Structural Construction (Nonextruding and Resilient Bituminous Types).
  2. ASTM E96 - Standard Test Methods for Water Vapor Transmission of Materials.
- F. West Coast Lumber Inspection Bureau:
1. WCLIB - Standard Grading Rules for West Coast Lumber.

## 1.3 DESIGN REQUIREMENTS

- A. Design, engineer and construct formwork, shoring and bracing in accordance with ACI 318 to conform to design and applicable code requirements to achieve concrete shape, line and dimension as indicated on Drawings.



#### 1.4 PERFORMANCE REQUIREMENTS

- A. Vapor Retarder Permeance: Maximum 1 perm when tested in accordance with ASTM E96, Procedure A.

#### 1.5 QUALITY ASSURANCE

- A. Perform Work in accordance with ACI 347, ACI 301, ACI 318.
- B. For wood products furnished for work of this Section, comply with AF&PA.
- C. Perform Work in accordance with MDOT standards.

#### 1.6 COORDINATION

- A. Coordinate this Section with other sections of work, requiring attachment of components to formwork.

### PART 2 PRODUCTS

#### 2.1 WOOD FORM MATERIALS

- A. Form Materials: At discretion of Contractor.

#### 2.2 FORMWORK ACCESSORIES

- A. Form Ties: Removable or Snap-off type, metal, adjustable length, cone type, with waterproofing washer, inch back break dimension, free of defects capable of leaving holes larger than 1 inch in concrete surface.
- B. Spreaders: Standard, non-corrosive metal form clamp assembly, of type acting as spreaders and leaving no metal within 1 inch of concrete face. Wire ties, wood spreaders or through bolts are not permitted.
- C. Form Anchors and Hangers:
  - 1. Do not use anchors and hangers exposed concrete leaving exposed metal at concrete surface.
  - 2. Symmetrically arrange hangers supporting forms from structural steel members to minimize twisting or rotation of member.
  - 3. Penetration of structural steel members is not permitted.



## PART 3 EXECUTION

### 3.1 EXAMINATION

- A. Verify lines, levels, and centers before proceeding with formwork. Verify dimensions agree with Drawings.
- B. When formwork is placed after reinforcement resulting in insufficient concrete cover over reinforcement before proceeding, request instructions from Architect/Engineer.

### 3.2 INSTALLATION

#### A. Earth Forms:

- 1. Trench earth forms neatly, accurately, and at least 2 inches wider than footing widths indicated on Drawings.
- 2. Trim sides and bottom of earth forms.
- 3. Construct wood edge strips at top of each side of trench to secure reinforcing and prevent trench from sloughing.
- 4. Form sides of footings where earth sloughs.
- 5. Tamp earth forms firm and clean forms of debris and loose material before depositing concrete.

#### B. Formwork - General:

- 1. Provide top form for sloped surfaces steeper than 1.5 horizontal to 1 vertical to hold shape of concrete during placement, unless it can be demonstrated that top forms can be omitted.
- 2. Construct forms to correct shape and dimensions, mortar-tight, braced, and of sufficient strength to maintain shape and position under imposed loads from construction operations.
- 3. Carefully verify horizontal and vertical positions of forms. Correct misaligned or misplaced forms before placing concrete.
- 4. Complete wedging and bracing before placing concrete.

#### C. Forms for Smooth Finish Concrete:

- 1. Use steel, plywood or lined board forms.
- 2. Use clean and smooth plywood and form liners, uniform in size, and free from surface and edge damage capable of affecting resulting concrete finish.
- 3. Install form lining with close-fitting square joints between separate sheets without springing into place.
- 4. Use full size sheets of form lines and plywood wherever possible.
- 5. Tape joints to prevent protrusions in concrete.
- 6. Use care in forming and stripping wood forms to protect corners and edges.
- 7. Level and continue horizontal joints.
- 8. Keep wood forms wet until stripped.



- D. Architectural Form Liners:
  - 1. Erect architectural side of formwork first.
  - 2. Attach form liner to forms before installing form ties.
  - 3. Install form liners square, with joints and pattern aligned.
  - 4. Seal form liner joints to prevent grout leaks.
  - 5. Dress joints and edges to match form liner pattern and texture.
- E. Forms for Surfaces to Receive Membrane Waterproofing: Use plywood or steel forms. After erection of forms, tape form joints to prevent protrusions in concrete.
- F. Framing, Studding and Bracing:
  - 1. Space studs at 16 inches on center maximum for boards and 12 inches on center maximum for plywood.
  - 2. Size framing, bracing, centering, and supporting members with sufficient strength to maintain shape and position under imposed loads from construction operations.
  - 3. Construct beam soffits of material minimum of 2 inches thick.
  - 4. Distribute bracing loads over base area on which bracing is erected.
  - 5. When placed on ground, protect against undermining, settlement or accidental impact.
- G. Erect formwork, shoring, and bracing to achieve design requirements, in accordance with requirements of ACI 301 and ACI 318.
- H. Arrange and assemble formwork to permit dismantling and stripping. Do not damage concrete during stripping. Permit removal of remaining principal shores..
- I. Install void forms in accordance with manufacturer's recommendations.
- J. Do not patch formwork.

### 3.3 APPLICATION - FORM RELEASE AGENT

- A. Apply form release agent on formwork in accordance with manufacturer's recommendations.
- B. Apply prior to placement of reinforcing steel, anchoring devices, and embedded items.
- C. Do not apply form release agent where concrete surfaces are indicated to receive special finishes that are affected by agent. Soak inside surfaces of untreated forms with clean water. Keep surfaces coated prior to placement of concrete.
- D. Reuse and Coating of Forms: Thoroughly clean forms and reapply form coating before each reuse. For exposed work, do not reuse forms with damaged faces or edges. Apply form coating to forms in accordance with manufacturer's specifications. Do not coat forms for concrete indicated to receive "scored finish". Apply form coatings before placing reinforcing steel.



### 3.4 INSTALLATION - INSERTS, EMBEDDED PARTS, AND OPENINGS

- A. Install formed openings for items to be embedded in or passing through concrete work.
- B. Locate and set in place items required to be cast directly into concrete.
- C. Coordinate with Work of other sections in forming and placing openings, slots, reglets, recesses, sleeves, bolts, anchors, other inserts, and components of other Work.
- D. Position recessed reglets for brick veneer masonry anchors in accordance with spacing and intervals indicated on Drawings.
- E. Install accessories straight, level, and plumb. Ensure items are not disturbed during concrete placement.
- F. Install water stops continuous without displacing reinforcement. Provide temporary ports or openings in formwork where required to facilitate cleaning and inspection. Locate openings at bottom of forms to allow flushing water to drain.
- G. Close temporary openings with tight fitting panels, flush with inside face of forms, and neatly fitted so joints will not be apparent in exposed concrete surfaces.
- H. Form Ties:
  - 1. Use sufficient strength and sufficient quantity to prevent spreading of forms.
  - 2. Place ties at least 1 inch away from finished surface of concrete.
  - 3. Leave inner rods in concrete when forms are stripped.
  - 4. Space form ties equidistant, symmetrical and aligned vertically and horizontally unless otherwise shown on Drawings.
- I. Arrangement: Arrange formwork to allow proper erection sequence and to permit form removal without damage to concrete.
- J. Construction Joints:
  - 1. Install surfaced pouring strip where construction joints intersect exposed surfaces to provide straight line at joints.
  - 2. Just prior to subsequent concrete placement, remove strip and tighten forms to conceal shrinkage.
  - 3. Show no overlapping of construction joints. Construct joints to present same appearance as butted plywood joints.
  - 4. Arrange joints in continuous line straight, true and sharp.
- K. Embedded Items:
  - 1. Make provisions for pipes, sleeves, anchors, inserts, reglets, anchor slots, nailers, water stops, and other features.
  - 2. Do not embed wood or uncoated aluminum in concrete.
  - 3. Obtain installation and setting information for embedded items furnished under other Specification sections.



4. Securely anchor embedded items in correct location and alignment prior to placing concrete.
  5. Verify conduits and pipes, including those made of coated aluminum, meet requirements of ACI 318 for size and location limitations.
- L. Openings for Items Passing Through Concrete:
1. Frame openings in concrete where indicated on Drawings. Establish exact locations, sizes, and other conditions required for openings and attachment of work specified under other sections.
  2. Coordinate work to avoid cutting and patching of concrete after placement.
  3. Perform cutting and repairing of concrete required as result of failure to provide required openings.
- M. Screeds:
1. Set screeds and establish levels for tops of concrete slabs and levels for finish on slabs.
  2. Slope slabs to drain where required or as shown on Drawings.
  3. Before depositing concrete, remove debris from space to be occupied by concrete and thoroughly wet forms. Remove freestanding water.
- N. Screenshot Supports:
1. For concrete over waterproof membranes and vapor retarder membranes, use cradle, pad or base type screed supports which will not puncture membrane.
  2. Staking through membrane is not be permitted.
- O. Cleanouts and Access Panels:
1. Provide removable cleanout sections or access panels at bottoms of forms to permit inspection and effective cleaning of loose dirt, debris and waste material.
  2. Clean forms and surfaces against which concrete is to be placed. Remove chips, saw dust and other debris. Thoroughly blow out forms with compressed air just before concrete is placed.

### 3.5 FORM CLEANING

- A. Clean forms as erection proceeds, to remove foreign matter within forms.
- B. Clean formed cavities of debris prior to placing concrete.
- C. Flush with water or use compressed air to remove remaining foreign matter. Ensure that water and debris drain to exterior through clean-out ports.
- D. During cold weather, remove ice and snow from within forms. Do not use de-icing salts. Do not use water to clean out forms, unless formwork and concrete construction proceed within heated enclosure. Use compressed air or other means to remove foreign matter.



3.6 FORM REMOVAL

- A. Do not remove forms or bracing until concrete has gained sufficient strength to carry its own weight and imposed loads.
- B. Loosen forms carefully. Do not wedge pry bars, hammers, or tools against finish concrete surfaces scheduled for exposure to view.
- C. Store removed forms in manner that surfaces to be in contact with fresh concrete will not be damaged. Discard damaged forms.
- D. Leave forms in place for minimum number of days as specified in ACI 347.

3.7 FIELD QUALITY CONTROL

- A. Inspect erected formwork, shoring, and bracing to ensure that work is in accordance with formwork design, and that supports, fastenings, wedges, ties, and items are secure.
- B. Notify Architect/Engineer after placement of reinforcing steel in forms, but prior to placing concrete.
- C. Schedule concrete placement to permit formwork inspection before placing concrete.

END OF SECTION



Concrete Reinforcement

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Reason for Issue: Issued for Pricing

Lead Engineer: XXXXXXXX

Submittal Date: XX/XX/2017

Revision	Date	Reviewed By	Checked By



## SECTION 03 20 00 - CONCRETE REINFORCEMENT

## PART 1 GENERAL

## 1.1 SUMMARY

- A. Section Includes:
1. Reinforcing steel bars.
  2. Steel wire fabric.
  3. Reinforcement accessories.

## 1.2 REFERENCES

- A. American Concrete Institute (ACI):
1. ACI 301 - Structural Concrete for Buildings.
  2. ACI 318 - Building Code Requirements For Reinforced Concrete.
  3. ACI SP-66 - American Concrete Institute - Detailing Manual.
- B. American Society for Testing and Materials (ASTM):
1. ASTM A 184 - Fabricated Deformed Steel Bar Mats for Concrete Reinforcement.
  2. ASTM A 615 - Deformed and Plain Billet Steel Bars for Concrete Reinforcement.
  3. ASTM A 704 - Welded Steel Plain Bar or Rod Mats for Concrete Reinforcement.
- C. American Welding Society (AWS):
1. AWS D1.4 - Structural Welding Code for Reinforcing Steel.
- D. Concrete Reinforcing Steel Institute (CRSI):
1. CRSI - Manual of Practice.
  2. CRSI 63 - Recommended Practice For Placing Reinforcing Bars.
  3. CRSI 65 - Recommended Practice For Placing Bar Supports, Specifications and Nomenclature.

## 1.3 SUBMITTALS

- A. Submittals: Procedures for submittals.
1. Shop Drawings: Indicate bar sizes, spacings, locations, and quantities of reinforcing steel [and wire fabric, bending and cutting schedules, and supporting and spacing device. Include special reinforcement required for openings through concrete structures.
  2. Assurance/Control Submittals;
    - a. Manufacturer's Certificate: Certify that products meet or exceed specified requirements.
    - b. Submit certified copies of mill test report of reinforcement materials analysis.
    - c. Welder's Certificates.



## 1.4 QUALITY ASSURANCE

- A. Perform Work in accordance with CRSI 63, 65 and Manual of Practice ACI 301, ACI SP-66, ACI 318, and ASTM A 184.
- B. Design reinforcement under direct supervision of a Professional Structural Engineer experienced in design of this work and licensed in the State where the Project is located.
- C. Welders' Certificates: Submit certificate, certifying welders employed on the Work, verifying AWS qualification within the previous 12 months.

## PART 2 PRODUCTS

### 2.1 STEEL REINFORCEMENT

- A. Reinforcing Steel: ASTM A 615, 60 ksi yield grade; deformed billet steel bars, unfinished.
- B. Reinforcing Steel Mat: ASTM A 704, ASTM A 615, 60 ksi yield grade; steel bars or rods, unfinished.
- C. Reinforcing Steel Mesh: ASTM A185

### 2.2 SYNTHETIC FIBER REINFORCEMENT: Monofilament or fibrillated polypropylene fibers engineered and designed for use in concrete pavement, complying with ASTM C 1116, Type III.

- A. Products:
  - 1. Axim Concrete Technologies; Fibrasol IIP.
  - 2. Euclid Chemical Company (The); Fiberstrand 100.
  - 3. FORTA Corporation; Forta Mono.
  - 4. Grace Construction Products, W. R. Grace & Co.; Grace MicroFiber.
  - 5. SI Concrete Systems; Fibermix Stealth.

### 2.3 ACCESSORIES

- A. Tie Wire: Minimum 16 gage annealed type.
- B. Chairs, Bolsters, Bar Supports, Spacers: Sized and shaped for strength and support of reinforcement during concrete placement conditions including load bearing pad on bottom to prevent vapor barrier puncture.
- C. Special Chairs, Bolsters, Bar Supports, Spacers Adjacent to Weather Exposed Concrete Surfaces: Plastic coated steel type(CRSI, Class 1) or stainless steel protected(CRSI, Class 2); size and shape as required.



## 2.4 FABRICATION

- A. Fabricate concrete reinforcing in accordance with ACI SP-66 and ACI 318.
- B. Weld reinforcement in accordance with AWS D1.4.
- C. Locate reinforcing splices not indicated on drawings, at point of minimum stress. Review location of splices with Architect/Engineer.

## PART 3 EXECUTION

### 3.1 EXAMINATION

- A. Verification of Conditions: Verify that field measurements, surfaces, and conditions are as required, and ready to receive Work.
- B. Report in writing to Architect/Engineer prevailing conditions that will adversely affect satisfactory execution of the Work of this Section. Do not proceed with Work until unsatisfactory conditions have been corrected.
- C. By beginning Work, Contractor accepts conditions and assumes responsibility for correcting unsuitable conditions encountered at no additional cost to the Owner.

### 3.2 PLACEMENT

- A. Place, support and secure reinforcement against displacement. Do not deviate from required position.
- B. Do not displace or damage vapor barrier.
- C. Accommodate placement of formed openings.
- D. Maintain concrete cover around reinforcing in accordance with ACI 318.

### 3.3 FIELD QUALITY CONTROL

- A. Section 011400 – Quality Control: Field Inspection.
- B. Inspect reinforcing locations, bar types and sizes, wire ties, and welding (if applicable).

END OF SECTION



Cast-In-Place Concrete

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Reason for Issue: Issued for Pricing

Lead Engineer: XXXXXXXX

Submittal Date: XX/XX/2017

Revision	Date	Reviewed By	Checked By



## SECTION 03 30 00 – CAST-IN-PLACE CONCRETE

## PART 1 GENERAL

## 1.1 SUMMARY

## A. Section Includes:

1. Cast-in-place (CIP) concrete in building frame elements, walls, foundations, foundation walls, slabs-on-ground, and mechanical equipment pads.
2. Finishing of concrete floor slabs and toppings. Concrete liquid surface treatment, sealer, and slip-resistant coatings.
3. Expansion and contraction, control joints in CIP concrete.
4. Concrete curing and protection.
5. Non-shrink grout including installation and forming.

## 1.2 REFERENCES

## A. American Concrete Institute (ACI):

1. ACI 121R, "Quality Assurance Systems for Concrete Construction."
2. ACI 301, "Specification for Structure /Concrete."
3. ACI 302.1R, "Guide for Concrete Floor and Slab Construction."
4. ACI 304.2-R, "Placing Concrete by Pumping Methods."
5. ACI 305, "Hot Weather Concreting."
6. ACI 306, "Cold Weather Concreting."
7. ACI 315, "Manual of Standard Practice for Detailing Concrete Structures."
8. ACI 347, "Recommended Practice for Concrete Formwork."
9. ACI 503.2, "Standard Specification for Bonding Plastic Concrete to Hardened Concrete with a Multi-Component Epoxy Adhesive."
10. ACI SP-15, "Field Reference Manual" which includes ACI 301 "Specifications for Structural Concrete for Buildings" and reference standards specified therein.

## B. American Society for Testing and Materials (ASTM):

1. ASTM A615, "Specification for Deformed and Plain Billet-Steel Bars for Concrete Reinforcement."
2. ASTM C33, "Specification for Concrete Aggregates."
3. ASTM C39, "Test Method for Compressive Strength of Cylindrical Concrete Specimens."
4. ASTM C94, "Specification for Ready-Mixed Concrete."
5. ASTM C114, "Test Method for Chemical Analysis of Hydraulic Cement."
6. ASTM C138, "Test Method for Unit Weight, Yield, and Air Content of Concrete."
7. ASTM C143, "Test Method for Slump of Hydraulic Cement."
8. ASTM C150, "Specification for Portland Cement."
9. ASTM C156, "Test Method for Water Retention by Concrete Curing Materials."
10. ASTM C171, "Specification for Sheet Materials for Curing Concrete."



11. ASTM C173, "Test Method for Air Content of Freshly Mixed Concrete by the Volumetric Method."
12. ASTM C227, "Test Method for Potential Alkali Reactivity of Cement-Aggregate Combinations."
13. ASTM C231, "Test Method for Air Content of Freshly Mixed Concrete by the Pressure Method."
14. ASTM C260, "Specification for Air Entraining Admixtures for Concrete."
15. ASTM C309, "Specification for Liquid Membrane-Forming Compounds for Curing Concrete."
16. ASTM C311, "Standard Test Methods for Sampling and Testing Fly Ash or Natural Pozzolans for Use as a Mineral Admixture in Portland-Cement Concrete."
17. ASTM C387, "Specification for Packaged, Dry, Combined Materials for Mortars and Concrete."
18. ASTM C494, "Specification for Chemical Admixtures for Concrete."
19. ASTM C618, "Specification for Fly Ash and Raw or Calcined Natural Pozzolan for Use as a Mineral Admixture in Portland Cement Concrete."
20. ASTM C685, "Specification for Concrete Made by Volumetric Batching and Continuous Mixing."
21. ASTM C989, "Specification for Ground Iron Blast-Furnace Slag for Use in Concrete and Mortars."
22. ASTM E154, "Test Methods for Water Vapor Retarders Used in Contact with Earth Under Slabs, On Walls, or as Ground Cover."
23. ASTM E1155, "Test Method for Determining Floor Flatness and Levelness Using The F-Number System."
24. ASTM D2240, "Standard Test Method for Rubber Property-Durometer Hardness."

C. American Welding Society (AWS):

1. AWS D1.4 - Structural Welding Code for Reinforcing Steel.

D. Concrete Reinforcing Steel Institute (CRSI):

1. CRSI - Manual of Practice.
2. CRSI 63 - Recommended Practice For Placing Reinforcing Bars.
3. CRSI 65 - Recommended Practice For Placing Bar Supports, Specifications and Nomenclature.

### 1.3 SUBMITTALS

A. Submittals: Procedures for submittals.

1. Shop Drawings: Indicate bar sizes, spacings, locations, and quantities of reinforcing steel [and wire fabric, bending and cutting schedules, and supporting and spacing device. Include special reinforcement required for openings through concrete structures.
2. Assurance/Control Submittals;
  - a. Manufacturer's Certificate: Certify that products meet or exceed specified requirements.
  - b. Submit certified copies of mill test report of reinforcement materials analysis.
  - c. Welder's Certificates.



#### 1.4 QUALITY ASSURANCE

- A. Perform Work in accordance with CRSI 63, 65 and Manual of Practice ACI 301, ACI SP-66, ACI 318, and ASTM A 184.
- B. Design reinforcement under direct supervision of a Professional Structural Engineer experienced in design of this work and licensed in the State where the Project is located.
- C. Welders' Certificates: Submit certificate, certifying welders employed on the Work, verifying AWS qualification within the previous 12 months.

#### PART 2 PRODUCTS

##### 2.1 CONCRETE MATERIALS

- A. Portland Cement: ASTM C150 - Type unless otherwise approved.
  - 1. Assume full responsibility for the quality and soundness of cement. Cement is to be of one type and from the same mill; it is to be of uniform color for all concrete with permanently exposed concrete finishes.
- B. Admixtures: The following admixtures are permitted when approved in writing prior to use or are required as specified herein and shall be used in strict accordance with the manufacturer's specifications or recommendations:
- C. Calcium chloride: Conform to ACI 301. The chloride ion level shall not exceed 0.3 percent.
- D. Air-entraining admixtures: ASTM C260 shall be used to achieve the specified air content in all permanently exposed exterior concrete. For steel trowel interior slab finish, do not use air entrainment admixtures and total air entrainment must not exceed 3%. For steel trowel exterior slab finish, comply with ACI 318 and ACI 302.
  - 1. Euclid: AEA-92 or Air Mix 200.
- E. Water-reducing admixtures: Conform to ASTM C494, Type A, containing not more chloride ions than allowed in paragraph A., above.
  - 1. Euclid: Eucon WR series or Eucon MR.
- F. Water-reducing/accelerating admixtures: Conform to ASTM C494, Type C or E having long-term test results showing non-rusting on metal deck and reinforcing steel.
  - 1. Euclid: Accelguard series.



- G. Water-reducing/retarding admixtures: Conform to ASTM C494, Type D containing not more than 1 percent chloride ions.
1. Euclid: Eucon Retarder series.
- H. High-range/water-reducing (HRWR) admixtures: Conform to ASTM C494, Type F or G super plasticizers containing 1 percent maximum chloride ions may be used with low slump (3 inches maximum) concrete to produce flowable concrete (up to 8 inches slump) with early strength gain and 28-day strengths equal to reference concrete. HRWR admixture may be used providing not more than 60 minutes is allowed from addition of admixture to final placement of concrete. HRWR admixture shall be used in concrete with a maximum water/cement ratio of 0.50 or less and is suggested in the following:
1. In pumped concrete.
  2. In concrete topping slabs
  3. In lieu of the specified water-reducing admixture (Type A) where confinement of placing due to heavy reinforcement or narrow space requires flowable concrete.
  4. Where more than 30 minutes is required between the addition of admixtures to final placement of the concrete, a combination of water-reducing, set controlling admixtures (ASTM C494, Types A, D, & E) as in Master Builders Company "Synergized Performance System" may be used.
    - a. Euclid: Eucon 37 or Eucon 537.
- I. Fly ash: Conform to ASTM C618. The use of a quality fly ash is required as a cement-reducing admixture (minimum 15 percent and maximum 25 percent). The fly ash shall meet all of the requirements of ASTM C618, Class C or Class F, with the following special requirements: The loss on ignition in Table 1 shall not exceed 3 percent. Compliance to Table 1A shall apply. The amount retained on the 325 sieve in Table 2 shall not exceed 34 percent. The chemical analysis of the fly ash shall be reported in accordance with ASTM C311. Quality assurance testing and reports for a minimum of six months shall be submitted by the fly ash supplier.
- J. Fly ash: Conform to ASTM C618. The use of a quality fly ash will be permitted as a cement-reducing admixture (minimum 15 percent and maximum 25 percent). The fly ash shall meet all of the requirements of ASTM C618, Class C or Class F, with the following special requirements: The loss on ignition in Table 1 shall not exceed 3 percent. Compliance to Table 1A shall apply. The amount retained on the 325 sieve in Table 2 shall not exceed 34 percent. The chemical analysis of the fly ash shall be reported in accordance with ASTM C311. Quality assurance testing and reports for a minimum of six months shall be submitted by the fly ash supplier. The option to use fly ash must be approved prior to use.



- K. Granulated Blast Furnace Slag is an alternative to fly ash and shall conform to ASTM C989. Granulated blast furnace slag may be used as a substitute for a maximum of 30 percent of Portland cement.
- L. Certification: Certification of the above requirements is required from the admixture manufacturer prior to mix design review and approval by the Contracting Officer. Upon request by the Contracting Officer, a qualified representative is to be provided to assure proper use of admixtures. Use of admixtures, other than listed above will be permitted only when approved.
- M. Aggregates:
1. Normal-weight concrete - ASTM C33. For slabs, also conform to combined aggregate grading recommendations of ACI 302 and ACI 302.1R, unless otherwise permitted.
  2. All concrete exposed to the weather shall conform to the limits of deleterious substances and physical properties of Table 3, ASTM C 33.
  3. Local aggregates: Local aggregates not complying with ASTM C33 but which have been shown by special test or actual service to produce concrete of adequate strength and durability may be used when acceptable to the Contracting Officer.
  4. Maximum size of coarse aggregates: ACI 301.
  5. Abrasive aggregates non-slip finishes: Fused aluminum oxide grits, or crushed emery, as abrasive for non-slip finish with emery aggregate containing not less than 40 percent aluminum oxide and not less than 25 percent ferric oxide. Use material that is factory-graded, packaged, rustproof, non-glazing, and unaffected by freezing, moisture, and cleaning materials.
- N. Water: Clean and not detrimental to concrete; drinkable.

## 2.2 GROUT/MORTARS

- A. Cement grout: Conform to ASTM C387 "Dry packaged mixtures" or:
1. Mix at the site, in composition of one volume of Portland cement to 2-1/2 volumes of fine aggregate.
  2. Mix the materials dry; then add sufficient water to make the mixture flow under its own weight.
  3. Field service: When required by the contracting officer, provide a qualified concrete technician employed by the Grout Manufacturer to assist in the initial grouting operations.
  4. Euclid: NS Grout or Hi Flow Grout.

## 2.3 CURING/SEALING/HARDENERS

- A. Liquid membrane-forming compounds for curing concrete; Conform to ASTM C309, Type 1. Curing compound shall be compatible with floor sealer or finish used. Low VOC.



1. Euclid: VOX series; waterborne products .
  2. W.R. Meadows: Vocomp series or 1100 series .
  3. ChemREX: Sooneborn Kure-N-Seal 30.
  4. Section 01600 - Product Requirements: Product options and substitutions. Substitutions: Permitted.
- B. Method of curing shall be approved by the finish flooring applicator where finishes are indicated.
- C. Moisture-retaining cover: Complying with ASTM C171, synthetic fiber mat with plastic backing, waterproof, heavy kraft paper, polyethylene film (min. 6 mils thick), or polyethylene-coated burlap.
1. Reef Industries, Transguard 4000.
  2. Substitutions: Permitted.
- D. Absorptive Cover: Burlap cloth made from jute or kenaf, weighing approximately 9 ounces per square yard complying with AASHTO M182, Class T.
- E. Curing and Sealing: ACI 301, Chapter 12 and Federal Specification TT-C-800, Type I - Chlorinated rubber or styrene-butadiene-based compounds with 30 percent solids content minimum and having moisture retention tests (ASTM C156) by an independent testing laboratory showing a maximum moisture loss of 0.03 gm/cm<sup>2</sup> at a coverage of 300 square feet per gallon. Manufacturer's Certification required.
1. Super Aqua-Cure VOX (30 percent solids).
  2. Master Builders: Masterkure N- Seal- HS.
  3. Applied Concrete Technology: Protecrete
  4. Substitutions: Permitted.
- F. Exterior Sealers: applied to horizontal concrete surfaces permanently exposed to salts, deicer chemicals and moisture, including parking decks. The manufacturer shall provide a five year labor and materials warranty on performance of the sealer. Sealer shall be compatible with the curing compound used.
1. Euclid: Eucoguard or Diamond Clear or Super Diamond Clear.
  2. ChemREX: Hydrozo Clear 40.
  3. Substitutions: Permitted.
- G. Interior Dustproofing Sealer to be applied on floors cured with membrane-forming liquid curing compound. Apply after the slab is fully cured at a time acceptable to the Contracting Officer. The sealing compound shall be compatible with the curing compound and tile or carpet adhesive where applicable.



1. Euclid: Super Floor Coat.
2. Master Builders: Masterkure N- Seal VOC.
3. Substitutions: Permitted.

H. Liquid Sealers/Hardener: to be applied on exposed concrete floors cured with moisture retentive or absorptive covers.

1. Euclid: Euco Diamond Hard (Liquid Sealer and Hardener)
2. L&M Construction Chemicals: Seal Hard (Liquid Sealer and Hardener)
3. Curecrete Chemical Company: Ashford Formula (Liquid Sealer and Hardener)
4. Midwest Floor Care: Structure Formula (Liquid Sealer and Hardener)
5. Or approved equal.

#### 2.4 JOINTS AND EMBEDDED ITEMS:

A. Construction and Contraction Joints: Comply with ACI 301 and recommendations of ACI 302.1R. Sealant shall be two-part semi-rigid epoxy, and shall have minimum Shore A Hardness of 80 when measured with ASTM D2240. Sealant is not required in contraction or construction joints in slabs to receive asphalt plank.

B. Isolation Joints: Fillers shall consist of 1/8 inch width strips of neoprene, synthetic rubber, or approved substitute, extending the full depth of the slab. Sealant shall be two-part elastomeric type, polyurethane base.

#### 2.5 VAPOR BARRIER/RETARDER

A. Provide cover over prepared base material at slabs-on-ground unless otherwise noted on the plans. Use only materials which are resistant to decay when coated in accordance with ASTM E154.

#### 2.6 PROPORTIONING

A. Prepare design mixes for each type and strength of concrete by either laboratory trial batch or field experience methods as specified in ACI 301. If laboratory trial batch method is used, use an independent testing facility acceptable to Contracting Officer for preparing and reporting proposed mix designs. The testing facility shall not be the same as used for field quality control testing and inspection unless otherwise acceptable to Contracting Officer.

B. Submit written reports to the testing laboratory of each proposed mix for each class of concrete at least 15 days prior to start of work. Do not begin concrete production until mixes have been reviewed and approved. Include the following information for each concrete mix design:



1. Method used to determine the proposed mix design.
2. Gradation of fine and coarse aggregates, plus combined aggregate gradation for slabs, ACI 302.
3. Proportions of all ingredients including all admixtures added either at the time of batching or at the job site.
4. Water-cement ratio.
5. Slump, ASTM C143.
6. Certification of the chloride content of individual admixtures and of the mixes as proposed.
7. Air Content: ASTM C173 (Volumetric Method).
8. Unit weight of concrete, ASTM C138.
9. Strength at 4, 7, and 28 days, ASTM C39.
10. Method of recording batch proportions.
11. Substantiating test reports.

C. Concrete types and strengths: Minimum 28 Day Compressive Strength shall be per design requirements but not less than:

1. Slabs on ground, paving base, columns, beams, walls, foundations, and footings: 4,000 psi.
2. Normal or Lightweight concrete on metal deck: 4,000 psi.
3. Tilt-up: 4,000 psi.
4. All concrete exposed to weather shall be air entrained (ASTM C260).
5. All concrete shall be normal weight except as noted above.

Also, see general and specific notes on structural drawings.

D. Weights: All concrete shall be normal-weight concrete unless otherwise designated on the structural drawings.

E. Durability: Conform to ACI 301.

1. All concrete exposed to potentially destructive weathering, such as freezing and thawing, or to de-icer chemicals is to be air-entrained, 6 percent +1percent, six sacks cement/cu. yd. min., 4" max. slump.
2. Water-cement ratio: For concrete subject to freezing and thawing or deicer chemicals, the water-cement ratio shall not exceed 0.53 by weight including any water added to meet specified slump in accordance with the requirements of ASTM C94 unless otherwise noted.

F. Slump: Conform to ACI 301.

1. 4 ½ inch maximum for consolidation by vibration
2. 5 inch maximum for consolidation by other methods
3. 8 inch maximum for flowable concrete. Concrete containing HRWR admixture (super plasticizer): 3 inch maximum before addition of HRWR



4. Where field conditions require slump to exceed that specified above, the increased slump shall be obtained by the use of a superplasticizer only, and the Contractor shall obtain written approval from the Contracting Officer who may require an adjustment to the mix.
- G. Production of concrete: Conform to ACI 301:
1. Ready-mixed concrete:
    - a. Ready-mixed concrete shall be batched, mixed, and transported in accordance with ASTM C94.
    - b. All concrete shall be proportioned conforming to the approved mix designs and of the materials contained in those approved mixes. A certified copy of the design weights for each mix shall be kept at the producing plant for each class of concrete used on the project.
    - c. Plant equipment and facilities are to conform to the "Check List for Certification of Ready -Mixed Concrete Production Facilities" of the National Ready-Mixed Concrete Association and have NRMCA or approved certification within the past year.
  2. All other concrete: Conform to ACI 301
  3. Concrete produced by on-site volumetric batching and continuous mixing if approved shall conform to ASTM C685.
  4. Use of accelerating admixtures in cold weather and retarding admixtures in hot weather shall not relax placement requirements specified herein.
  5. Admixtures: ACI 301. All concrete placed at ambient temperatures below 50 degrees F is to contain an approved accelerator. All concrete placed at ambient temperatures above 80 degrees F is to contain an approved retarder. All concrete required to be air-entrained is to contain an approved air-entraining admixture. When improved workability, pumpability, lower water-cement ratio, or high ultimate and/or early strength is required, the HRWR admixture (super plasticizer) may be used.
  6. Ensure air content for slabs with steel trowel finish is less than 3.0 percent.
  7. The concrete shall be of such consistency and composition that it can be worked readily into the corners and angles of the forms and around reinforcement without permitting materials to segregate or free water to collect on the surfaces. Within the limiting requirements, adjust the consistency of the concrete as may be necessary to produce mixtures which will be placeable with reasonable methods of placing and compacting. Maintain on the job at all times adequate extra cement to be used at rate of 1/2 sack cement per cubic yard concrete for each 2" slump increase for corrections due to wetness desired or obtained. No water shall be added to concrete except under the direct awareness of the project inspector.
  8. Adjustments to concrete mixes: Mix design adjustments may be requested by Contractor when characteristics of materials, job conditions, weather, test results, or other circumstances warrant at no additional cost to Contracting Officer. Laboratory test data for revised mix design and strength results must be submitted and accepted before using in work.



## PART 3 EXECUTION

### 3.1 EXAMINATION

- A. Verification of Conditions: Verify that field measurements, surfaces, substrates and conditions are as required, and ready to receive Work.
- B. Report in writing to Contracting Officer prevailing conditions that will adversely affect satisfactory execution of the Work of this Section. Do not proceed with Work until unsatisfactory conditions have been corrected.
- C. By beginning Work, Contractor accepts conditions and assumes responsibility for correcting unsuitable conditions encountered at no additional cost

### 3.2 INSTALLATION – GENERAL

- A. Install all cast-in-place concrete work in accordance with ACI 301 except as herein specified.

### 3.3 INSTALLATION – FORMWORK

- A. Construction and Contraction Joints: Conform to ACI 301 and recommendations of ACI 302.1R.

### 3.4 REINFORCEMENT

- A. Placement: Section 032000 Concrete Reinforcement

### 3.5 CONCRETE (CONVEYING AND DEPOSITING)

- A. Placement: Conform to ACI 301:
  - 1. Maintain concrete cover around reinforcing as per Section 3.3 above and ACI 301.
  - 2. Pumping concrete: ACI 304.2-R.
  - 3. Cold-Weather Placement: Comply with provisions of ACI 306.1 “Standard Specifications for Cold-Weather Concreting” and as follows. Protect concrete work from physical damage or reduced strength that could be caused by frost, freezing actions, or low temperatures.
  - 4. When air temperature has fallen to or is expected to fall below 40 deg F (4 deg C), uniformly heat water and aggregates before mixing to obtain a concrete mixture temperature of not less than 50 deg F (10 deg C) and not more than 80 deg F (27 deg C) at point of placement.
    - a. Do not use frozen materials or materials containing ice or snow. Do not place concrete on frozen subgrade or on subgrade containing frozen materials.



- b. Do not use calcium chloride, salt, or other materials containing antifreeze agents or chemical accelerators unless otherwise accepted in mix designs.
5. Hot-Weather Placement: When hot weather conditions exist that would impair quality and strength of concrete, place concrete complying with ACI 305R "Standard Specification for Hot-Weather Concreting" and as specified.
  - a. Cool ingredients before mixing to maintain concrete temperature at time of placement to below 90 deg F (32 deg C). Mixing water may be chilled or chopped ice may be used to control temperature, provided water equivalent of ice is calculated to total amount of mixing water. Using liquid nitrogen to cool concrete is Contractor's option.
  - b. Cover reinforcing steel with water-soaked burlap if it becomes too hot, so that steel temperature will not exceed the ambient air temperature immediately before embedding in concrete.
  - c. Fog spray forms, reinforcing steel, and subgrade just before placing concrete. Keep subgrade moisture uniform without puddles or dry areas.
  - d. Use water-reducing retarding admixture when required by high temperatures, low humidity, or other adverse placing conditions, as acceptable to Contracting Officer.

B. Protection of cast concrete: Conform to ACI 301.

C. Repair of surface defects: ACI 301.

1. Inspect concrete surfaces immediately upon removal of forms. Patch imperfections as needed or as directed by the Contracting Officer.
2. Modify or replace concrete not conforming to required thickness, lines, details, and elevations.
3. Repair or replace concrete with excessive honeycombing and other defects due to improper placement. Do not patch, fill, touch-up, repair, or replace exposed concrete except upon express direction of Contracting Officer for each individual area.
4. Tie holes shall be filled solid with patching mortar.

### 3.6 FINISHING

A. Finishing of formed surfaces: ACI 301:

1. Tops of forms:
  - a. Strike concrete smooth at tops of forms.
  - b. Float to texture comparable to formed surfaces.
2. Formed surfaces:
  - a. Permanently exposed surfaces and surfaces to be painted: ACI 301 - "Smooth Form Finish" with the fins ground smooth and air holes or honeycomb filled with mortar.
  - b. Surfaces in unfinished areas unexposed to public view: ACI 301- "Rough Form Finish".

B. Slabs: Minimum slab surface tolerance must satisfy ACI 301 and ACI 302.1R as measured in accordance with ASTM E1155.



1. Slabs-on- ground:
  - a. Preparation of sub-grade: Provide vapor barrier below all slabs on ground unless specifically noted otherwise on plans.
  - b. Place floor slabs-on- ground by "strip cast" method. Contraction joints where shown on drawings shall be saw-cut (as soon as slab has set enough to allow working on but not before it has set enough to prevent raveling) 1/4 of the depth of slab thickness or a "Zip Cap" control joint former as manufactured by Green Streak Plastic Products, or approved equal installed in accord with the Manufacturer's recommendations. It is recommended to use a SOFF-CUT saw and blades (between 1 to 4 hours after finish typically with 1 inch minimum depth) for all contraction joints as per manufacturer recommendations.
  - c. For exposed slabs, install semi-rigid epoxy sealant in construction and contraction joints after slab has fully dried.
  - d. Separate slabs-on- ground from vertical surfaces with 1/2 inch-thick joint filler. Extend joint filler from bottom of slab to within 1/8 inch of finished slab surface.
  - e. All slabs on ground to satisfy a minimum overall tolerance of FF35 and minimum local tolerance of FF24. In addition, all floor slabs shall be flat and level within a maximum variation of 1/4 inch per 10 feet and satisfy a minimum overall tolerance of FL25 and minimum local tolerance of FL17.
2. Suspended Floor Slab:
  - a. Minimum surface tolerances: FF25 & FL20 overall FF20 & FL15 local.
3. Concrete Finishes:
  - a. Floor Slabs: Steel trowel finish unless otherwise noted on the plans. Exposed concrete slabs shall be sealed or sealed and hardened using a liquid compound compatible with the curing method used. .
  - b. Exterior Concrete Finishes: Steel trowel with broom finish unless otherwise noted on the plans. Apply exterior sealer to surfaces exposed to deicer chemicals.
  - c. Exposed Ramps, Landings and Stair Treads: Steel trowel with broom finish unless otherwise noted on the plans. Surfaces shall be sealed or sealed and hardened using a liquid compound compatible with the curing method used.

### 3.7 CURING AND PROTECTION

- A. All exposed surfaces of concrete including floor slabs, whether or not they receive a finish flooring, shall be protected from premature drying for a minimum of seven days. Freshly placed concrete shall be protected against wash by rain. If a liquid curing compound is used, apply the curing compound at a rate equivalent to the rate of application at which the curing compound was originally tested for conformance to the requirements of ASTM C309. Do not use membrane curing when freezing weather is anticipated during first few days of curing period.
- B. All curing methods shall be placed immediately after final finishing (i.e., within two hours). Contractor's attention is directed to the fact that experience shows the most important time of curing is from three to four hours after placing and extending five to six hours



thereafter. It is extremely important, therefore, to prevent loss of moisture, particularly during this period when concrete is especially vulnerable to shrinkage cracks.

- C. During the first 2 day period of curing, no traffic on or loading of the floors will be permitted.
- D. All floor slabs shall be cured using products and methods compatible with selected floor adhesives, toppings, and other finish materials.
- E. Protect all slabs and joints from potentially destructive construction equipment.

### 3.8 PATCHING AND REPAIR

- A. Comply with ACI 301 and ACI 503.2 for standard specifications for bonding plastic concrete to hardened concrete with a multiple component epoxy adhesive.

### 3.9 GROUTING

- A. After steel columns have been installed and leveled, grout the space between the bottom of the plate and concrete, using cement grout completely filling the space and forming solid bearing for the column base plate.

### 3.10 FIELD QUALITY CONTROL

- A. Section 01450 - Quality Control: Field testing and inspection.
- B. Requirements:
  - 1. Provide and maintain an adequate program of quality control for the materials, production methods, and workmanship to assure conformance of all work to the project contract documents. ACI 121R outlines the essential elements of the Material Control portion of the QA program.
  - 2. All materials, equipment, and methods shall be subject to verification inspections and/or testing as specified herein; ACI 121R.
  - 3. Testing and Evaluation:
    - a. Furnish and pay for the services of an independent Testing Laboratory satisfactory to the Contracting Officer. The testing laboratory shall have prime responsibility for review, verification inspection, and testing of the concrete producer's materials, operations, facilities, and quality control procedures and evaluating the results for conformance with these specifications complying with ACI 121R.
    - b. The Testing Laboratory will be required to provide evidence of recent inspection of its facilities by the Cement and Concrete Reference Laboratory of the National Bureau of Standards (NBS) and to show that any deficiencies have been corrected.



- c. In addition to the requirements and duties in ACI 301 the testing laboratory shall provide the following:
- 1) One or more additional test cylinders shall be taken during cold weather concrete placement and cured on the job site under conditions of concrete represented to determine safe form-stripping period.
  - 2) Sample (and test when directed by the contracting officer) each shipment of cement and aggregates and verify approved admixtures. Store samples in a protected place until authorized to dispose of them.
  - 3) Inspect concrete batching, mixing, and delivery operations periodically or as directed by the Contracting Officer.
  - 4) Review manufacturer's reports and/or certification for each shipment of cement and reinforcing steel and/or conduct laboratory tests or spot checks of the materials as received for compliance with specifications.
  - 5) Submit to the Contracting Officer and concrete producer, during construction, the results of concrete tests.
  - 6) Include the following information:
    - a) Weight of concrete - ASTM C138
    - b) Slump - ASTM C143
    - c) Air content of freshly-mixed concrete by the pressure method, ASTM C231 or the volumetric method, ASTM C173.
    - d) Concrete temperature (at placement time).
    - e) Air temperature (at placement time).
    - f) Strength determined in accordance with ASTM C39.
    - g) Other testing or inspection as required.
- d. The Testing Laboratory shall assess and report floor flatness and levelness in accordance with ASTM E1155.
- e. Field and concrete plant inspections are to be made by a competent representative of the Testing Laboratory during all structural concreting operations including periodic audit and spot check of the Producer's and/or Contractor's quality control procedures to assure proper and adequate control. When it appears that any material furnished fails to fulfill specification requirements, the Testing Laboratory is to report such deficiency immediately to the Contracting Officer and appropriately record it in his report.

END OF SECTION



Concrete Finishing

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Reason for Issue: Issued for Pricing

Lead Engineer: XXXXXXXX

Submittal Date: XX/XX/2017

Revision	Date	Reviewed By	Checked By



SECTION 03 35 00 – CONCRETE FINISHING

PART 1 GENERAL

1.1 SUMMARY

- A. Section Includes:
  - 1. Floor surface treatment.

1.2 REFERENCES

- A. American Concrete Institute:
  - 1. ACI 301 – Specifications for Structural Concrete
  - 2. ACI 302.1 – Guide for Concrete Floor and Slab Construction.
- B. ASTM International:
  - 1. ASTM E1155 – Standard Test Method for Determining Floor Flatness and of Levelness Using the F-Number System.

1.3 QUALITY ASSURANCE

- A. Perform Work in accordance with ACI 301 and ACI 302.1.

1.4 QUALIFICATIONS

- A. Manufacturer: Company specializing in manufacturing Products specified in this section with minimum 3 years' experience.
- B. Applicator or Installer: Company specializing in performing work of this section with minimum 3 years' experience.

1.5 DELIVERY, STORAGE, AND HANDLING

- A. Deliver materials in manufacturer's packaging including application instructions.

1.6 ENVIRONMENTAL REQUIREMENTS

- A. Ventilation: Sufficient to prevent injurious gases from temporary heat or other sources affecting concrete.

1.7 COORDINATION

- A. Coordinate the Work with concrete floor placement and concrete floor curing.



## PART 2 PRODUCTS

### 2.1 MANUFACTURERS

- A. Manufacturers:
  - 1. Dayton Superior Corp.
  - 2. Euclid Chemical Co.
  - 3. Scofield: L M Scofield Co.
  - 4. Sika Corp.

### 2.2 SLIP RESISTANT TREATMENT

- A. Slip Resistant Finish: Aluminum oxide or Silica sand type, color as selected from manufacturer's standard range.

## PART 3 EXECUTION

### 3.1 EXAMINATION

- A. Verify floor surfaces are acceptable to receive the Work of this section.

### 3.2 FLOOR FINISHING

- A. Finish concrete floor surfaces in accordance with ACI 301 and ACI 302.1.
- B. Steel trowel surfaces receiving carpeting, resilient flooring, seamless flooring, and thin set ceramic tile.
- C. Steel trowel surfaces which are indicated to be exposed.
- D. In areas with floor drains, maintain design floor elevation at walls; slope surfaces uniformly to drains as indicated on Drawings.

### 3.3 FLOOR SURFACE TREATMENT

- A. Apply slip resistant finish as scheduled on floor surfaces.
- B. Apply sealer as scheduled on floor surfaces.

### 3.4 TOLERANCES

- A. ACI 317
- B. Measure for F(F) and F(L) tolerances for floors in accordance with ASTM E1155, within 48 hours after slab installation.



- C. Correct defects in defined traffic floor by grinding or removal and replacement of defective Work. Areas requiring corrective Work will be identified. Re-measure corrected areas by same process.

END OF SECTION



Masonry Reinforcement and Accessories

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Reason for Issue: Issued for Pricing

Lead Engineer: XXXXXXXX

Submittal Date: XX/XX/2017

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SECTION 04 08 00 – MASONRY REINFORCEMENT AND ACCESSORIES

PART 1 GENERAL

1.1 WORK INCLUDED

- A. Masonry reinforcement, anchors, and accessories.
- B. Mock Up Wall

1.2 REFERENCES

- A. Brick Industry of America (B.I.A.)
- B. National Concrete Masonry Association
- C. ASTM A 153: Hot-Dipped Galvanizing

1.3 SUBMITTALS

- A. Submit product data for each item specified.

1.4 MOCK UP WALL

- A. Provide mock up wall of complete wall system using all materials for Architects and Owner's review on site.
- B. Demonstrate performance of all products and wall assembly.
- C. Refer to drawings for installation location.
- D. Approved Mock Up Wall shall be the standard for appearance and workmanship for project.
- E. Remove mock up wall from job site prior to Substantial Completion.

PART 2 PRODUCTS

2.1 REINFORCEMENT AND ANCHORAGE

- A. Reinforcement and anchorage products shall be equal to those manufactured by Hohmann & Barnard, Inc. Hauppauge, NY, Phone: (800) 645-0616.
- B. Masonry cavity wall and interior CMU reinforcement:
  - 1. Joint Reinforcement wire for use as masonry wall reinforcing:
    - a. Continuous 9 gauge wire



- 1) Coating: ASTM A153 hot dipped galvanized, 1.50 oz. p.s.f.
    - 2) Install 16" on center vertically.
  2. Exterior Ladder type reinforcement:
    - a. #270 S.I.S. Ladder Eye-Wire with Seismiclip Inerlock System.
      - 1) Coating: ASTM A153 hot dipped galvanized, 1.50 oz. p.s.f.
      - 2) Install 16 inches on center vertically with pintels at 16" on center horizontally.
      - 3) Seismiclips and continuous joint reinforcement wire required.
      - 4) Size as required for wall cavity.
    - .1 Exterior wall is 1'-3" wide at brick
    - .2 Exterior wall is 1'-7" at 8" split face CMU
    - .3 Exterior rigid insulation is 2" thick
  3. Interior Ladder type reinforcement:
    - a. #220 Ladder Mesh at CMU wall.
      - 1) Coating: ASTM A153 hot dipped galvanized, 1.50 oz. p.s.f.
      - 2) Install 16" o.c. vertically.
      - 3) Size as required for wall.
    - b. #230 Ladder Tri-Mesh at CMU and brick/ground face (smooth) CMU wall.
      - 1) Coating: ASTM A153 hot dipped galvanized, 1.50 oz. p.s.f.
      - 2) Install 16" o.c. vertically.
      - 3) Size as required for wall.
- C. Weld On Ties
  1. #359FH Weld-on Tie.
    - a. Coating: ASTM A153 hot dipped galvanized, 1.50 oz. p.s.f.
    - b. Weld to structural steel, prime all connection points.
    - c. Install 16" on center vertically.
    - d. Size: 12 gauge x 3/4" wide x 6" long
  2. #VBT Vee Byna-Tie.
    - a. Coating: ASTM A153 hot dipped galvanized, 1.50 oz. p.s.f.
    - b. Install 16" on center vertically.
    - c. Seismiclips and continuous joint reinforcement wire required.
    - d. Size:
      - 1) Diameter: 3/16"
      - 2) Length as required for wall cavity.
  3. #302W Column Web Tie.
    - a. Coating: ASTM A153 hot dipped galvanized, 1.50 oz. p.s.f.
    - b. Install 16" on center vertically.
    - c. Size:
      - 1) Diameter: 3/16"
      - 2) Length: 12"
      - 3) Width as required for wall cavity.



## 2.2 THRU-WALL FLASHING

### A. Sheet copper flashing:

1. Cop-R-Cote by Advanced Building Products, Inc. P.O. Box 98, Springvale, Main 04083. Phone: (800) 252-2306. [www.advancedflashing.com](http://www.advancedflashing.com) or equal.
  - a. Type: 3 layers, flexile flashing consisting of cooper sheet coated on both sides to plasticized asphalt compound.
  - b. Characteristics: Waterproof, flexible at extreme temperatures, high tensile strength, resistant to mortar acid and alkali action, self-sealing at punctures and allowing minimum thermal cold flow through structure.
  - c. Cooper sheet: Full, Single copper sheet weighing 7 ounces per swaure foot and complying with ASTM B370.
  - d. Coating: Plasticized asphalt compound weighting 6 ounces per square foot minimum.
  - e. Roll width: 36"
  - f. Utilized premanufactured interior and exterior corners.

## 2.3 OTHER ACCESSORIES

### A. Weeps: Equal to Sandell's cell vent.

1. Install at 24" on center maximum.
2. Full head joint required.

### B. Provide and install "Z" Anchors at corners and intersections of CMU walls for lateral support.

1. Minimum cross section shall be 1/4 inch by 1-1/2 inches with 2 inch bends.
2. Anchor shall be at least 24 inches long.
3. Installed at a maximum spacing of 32" o.c. vertically.
4. Coating: ASTM A153 hot dipped galvanized, 1.50 oz. p.s.f.

### C. Control Joints: Equal to VS Series PVC Control Joint by Hohmann & Barnard, Inc. Hauppauge

### D. Mortar Net: Equal to Mortar Net for cavity walls.

1. High density polyethylene drainage system.
2. Two inches thick by 10 inches high.
3. Install continuously at the base of all exterior walls, over all doors, windows, and openings, and other areas as shown on drawings.

### E. Thru-wall flashing drip edge: Equal to Sandell's Stainless Steel drip edge.

### F. Thru-wall flashing mastic: Fibrated, trowel grade mastic consisting of asphalt, mineral stabilizers, and interfibe complying with ASTM D2822, Type 1; Cop-R-Tite Flashing Mastic as manufactured by Advanced Building Products, Inc. or equal.

### G. Termination bars equal to Sandell's 1/8" x 1" stainless steel with pre-punched holes at 12" o.c.



- H. Stainless steel sub sill pans, end dams and thru wall flashing: Forged from 24 gauge metal with welded and ground joints. Workmanship shall be smooth with no burrs or protrusions which could penetrate other materials.

### PART 3 EXECUTION

#### 3.1 PREPARATION

- A. Review locations where waterproofing is required.
- B. Schedule a pre-installation conference with Architect and all trades.
- C. Successfully demonstrate the use of all products in mock up wall.

#### 3.2 REINFORCEMENT AND ANCHORAGE

- A. Install joint reinforcement at 16 inches o.c.
- B. Place masonry joint reinforcement in first and second horizontal joints above and below openings. Extend 16 inches minimum each side of opening.
- C. Place joint reinforcement continuous in first joint below top of walls.
- D. Lap joint reinforcement ends minimum 6 inches. Extend 16 inches minimum each side of opening.
- E. Place reinforcing bars supported and secured against displacement. Maintain position within  $\frac{1}{2}$  inch of true dimension.
- F. Reinforce corners and intersections with pre-formed units of reinforcement at 16" o.c.
- G. Install 2" anchor straps at corners and intersections at 32" o.c.
- H. Discontinue reinforcement and anchorage at expansion joints and control joints.

#### 3.3 CONCRETE FILLING AND GROUT

- A. Reinforce bond beam, pilasters, cells at doors, windows, and openings.
- B. Support and secure reinforcing bars. Maintain within  $\frac{1}{2}$  inch of dimensioned position.
- C. Do not displace reinforcing. Work into cores and cavities to eliminate voids.
- D. At bearing locations, fill side cores with concrete for a minimum 12 inches each side.
- E. Fill cores where "Z" anchors are installed.



- F. Fill cores at reinforced cells at exterior walls.

### 3.4 THRU-WALL FLASHING

- A. Coordinate installation of flashings with erection of masonry walls to ensure material is provided in timely manner for embedment in mortar joints.
- B. Inspection: Verify masonry surfaces to receive through-wall flashings are smooth, free of loose materials, and properly sloped to provide drainage.
- C. Verify that adequate weep holes and mortar deflection devices and thru wall flashing drip edges are being installed to provide proper drainage at flashing locations.
- D. Install flashings in accordance with Drawings, approved shop drawings, and manufacture's recommended installation instructions.
  - 1. Use recommended adhesive and sealer.
  - 2. Form end dams at all locations to provide positive drainage to weep holes.
- E. Install copper flashings at all foundation sills, base of exterior walls, window and door sills and heads, through-wall conditions and other locations as detailed on drawings.
- F. Lap joints: Coat contacting surfaces with mastic and lap 8" inches minimum. Roll with hand roller until mastic bead appears at edges.
- G. After installation of flashings (and completion of masonry assemblies), inspect work.
  - 1. Verify flashings have been properly installed at all required locations to prevent water penetration.
  - 2. Verify weep holes have been provided to ensure proper drainage to exterior.
- H. Water test flashings at one location per 100 lin. ft. of flashing to verify flashing has been properly installed and moisture drains through weep holes. **Provide written documentation of test results.**
- I. Extend flashing all the way through brick course. Terminate at exterior with a visible drip edge.
- J. Trim exposed flashings flush with masonry surfaces after installation has been reviewed by the architect

### 3.5 CONTROL AND EXPANSION JOINTS

- A. Install preformed control joint devices at all **interior** masonry walls, not to exceed 25'-0" on center. Sealant and backer rod required.
- B. Install preformed control joints devices at all exterior masonry wall through both CMU and brick. Locate behind downspouts typically unless otherwise shown, not to exceed 25'-0" on center. Sealant and backer rod required.



END OF SECTION



Masonry Grout and Mortar

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Reason for Issue: Issued for Pricing

Lead Engineer: XXXXXXXX

Submittal Date: XX/XX/2017

Revision	Date	Reviewed By	Checked By



## SECTION 04 20 00 – MASONRY GROUT AND MORTAR

## PART 1 GENERAL

## 1.1 SUMMARY

## A. Section Includes:

1. Mortar for unit masonry.
2. Grout for unit masonry.

## 1.2 REFERENCES

## A. American Society for Testing and Materials (ASTM):

1. ASTM C 94 - Specification for Ready-Mixed Concrete.
2. ASTM C 143 - Test Method for Slump of Hydraulic Cement Concrete.
3. ASTM C 144 - Specification for Aggregate for Masonry Mortar.
4. ASTM C 150 - Specification for Portland Cement.
5. ASTM C 207 - Specification for Hydrated Lime for Masonry Purposes.
6. ASTM C 270 - Specification for Mortar for Unit Masonry.
7. ASTM C 387 - Specification for Packaged, Dry, Combined Materials for Mortar and Concrete.
8. ASTM C 404 - Specification for Aggregates for Masonry Grout.
9. ASTM C 476 - Specification for Grout for Masonry.
10. ASTM C 1019 - Method of Sampling and Testing Grout.
11. ASTM C 1142 - Specification for Extended Life Mortar for Unit Masonry.

## B. IMIAC - International Masonry Industry All-Weather Council: Recommended Practices and Guide Specifications for Cold Weather Masonry Construction.

## 1.3 SUBMITTALS

1. Samples: Submit two samples 3 inch x 3 inch in size illustrating mortar color and color range.
2. Assurance/Control Submittals:
  - a. Design Data: Design mix in accordance with the Proportion specification of ASTM C 270 and required environmental conditions.
  - b. Test Reports: Submit the following reports directly to Architect/Engineer from Testing Laboratory, with copy to Contractor. Prepare reports in conformance with Section 01450 – Quality Control.
    - 1) Conformance to Proportion specification of ASTM C 270.
    - 2) Test and evaluation reports to ASTM C 780.
  - c. Certificates: Submit manufacturer's certificate that Products meet or exceed specified requirements.



#### 1.4 QUALITY ASSURANCE

- A. Installer Qualifications: Company specializing in performing the Work of this Section with minimum 5 years documented experience.

#### 1.5 DELIVERY, STORAGE AND HANDLING

- A. Store sand for mortar on plastic sheeting to prevent contamination by extraneous chemicals in earth beneath.

#### 1.6 PROJECT CONDITIONS OR SITE CONDITIONS

- A. Environmental Requirements:
  - 1. Cold Weather Requirements: IMIAC - Recommended Practices and Guide Specifications for Cold Weather Masonry Construction.
  - 2. Specific Cold Weather Requirements: When the ambient air temperature is below 40 degrees F, heat mixing water to maintain mortar temperature between 40 degrees F and 120 degrees F until placed. When the ambient air temperature is below 32 degrees F, heat the sand and water to maintain this mortar temperature.

### PART 2 PRODUCTS

#### 2.1 MATERIALS

- A. Portland Cement: ASTM C 150, normal-Type I or Type II; gray color. Fly ash, slag, and pozzolans not permitted as substitutes for Portland cement.
- B. Mortar Aggregate: ASTM C 144, standard masonry type; clean, dry, protected against dampness, freezing, and foreign matter.
- C. Grout Aggregate: ASTM C 404; use of blast furnace slag is not permitted. Maximum coarse aggregate size, 3/8 inch.
- D. Calcium chloride is not permitted in mortar or grout. Admixtures or other chemicals containing Thyocyanates, Calcium Chloride or more than 0.1 percent chloride ions are not permitted.
- E. Hydrated Lime: ASTM C 207, Type S.
- F. Water: Potable.
- G. Admixtures: Not permitted unless approved by Architect/Engineer prior to construction.



## 2.2 MIXES - MORTAR

- A. Mortar: Type "N" or Type "S", as recommended by manufacturer, in accordance with the Proportion specification of ASTM C 270.
  - 1. Mixing of components on-site is acceptable.
  - 2. Mixing on-site water and packaged dry blended mix for mortar (ASTM C 387), that contains no masonry cement, is acceptable.
- B. Pointing Mortar: Duplicate original mortar proportions. Add aluminum tristearate, calcium stearate, or ammonium stearate equal to 2 Percent of Portland cement weight.
- C. Mortar Color: Selected by Architect.

## 2.3 MIXING - MORTAR

- A. Thoroughly mix mortar ingredients in accordance with ASTM C 270, in quantities needed for immediate use.
  - 1. Maintain sand uniformly damp immediately before the mixing process.
  - 2. Provide uniformity of mix and coloration.
  - 3. Do not use anti-freeze compounds.
  - 4. If water is lost by evaporation, retemper only within 2 hours of mixing. Do not retemper mortar more than 2 hours after mixing.

## 2.4 MIXES - GROUT FILL

- A. Grout fill is for concrete masonry unit bond beams, lintels, and reinforced cells with reinforcing bars and embedded plates.
  - 1. Compressive Strength: 2000 psi minimum at 28 days, as determined in accordance with the provisions of ASTM C 1019.
  - 2. Slump: 8 inches, minimum; 10 inches, maximum, taken in accordance with ASTM C 143.
  - 3. Use coarse grout when grout space is equal to or greater than 4 inches in both directions.
  - 4. Use fine grout when grout space is smaller than 4 inches in either direction.
  - 5. Do not use air-entrainment admixtures.

## 2.5 MIXING - GROUT

- A. Grout: Batch and mix grout in accordance with ASTM C 94 or ASTM C476 for site batched and mixed grout. Do not use anti-freeze compounds to lower the freezing point of grout.

## PART 3 EXECUTION

### 3.1 EXAMINATION

- A. Verification of Conditions: Verify that field measurements, surfaces, substrates and conditions are as required, and ready to receive Work.



- B. Report in writing to Architect/Engineer prevailing conditions that will adversely affect satisfactory execution of the Work of this Section. Do not proceed with Work until unsatisfactory conditions have been corrected.
- C. By beginning Work, Contractor accepts conditions and assumes responsibility for correcting unsuitable conditions encountered at no additional cost to the Owner.

### 3.2 INSTALLATION

- A. After reinforcing of masonry is securely tied in place, plug cleanout holes with masonry units. Brace against wet grout pressure.
- B. Install mortar and grout under provisions of Section 04210.

### 3.3 FIELD QUALITY CONTROL

- A. Section 011450 – Quality Control: Procedures for testing.
- B. Testing - Masonry Grout: Conduct strength tests in accordance with ASTM C 1019.
  - 1. Take two strength samples for each 5000 square feet of masonry wall surface for each type of grout placed each day.
  - 2. Create test samples by forming with wood surface on bottom and concrete block on sides. The samples shall be 3 inches square and 6 inches high.
  - 3. Initial cure during first 48 hours. Protect samples from loss of moisture by covering with wet cloth and keeping moist. Protect from freezing and variations in temperature. Record maximum and minimum temperatures by using a max/min thermometer.
  - 4. Remove masonry units that form samples after 48 hours and transport grout samples to laboratory. Keep samples protected from vibration, freezing, and moisture loss during transportation.
  - 5. Test samples with test method ASTM C 39 at 28 days. Compressive strength shall be the average of the two samples and shall be adequate if it equals the designated compression strength as defined on the Drawings, but not less than 2000 psi.
- C. Testing - Masonry Mortar: Conduct strength tests in accordance with the following:
  - 1. Spread mortar on the masonry units 1/2 inch to 5/8 inch thick, and allow to stand for one minute.
  - 2. Remove mortar and place in a 2-inch by 4-inch cylinder in two layers, compressing the mortar into the cylinder using a flat-end stick or fingers. Lightly tap mold on opposite sides, level off and immediately cover molds and keep them damp until taken to the laboratory.
  - 3. After 48 hours' set, have the laboratory remove molds and place them in the fog room until tested in damp condition.

END OF SECTION





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MASONRY MORTAR

PAGE 6

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Concrete Masonry Units

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Reason for Issue: Issued for Pricing

Lead Engineer: XXXXXXXX

Submittal Date: XX/XX/2017

Revision	Date	Reviewed By	Checked By



SECTION 04 22 00 – CONCRETE MASONRY UNITS

PART 1 GENERAL

1.1 WORK INCLUDED

- A. Concrete masonry units.

1.2 ENVIRONMENTAL REQUIREMENTS

- A. Maintain materials and surrounding air temperature to minimum 50 degrees F. prior to, during, and 48 hours after completion of masonry work. Comply with the International Masonry Industry All Weather Council, Recommended Practices and Guide Specifications for Cold Weather.

- B. ASTM C90 – Latest Edition

1.3 REFERENCES

- A. National Concrete Masonry Association.

1.4 SUBMITTALS

- A. Submit actual sample of specified products.

1.5 Mock up wall if required by Architect/Owner

- A. Provide mock up wall of complete wall system using all materials for Architect's and Owner's approval review on site.
- B. Demonstrate performance of all products and wall assembly.
- C. Refer to drawings for installation location.
- D. Approved Mock Up Wall shall be the standard for appearance and workmanship for project.
- E. Remove mock up wall from job site prior to Substantial Completion.

PART 2 PRODUCTS

2.1 CONCRETE MASONRY UNITS

- A. Concrete masonry units shall be in accordance with the requirements specified herein and the current issues of the following applicable specifications and standards:
  - 1. Load-Bearing Concrete Masonry Units:



- a. ASTM C90 Latest Edition.
- b. Minimum compressive strength based on net cross-sectional area:
  - 1) Minimum 1700 psi for individual units.
  - 2) Minimum 1900 psi for average of three units.
- 2. Provide fire-rated units as shown on drawings in accordance with 2006 International Building Code.
- 3. Special Faced CMU:
  - a. Equal to Decrastone as manufactured by Div. 2-4, a division of Tupelo Concrete.
  - b. Ground Face CMU (Smooth).
    - 1) Color: Champagne Cream. Submit manufacturer’s full color range for Owners selection.
    - 2) Size: 4”x8”x16” Veneer and Corner
    - 3) Install on **exterior** masonry wall as shown on drawings, **above 4’-0”** Above Finish Floor.
    - 4) Install on **interior** masonry wall as shown on drawings.
  - c. Split Face CMU.
    - 1) Color: Marble. Submit manufacturer’s full color range for Owners selection.
    - 2) Size: 8”x8”x16”; 8”x4”x16”; 4”x4”x16” Veneer and Corner
    - 3) Install on **exterior** masonry wall as shown on drawings, **below 4’-0”** Above Finish Floor.

2.2 CONCRETE MASONRY LINTELS, BOND BEAMS, AND EXTERIOR WALLS

A. Lintels

- 1. 4" block walls
 

R.O. 0'-0" W to 3'-0" W	Plate steel 3/8" x 3-1/2"
R.O. 3'-0" W to 8'-6" W	ST 3 x 6.25
- 2. 6" block walls
 

R.O. 0'-0" W to 4'-0" W	2 -4"x3"x ¼" steel angles
R.O. 4'-0" W to 5'-10" W	2- 5"x3"x1/4" steel angles
- 3. 8" block walls
 

R.O. 0'-0" W to 5'-10" W	8" deep concrete filled bond beam w/2 #5's bottom
R.O. 5'-10" W to 8'-0" W	16" deep concrete filled bond beam w/ 2 #5 top, 2 #5 bottom
- 4. 12" block walls
 

R.O. 0'-0" W to 5'-10" W	8" deep concrete filled bond beam w/ 2 #5 bottom
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R.O. 5'-10" W to 8'-0" W      16" deep concrete filled bond beam w/2 #5 top, 2 #6 bottom

All lintels shall bear a minimum of 8" at each side.

**B. Bond Beams**

1. 8" CMU      Concrete filled bond beam w/ 2 #5 bottom .
2. 8" CMU walls 16" deep Concrete filled bond beam w/2 #5 top, 2 #6 bottom
3. 12" CMU walls Concrete filled bond beam w/2 #6 top, 2 #6 bottom

**C. Exterior / Interior Walls:**

1. See structural drawings for locations of pilasters. Locations are approximate, coordinate with architectural layout of doors and windows. Do not shift pilasters under steel beams above by more than 4" unless engineer approves modified location.
2. Rebars shall be full height doweled into foundation/grade beam to fully develop in tension and doweled into bond beam. Bend 90 degrees into bond beam at top of wall with a min. 12" horizontal leg.

D. Concrete: 3,000 psi @ 28 days; 8 - 10 inch slump.

E. Grout: 2,500 psi @ 28 days; 8 - 10 inch slump.

## PART 3 EXECUTION

### 3.1 PREPARATION

- A. Verify items provided by other Sections of work are properly sized and located. Take special care to coordinate masonry work with requirements of Division 15 and Division 16 of specifications.
- B. Establish lines, levels, and coursing. Protect from disturbance.
- C. Provide temporary bracing during erection of masonry work. Maintain in place until building structure provides permanent bracing.
- D. Review locations where waterproofing is required.

### 3.2 COURSING

- A. Place masonry to lines and levels indicated.
- B. Maintain masonry courses to uniform width. Make vertical and horizontal joints equal and of uniform thickness.
- C. Lay concrete masonry units in running bond. Course one block unit and one mortar joint to equal 8 inches. Form tooled concave mortar joints.



- D. Review control joint locations and configurations with Architect prior to initiating the work.

### 3.3 PLACING AND BONDING

- A. Lay masonry in full bed of mortar, properly jointed with other work. All joints, head, bed, and collar shall be completely filled. Buttering corners of joints, and deep or excessive furrowing of mortar joints are not permitted.
- B. Fully bond intersections and external and internal corners. Fill cells in CMU supporting "Z" anchors with grout.
- C. Do not shift or tap masonry units after mortar has taken initial set. Where adjustment must be made, remove mortar and replace.
- D. Remove excess mortar.
- E. Perform jobsite cutting with proper tools to provide straight, unchipped edges. Take care to prevent breaking masonry unit corners or edges.
- F. Weep holes (full head joint) required above all flashing at the base of all exterior walls, over all doors, windows, and openings, and other areas as shown on drawings. Install at 16" on center horizontally maximum.

### 3.4 TOLERANCES

- A. The Contractor must review the work as it progresses and review in areas not more than 100 s.f. per review. If the Contractor has any doubt that the work does not conform to tolerances or aesthetics, he shall stop the work and notify the Architect verbally and in writing immediately. The Architect or his authorized representative shall visit the site and review the area(s) in question within forty-eight (48) hours of the Contractor's written notice. If the work is non-conforming, the Contractor shall remove all of the non-conforming work and immediately reconstruct it using all new materials. If the project is delayed due to non-conforming work, the Contractor shall not be granted time extension(s).
- B. Variation from Unit to Adjacent Unit: 1/32 inch maximum.
- C. Variation from Plane of Wall: 1/4 inch in 10 feet and 1/2 inch in 20 feet or more.
- D. Variation from Plumb: 1/4 inch per story noncumulative.
- E. Variation from Level Coursing: 1/8 inch in 3 feet; 1/4 inch in 10 feet.
- F. Variation of Joint Thickness: 1/8 inch in 3 feet.
- G. Maximum Variation from Cross Sectional Thickness of Walls: Plus or minus 1/4 inch.



### 3.5 REINFORCEMENT AND ANCHORAGE

- A. See Section 040800 – Masonry Reinforcement and Accessories

### 3.6 CUTTING AND FITTING

- A. Cut and fit for pipes, conduit and sleeves. Cooperate with other sections of work to provide correct size, shape, and location. Take special care to coordinate work of this section with requirements of Division 15 and Division 16 of specifications.
- B. Obtain approval prior to cutting or fitting any area not indicated or where appearance or strength of masonry work may be impaired.

### 3.7 CLEANING

- A. Clean soiled surfaces with a non-acidic solution which will not harm masonry or adjacent materials. Consult masonry manufacturer for acceptable cleaners. Consult painting contractor and manufacturer of paint, primer, and elastomeric coatings to insure that cleaning solutions are compatible with finishes.
- B. Use non-metallic tools in cleaning operations.

### 3.8 PROTECTION

- A. Provide protection without damaging completed work.
- B. At day's end, cover unfinished walls to prevent moisture infiltration.
- C. Keep masonry units covered and dry to prevent moisture infiltration during storage and construction.

### 3.9 LINTELS

- A. Install concrete masonry lintels over openings where steel lintels are not required.
- B. Provide a minimum of 8 inch bearing on each side of opening.

### 3.10 CONTROL AND EXPANSION JOINTS

- A. See Section 040800 – Masonry Reinforcement and Accessories.

END OF SECTION



## SECTION 048100 - UNIT MASONRY ASSEMBLIES

## PART 1 - GENERAL

## 1.1 RELATED DOCUMENTS

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

## 1.2 SUMMARY

- A. This Section includes unit masonry assemblies consisting of the following:
  - 1. Face brick.
  - 2. Concrete masonry units.
  - 3. Mortar and grout.
  - 4. Masonry joint reinforcement.
  - 5. Ties and anchors.
  - 6. Embedded flashing.
- B. Related Sections include the following:
  - 1. Division 7 Section "Water Repellents" for water repellents applied to unit masonry assemblies.
  - 2. Division 7 Section "Sheet Metal Flashing and Trim" for exposed sheet metal flashing.
  - 3. Division 7 Section "Joint Sealants" for sealing control and expansion joints in unit masonry.
  - 4. Division 10 Section "Louvers and Vents" for wall vents (brick vents).
  - 5. Division 5 Section "Metal Fabrications" Steel lintels for unit masonry.
- C. Products furnished, but not installed, under this Section include the following:
  - 1. Anchor sections of adjustable masonry anchors for connecting to structural frame, installed under Division 5 Section "Structural Steel."
- D. Products installed, but not furnished, under this Section include the following:
  - 1. Cast-stone trim, furnished under Division 4 Section "Cast Stone."
  - 2. Steel lintels and shelf angles for unit masonry, furnished under Division 5 Section "Metal Fabrications."
  - 3. Manufactured reglets in masonry joints for metal flashing, furnished under Division 7 Section "Sheet Metal Flashing and Trim."

### 1.3 SUBMITTALS

- A. Product Data: For each type of product indicated.
- B. Shop Drawings: For the following:
  - 1. Masonry Units: Show sizes, profiles, coursing, and locations of special shapes.
  - 2. Stone Trim Units: Show sizes, profiles, and locations of each stone trim unit required.
  - 3. Fabricated Flashing: Detail corner units, end-dam units, and other special applications.
  - 4. Reinforcing Steel: Detail bending and placement of unit masonry reinforcing bars. Comply with ACI 315, "Details and Detailing of Concrete Reinforcement."
- C. Samples for Initial Selection: For the following:
  - 1. Colored mortar.
  - 2. Weep holes/vents.
- D. Samples for Verification: For each type and color of the following:
  - 1. Face brick.
  - 2. Special brick shapes.
  - 3. Pigmented and colored-aggregate mortar.
  - 4. Weep holes/vents.
  - 5. Accessories embedded in masonry.
- E. Material Certificates: Include statements of material properties indicating compliance with requirements including compliance with standards and type designations within standards. Provide for each type and size of the following:
  - 1. Masonry units.
    - a. Include material test reports substantiating compliance with requirements.
    - b. For bricks, include size-variation data verifying that actual range of sizes falls within specified tolerances.
    - c. For exposed brick, include material test report for efflorescence according to ASTM C 67.
  - 2. Provide unit masonry that develops the following net-area compressive strengths ( $f'_m$ ) at 28 days. Determine compressive strength of masonry from net-area compressive strengths of masonry units and mortar types according to Tables 1 and 2 in ACI 530.1/ASCE 6/TMS 602.
    - a. For Concrete Unit Masonry:  $f'_m = 1500$  psi (10.3 MPa)
  - 3. Cementitious materials. Include brand, type, and name of manufacturer.
  - 4. Preblended, dry mortar mixes. Include description of type and proportions of ingredients.
  - 5. Grout mixes. Include description of type and proportions of ingredients.
  - 6. Reinforcing bars.
  - 7. Joint reinforcement.
  - 8. Anchors, ties, and metal accessories.

- F. Mix Designs: For each type of mortar and grout. Include description of type and proportions of ingredients.
  - 1. Include test reports, per ASTM C 780, for mortar mixes required to comply with property specification.
  - 2. Include test reports, per ASTM C 1019, for grout mixes required to comply with compressive strength requirement.
  - 3. Grout mixes complying with compressive strength requirements of ASTM C 476 Include description of type and proportions of grout ingredients.
  
- G. Cold-Weather Procedures: Detailed description of methods, materials, and equipment to be used to comply with cold-weather requirements.

#### 1.4 QUALITY ASSURANCE

- A. Testing Agency Qualifications: An independent agency qualified according to ASTM C 1093 for testing indicated, as documented according to ASTM E 548.
  
- B. Source Limitations for Masonry Units: Obtain exposed masonry units of a uniform texture and color, or a uniform blend within the ranges accepted for these characteristics, through one source from a single manufacturer for each product required.
  
- C. Source Limitations for Mortar Materials: Obtain mortar ingredients of a uniform quality, including color for exposed masonry, from a single manufacturer for each cementitious component and from one source or producer for each aggregate.
  
- D. Sample Panels: Build sample panels to verify selections made under sample submittals and to demonstrate aesthetic effects. Comply with requirements in Division 1 Section "Quality Requirements" for mockups.
  - 1. Build sample panels for each type of exposed unit masonry construction in sizes approximately 60 inches (1500 mm) long by 48 inches (1200 mm) high by full thickness.
  - 2. Clean one-half of exposed faces of panels with masonry cleaner indicated.
  - 3. Protect approved sample panels from the elements with weather-resistant membrane.
  - 4. Approval of sample panels is for color, texture, and blending of masonry units; relationship of mortar and sealant colors to masonry unit colors; tooling of joints; aesthetic qualities of workmanship; and other material and construction qualities specifically approved by Architect in writing.
    - a. Approval of sample panels does not constitute approval of deviations from the Contract Documents contained in sample panels unless such deviations are specifically approved by Architect in writing.
  
- E. Preinstallation Conference: Conduct conference at Project site to comply with requirements in Division 1 Section "Project Management and Coordination."

### 1.5 DELIVERY, STORAGE, AND HANDLING

- A. Store masonry units on elevated platforms in a dry location. If units are not stored in an enclosed location, cover tops and sides of stacks with waterproof sheeting, securely tied. If units become wet, do not install until they are dry.
- B. Store cementitious materials on elevated platforms, under cover, and in a dry location. Do not use cementitious materials that have become damp.
- C. Store aggregates where grading and other required characteristics can be maintained and contamination avoided.
- D. Deliver preblended, dry mortar mix in moisture-resistant containers designed for lifting and emptying into dispensing silo. Store preblended, dry mortar mix in delivery containers on elevated platforms, under cover, and in a dry location or in a metal dispensing silo with weatherproof cover.
- E. Store masonry accessories, including metal items, to prevent corrosion and accumulation of dirt and oil.

### 1.6 PROJECT CONDITIONS

- A. Protection of Masonry: During construction, cover tops of walls, projections, and sills with waterproof sheeting at end of each day's work. Cover partially completed masonry when construction is not in progress.
  - 1. Extend cover a minimum of 24 inches (600 mm) down both sides and hold cover securely in place.
  - 2. Where 1 wythe of multiwythe masonry walls is completed in advance of other wythes, secure cover a minimum of 24 inches (600 mm) down face next to unconstructed wythe and hold cover in place.
- B. Do not apply uniform floor or roof loads for at least 12 hours and concentrated loads for at least 3 days after building masonry walls or columns.
- C. Stain Prevention: Prevent grout, mortar, and soil from staining the face of masonry to be left exposed or painted. Immediately remove grout, mortar, and soil that come in contact with such masonry.
  - 1. Protect base of walls from rain-splashed mud and from mortar splatter by spreading coverings on ground and over wall surface.
  - 2. Protect sills, ledges, and projections from mortar droppings.
  - 3. Protect surfaces of window and door frames, as well as similar products with painted and integral finishes, from mortar droppings.
  - 4. Turn scaffold boards near the wall on edge at the end of each day to prevent rain from splashing mortar and dirt onto completed masonry.
- D. Cold-Weather Requirements: Do not use frozen materials or materials mixed or coated with ice or frost. Do not build on frozen substrates. Remove and replace unit masonry damaged by

frost or by freezing conditions. Comply with cold-weather construction requirements contained in ACI 530.1/ASCE 6/TMS 602.

1. Cold-Weather Cleaning: Use liquid cleaning methods only when air temperature is 40 deg F (4 deg C) and above and will remain so until masonry has dried, but not less than 7 days after completing cleaning.
- E. Hot-Weather Requirements: Comply with hot-weather construction requirements contained in ACI 530.1/ASCE 6/TMS 602.

## PART 2 - PRODUCTS

### 2.1 MANUFACTURERS

- A. In other Part 2 articles where titles below introduce lists, the following requirements apply to product selection:
1. Available Products: Subject to compliance with requirements, products that may be incorporated into the Work include, but are not limited to, products specified.
  2. Products: Subject to compliance with requirements, provide one of the products specified.
  3. Available Manufacturers: Subject to compliance with requirements, manufacturers offering products that may be incorporated into the Work include, but are not limited to, manufacturers specified.
  4. Manufacturers: Subject to compliance with requirements, provide products by one of the manufacturers specified.

### 2.2 MASONRY UNITS, GENERAL

- A. Defective Units: Referenced masonry unit standards may allow a certain percentage of units to exceed tolerances and to contain chips, cracks, or other defects exceeding limits stated in the standard. Do not use units where such defects, including dimensions that vary from specified dimensions by more than stated tolerances, will be exposed in the completed Work or will impair the quality of completed masonry.

### 2.3 CONCRETE MASONRY UNITS

- A. General: Provide shapes indicated and as follows:
1. Provide special shapes for lintels, corners, jambs, sash, control joints, headers, bonding, and other special conditions.
  2. Provide square-edged units for outside corners, unless indicated as bullnose.
- B. Concrete Masonry Units: ASTM C 90 and as follows:
1. Unit Compressive Strength: Provide units with minimum average net-area compressive strength of 1900 psi (13.1 Mpa)
  2. Weight Classification: Lightweight
  3. Provide Type II, non-moisture-controlled units.

4. Select subparagraph above or below. Verify local availability of Type I units before retaining.
5. Size (Width): Manufactured to the following dimensions:
6. 8 inches (203 mm) nominal; 7-5/8 inches (194 mm) actual.
7. Provide "RainBlock" impregnated CMU (smooth/scored and split-faced equal to Oldcastle Company); Contact Scott Beach: 251.443.2040.
8. Exterior CMU shall provide for integrated "RainBloc" water repellent.

#### 2.4 MORTAR AND GROUT MATERIALS

- A. Basis of Design: Per division 1 allowance
- B. Cold-Weather Admixture: Nonchloride, noncorrosive, accelerating admixture complying with ASTM C 494/C 494M, Type C, and recommended by manufacturer for use in masonry mortar of composition indicated.
- C. Water Repellent System: Equal to "RainBloc" water repellent. All mortar/grout shall include "RainBloc".
  1. Available Products:
    - a. Addiment Incorporated; Mortar Kick.
    - b. Euclid Chemical Company (The); Accelguard 80.
    - c. Grace Construction Products, a unit of W. R. Grace & Co. - Conn.; Morset.
    - d. Sonneborn, Div. of ChemRex; Trimix-NCA.
- D. Water: Potable.

#### 2.5 REINFORCING STEEL

- A. Uncoated Steel Reinforcing Bars: ASTM A 615/A 615M, Grade 60 (Grade 400).

#### 2.6 MASONRY JOINT REINFORCEMENT

- A. General: ASTM A 951 and as follows:
  1. Mill galvanized, carbon-steel wire for interior walls.
  2. Hot-dip galvanized, carbon-steel wire for exterior walls.
  3. Wire Size for Side Rods: W1.7 or 0.148-inch (3.8-mm) diameter.
  4. Wire Size for Cross Rods: W1.7 or 0.148-inch (3.8-mm) diameter.
  5. Provide in lengths of not less than 10 feet (3 m), with prefabricated corner and tee units where indicated.
- B. For single-wythe masonry, provide either ladder or truss type with single pair of side rods and cross rods spaced not more than 16 inches (407 mm) o.c.

## 2.7 TIES AND ANCHORS

- A. Materials: Provide ties and anchors specified in subsequent paragraphs that are made from materials that comply with eight subparagraphs below, unless otherwise indicated.
1. Hot-Dip Galvanized, Carbon-Steel Wire: ASTM A 82; with ASTM A 153/A 153M, Class B-2 coating.
- B. Wire Ties, General: Unless otherwise indicated, size wire ties to extend at least halfway through veneer but with at least 5/8-inch (16-mm) cover on outside face. Outer ends of wires are bent 90 degrees and extend 2 inches (50 mm) parallel to face of veneer.
- C. Adjustable Anchors for Connecting to Structure: Provide anchors that allow vertical or horizontal adjustment but resist tension and compression forces perpendicular to plane of wall.
1. Tie Section for Steel Frame: Triangular-shaped wire tie, sized to extend within 1 inch (25 mm) of masonry face, made from 0.188-inch- (4.8-mm-) 0.25-inch- (6.4-mm-) diameter, hot-dip galvanized steel wire.
- D. Stone Anchors: Fabricate dowels, cramps, and other stone anchors from stainless steel.
- E. Adjustable Masonry-Veneer Anchors
1. General: Provide anchors that allow vertical adjustment but resist tension and compression forces perpendicular to plane of wall, for attachment over sheathing to wood or metal studs, and as follows:
    - a. Structural Performance Characteristics: Capable of withstanding a 100-lbf (445-N) load in both tension and compression without deforming or developing play in excess of 0.05 inch (1.3 mm).
  2. Screw-Attached, Masonry-Veneer Anchors: Units consisting of a wire tie and a metal anchor section.
    - a. Anchor Section: Zinc-alloy barrel section with flanged head with eye and corrosion-resistant, self-drilling screw. Eye designed to receive wire tie and to serve as head for drilling fastener into framing. Barrel length to suit sheathing thickness, allowing screw to seat directly against framing with flanged head covering hole in sheathing.
    - b. Wire Ties: Triangular-, rectangular-, or T-shaped wire ties fabricated from 0.188-inch- (4.8-mm-) 0.25-inch- (6.4-mm-) diameter, hot-dip galvanized steel stainless-steel wire.
    - c. Available Products:
      - 1) Dayton Superior Corporation, Dur-O-Wal Division; D/A 213 or D/A 210 with D/A 700-708.
      - 2) Heckmann Building Products Inc.; 315-D with 316 or Pos-I-Tie.
      - 3) Hohmann & Barnard, Inc.; DW-10 DW-10HS or DW-10-X.
      - 4) Wire-Bond; 1004, Type III or RJ-711.
  3. Polymer-Coated, Steel Drill Screws for Steel Studs: ASTM C 954 except manufactured with hex washer head and neoprene washer, No. 10 (4.8-mm) diameter by length

required to penetrate steel stud flange with not less than 3 exposed threads, and with organic polymer coating with salt-spray resistance to red rust of more than 800 hours per ASTM B 117.

a. Available Products:

- 1) ITW Buildex; Teks Maxiseal with Climaseal finish.
- 2) Textron Inc., Textron Fastening Systems; Elco Dril-Flex with Stalgard finish.

## 2.8 EMBEDDED FLASHING MATERIALS

A. Flexible Flashing: For flashing not exposed to the exterior, use the following, unless otherwise indicated:

1. Rubberized-Asphalt Flashing: Composite flashing product consisting of a pliable, adhesive rubberized-asphalt compound, bonded to a high-density, cross-laminated polyethylene film to produce an overall thickness of not less than 0.030 inch (0.8 mm) 0.040 inch (1.0 mm).

a. Available Products:

- 1) Advanced Building Products Inc.; Peel-N-Seal.
- 2) Carlisle Coatings & Waterproofing; CCW-705-TWF Thru-Wall Flashing.
- 3) Dayton Superior Corporation, Dur-O-Wal Division; Dur-O-Barrier-44.
- 4) Grace Construction Products, a unit of W. R. Grace & Co. - Conn.; Perm-A-Barrier Wall Flashing.
- 5) Heckmann Building Products Inc.; No. 82 Rubberized-Asphalt Thru-Wall Flashing.
- 6) Hohmann & Barnard, Inc.; Textroflash.
- 7) Polyguard Products, Inc.; Polyguard 300.
- 8) Polytite Manufacturing Corp.; Poly-Barrier Self-Adhering Wall Flashing.
- 9) Williams Products, Inc.; Everlastic MF-40.

B. Solder and Sealants for Sheet Metal Flashings: As specified in Division 7 Section "Sheet Metal Flashing and Trim."

1. Elastomeric Sealant: ASTM C 920, chemically curing urethane polysulfide silicone sealant; of type, grade, class, and use classifications required to seal joints in sheet metal flashing and trim and remain watertight.

C. Adhesives, Primers, and Seam Tapes for Flashings: Flashing manufacturer's standard products or products recommended by flashing manufacturer for bonding flashing sheets to each other and to substrates.

## 2.9 MISCELLANEOUS MASONRY ACCESSORIES

A. Compressible Filler: Premolded filler strips complying with ASTM D 1056, Grade 2A1; compressible up to 35 percent; of width and thickness indicated; formulated from neoprene urethane or PVC.

- B. Preformed Control-Joint Gaskets: Made from styrene-butadiene-rubber compound, complying with ASTM D 2000, Designation M2AA-805 or PVC, complying with ASTM D 2287, Type PVC-65406 and designed to fit standard sash block and to maintain lateral stability in masonry wall; size and configuration as indicated.
- C. Bond-Breaker Strips: Asphalt-saturated, organic roofing felt complying with ASTM D 226, Type I (No. 15 asphalt felt).
- D. Weep/Vent Products: Use one of the following, unless otherwise indicated:
  - 1. Wicking Material: Absorbent rope, made from cotton or UV-resistant synthetic fiber, 1/4 to 3/8 inch (6 to 10 mm) in diameter, in length required to produce 2-inch (50-mm) exposure on exterior and 18 inches (450 mm) in cavity between wythes. Use only for weeps.
  - 2. Round Plastic Weep/Vent Tubing: Medium-density polyethylene, 3/8-inch (9-mm) OD by 4 inches (100 mm) long.
- E. Cavity Drainage Material: Free-draining mesh, made from polymer strands that will not degrade within the wall cavity.
  - 1. Provide one of the following configurations:
    - a. Strips, full-depth of cavity and 10 inches (250 mm) wide, with dovetail shaped notches 7 inches (175 mm) deep that prevent mesh from being clogged with mortar droppings.
  - 2. Available Products:
    - a. Advanced Building Products Inc.; Mortar Break Mortar Break II.
    - b. Archovations, Inc.; CavClear Masonry Mat.
    - c. Dayton Superior Corporation, Dur-O-Wal Division; Polytite MortarStop.
    - d. Mortar Net USA, Ltd.; Mortar Net.

## 2.10 MASONRY CLEANERS

- A. Proprietary Acidic Cleaner: Manufacturer's standard-strength cleaner designed for removing mortar/grout stains, efflorescence, and other new construction stains from new masonry without discoloring or damaging masonry surfaces. Use product expressly approved for intended use by cleaner manufacturer and manufacturer of masonry units being cleaned.
  - 1. Available Manufacturers:
    - a. Diedrich Technologies, Inc.
    - b. EaCo Chem, Inc.
    - c. ProSoCo, Inc.

## 2.11 MORTAR AND GROUT MIXES

- A. General: Do not use admixtures, including pigments, air-entraining agents, accelerators, retarders, water-repellent agents, antifreeze compounds, or other admixtures, unless otherwise indicated. All exterior wall and foundation Masonry Mortar and grout shall have "RainBloc" additive.
1. Do not use calcium chloride in mortar or grout.
  2. Limit cementitious materials in mortar to portland cement, mortar cement, and lime.
  3. Limit cementitious materials in mortar for exterior and reinforced masonry to portland cement, mortar cement, and lime.
  4. Add cold-weather admixture (if used) at same rate for all mortar that will be exposed to view, regardless of weather conditions, to ensure that mortar color is consistent.
- B. Preblended, Dry Mortar Mix: Furnish dry mortar ingredients in form of a preblended mix. Measure quantities by weight to ensure accurate proportions, and thoroughly blend ingredients before delivering to Project site.
- C. Mortar for Unit Masonry: Comply with ASTM C 270, Property Specification. Provide the following types of mortar for applications stated unless another type is indicated or needed to provide required compressive strength of masonry.
1. For masonry below grade or in contact with earth, use Type S.
  2. For reinforced masonry, use Type N.
  3. For mortar parge coats, use Type N.
  4. For exterior, above-grade, load-bearing and non-load-bearing walls and parapet walls; for interior load-bearing walls; for interior non-load-bearing partitions; and for other applications where another type is not indicated, use Type N.
  5. For interior non-load-bearing partitions, Type O may be used instead of Type N.
- D. Pigmented Mortar: Use colored cement product or select and proportion pigments with other ingredients to produce color required. Do not add pigments to colored cement products.
1. Pigments shall not exceed 10 percent of portland cement by weight.
  2. Pigments shall not exceed 5 percent of masonry cement or mortar cement by weight.
  3. Mix to match Architect's sample.
- E. Colored-Aggregate Mortar: Produce required mortar color by using colored aggregates and natural color or white cement as necessary to produce required mortar color.
1. Mix to match Architect's sample.
- F. Grout for Unit Masonry: Comply with ASTM C 476.
1. Use grout of type indicated or, if not otherwise indicated, of type (fine or coarse) that will comply with Table 1.15.1 in ACI 530.1/ASCE 6/TMS 602 for dimensions of grout spaces and pour height.
  2. Provide grout with a slump of 8 to 11 inches (200 to 280 mm) as measured according to ASTM C 143/C 143M.

- G. Epoxy Pointing Mortar: Mix epoxy pointing mortar to comply with mortar manufacturer's written instructions.

### PART 3 - EXECUTION

#### 3.1 EXAMINATION

- A. Examine conditions, with Installer present, for compliance with requirements for installation tolerances and other conditions affecting performance of work.
  - 1. For the record, prepare written report, endorsed by Installer, listing conditions detrimental to performance of work.
  - 2. Verify that foundations are within tolerances specified.
  - 3. Verify that reinforcing dowels are properly placed.
- B. Before installation, examine rough-in and built-in construction for piping systems to verify actual locations of piping connections.
- C. Proceed with installation only after unsatisfactory conditions have been corrected.

#### 3.2 INSTALLATION, GENERAL

- A. Thickness: Build cavity and composite walls and other masonry construction to full thickness shown. Build single-wythe walls to actual widths of masonry units, using units of widths indicated.
- B. Leave openings for equipment to be installed before completing masonry. After installing equipment, complete masonry to match the construction immediately adjacent to opening.
- C. Use full-size units without cutting if possible. If cutting is required to provide a continuous pattern or to fit adjoining construction, cut units with motor-driven saws; provide clean, sharp, unchipped edges. Allow units to dry before laying unless wetting of units is specified. Install cut units with cut surfaces and, where possible, cut edges concealed.
- D. Select and arrange units for exposed unit masonry to produce a uniform blend of colors and textures.
  - 1. Mix units from several pallets or cubes as they are placed.
- E. Wetting of Brick: Wet brick before laying if initial rate of absorption exceeds 30 g/30 sq. in. (30 g/194 sq. cm) per minute when tested per ASTM C 67. Allow units to absorb water so they are damp but not wet at time of laying.
- F. Comply with construction tolerances in ACI 530.1/ASCE 6/TMS 602 and with the following:

1. For conspicuous vertical lines, such as external corners, door jambs, reveals, and expansion and control joints, do not vary from plumb by more than 1/8 inch in 10 feet (3 mm in 3 m), 1/4 inch in 20 feet (6 mm in 6 m), or 1/2 inch (12 mm) maximum.
2. For vertical alignment of exposed head joints, do not vary from plumb by more than 1/4 inch in 10 feet (6 mm in 3 m), or 1/2 inch (12 mm) maximum.
3. For conspicuous horizontal lines, such as lintels, sills, parapets, and reveals, do not vary from level by more than 1/8 inch in 10 feet (3 mm in 3 m), 1/4 inch in 20 feet (6 mm in 6 m), or 1/2 inch (12 mm) maximum.
4. For exposed bed joints, do not vary from thickness indicated by more than plus or minus 1/8 inch (3 mm), with a maximum thickness limited to 1/2 inch (12 mm). Do not vary from bed-joint thickness of adjacent courses by more than 1/8 inch (3 mm).
5. For exposed head joints, do not vary from thickness indicated by more than plus or minus 1/8 inch (3 mm). Do not vary from adjacent bed-joint and head-joint thicknesses by more than 1/8 inch (3 mm).
6. For faces of adjacent exposed masonry units, do not vary from flush alignment by more than 1/16 inch (1.5 mm) except due to warpage of masonry units within tolerances specified for warpage of units.
7. For exposed bed joints and head joints of stacked bond, do not vary from a straight line by more than 1/16 inch (1.5 mm) from one masonry unit to the next.

### 3.3 LAYING MASONRY WALLS

- A. Lay out walls in advance for accurate spacing of surface bond patterns with uniform joint thicknesses and for accurate location of openings, movement-type joints, returns, and offsets. Avoid using less-than-half-size units, particularly at corners, jambs, and, where possible, at other locations.
- B. Bond Pattern for Exposed Masonry: Unless otherwise indicated, lay exposed masonry in running bond; do not use units with less than nominal 4-inch (100-mm) horizontal face dimensions at corners or jambs.
- C. Stopping and Resuming Work: Stop work by racking back units in each course from those in course below; do not tooth. When resuming work, clean masonry surfaces that are to receive mortar, remove loose masonry units and mortar, and wet brick if required before laying fresh masonry.
- D. Built-in Work: As construction progresses, build in items specified in this and other Sections. Fill in solidly with masonry around built-in items.
- E. Fill space between steel frames and masonry solidly with mortar, unless otherwise indicated.
- F. Where built-in items are to be embedded in cores of hollow masonry units, place a layer of metal lath, wire mesh, or plastic mesh in the joint below and rod mortar or grout into core.
- G. Fill cores in hollow concrete masonry units with grout 24 inches (600 mm) under bearing plates, beams, lintels, posts, and similar items, unless otherwise indicated.

### 3.4 MORTAR BEDDING AND JOINTING

- A. Lay hollow brick as follows:
1. With face shells fully bedded in mortar and with head joints of depth equal to bed joints.
  2. With webs fully bedded in mortar in all courses of piers, columns, and pilasters.
  3. With webs fully bedded in mortar in grouted masonry, including starting course on footings.
  4. With entire units, including areas under cells, fully bedded in mortar at starting course on footings where cells are not grouted.
- B. Lay solid masonry units with completely filled bed and head joints; butter ends with sufficient mortar to fill head joints and shove into place. Do not deeply furrow bed joints or slush head joints.

### 3.5 CAVITY WALLS

- A. Bond wythes of cavity walls together using one of the following methods:
1. Individual Metal Ties: Provide ties as shown installed in horizontal joints, but not less than one metal tie for 2.67 sq. ft. (0.25 sq. m) of wall area spaced not to exceed 24 inches (610 mm) o.c. horizontally and 16 inches (406 mm) o.c. vertically. Stagger ties in alternate courses. Provide additional ties within 12 inches (305 mm) of openings and space not more than 36 inches (915 mm) apart around perimeter of openings. At intersecting and abutting walls, provide ties at no more than 24 inches (610 mm) o.c. vertically.
    - a. Where bed joints of wythes do not align, use adjustable (two-piece) type ties.
    - b. Where one wythe is of clay masonry and the other of concrete masonry, use adjustable (two-piece) type ties to allow for differential movement regardless of whether bed joints align.
  2. Header Bonding: Provide masonry unit headers extending not less than 3 inches (76 mm) into each wythe. Space headers not over 8 inches (203 mm) 12 inches (305 mm) clear horizontally and 16 inches (406 mm) clear vertically.
  3. Masonry Veneer Anchors: Comply with requirements for anchoring masonry veneers.
- B. Bond wythes of cavity walls together using bonding system indicated on Drawings.
- C. Keep cavities clean of mortar droppings and other materials during construction. Bevel beds away from cavity, to minimize mortar protrusions into cavity. Do not attempt to trowel or remove mortar fins protruding into cavity.

### 3.6 MASONRY JOINT REINFORCEMENT

- A. General: Provide continuous masonry joint reinforcement as indicated. Install entire length of longitudinal side rods in mortar with a minimum cover of 5/8 inch (16 mm) on exterior side of walls, 1/2 inch (13 mm) elsewhere. Lap reinforcement a minimum of 6 inches (150 mm).
1. Space reinforcement not more than 16 inches (406 mm) o.c.
  2. Space reinforcement not more than 8 inches o.c. in foundation walls and parapet walls.
  3. Provide reinforcement not more than 8 inches above and below wall openings and extending 12 inches beyond openings.
  4. Cut or interrupt joint reinforcement at control and expansion joints, unless otherwise indicated.
- B. Provide continuity at corners and wall intersections by using prefabricated "L" and "T" sections. Cut and bend reinforcing units as directed by manufacturer for continuity at returns, offsets, column fireproofing, pipe enclosures, and other special conditions.

### 3.7 ANCHORING MASONRY VENEERS

- A. Anchor masonry veneers to wall framing with seismic masonry-veneer anchors to comply with the following requirements:
1. Fasten screw-attached anchors through sheathing to wall framing with metal fasteners of type indicated. Use two fasteners unless anchor design only uses one fastener.
  2. Locate anchor sections to allow maximum vertical differential movement of ties up and down.
  3. Space anchors as indicated, but not more than 16 inches (406 mm) o.c. vertically and 24 inches (610 mm) o.c. horizontally with not less than 1 anchor for each 2.67 sq. ft. (0.25 sq. m) of wall area. Install additional anchors within 12 inches (305 mm) of openings and at intervals, not exceeding 36 inches (914 mm), around perimeter.

### 3.8 CONTROL AND EXPANSION JOINTS

- A. General: Install control and expansion joint materials in unit masonry as masonry progresses. Do not allow materials to span control and expansion joints without provision to allow for in-plane wall or partition movement.
- B. Form expansion joints in brick made from clay or shale as follows:
1. Build flanges of metal expansion strips into masonry. Lap each joint 4 inches (100 mm) in direction of water flow. Seal joints below grade and at junctures with horizontal expansion joints if any.
  2. Build flanges of factory-fabricated, expansion-joint units into masonry.
  3. Build in compressible joint fillers where indicated.
  4. Form open joint full depth of brick wythe and of width indicated, but not less than 3/8 inch (10 mm) for installation of sealant and backer rod specified in Division 7 Section "Joint Sealants."

- C. Provide horizontal, pressure-relieving joints by either leaving an air space or inserting a compressible filler of width required for installing sealant and backer rod specified in Division 7 Section "Joint Sealants," but not less than 3/8 inch (10 mm).
  - 1. Locate horizontal, pressure-relieving joints beneath shelf angles supporting masonry.

### 3.9 LINTELS

- A. Install steel lintels where indicated.
- B. Provide masonry lintels where shown and where openings of more than 12 inches (305 mm) for brick-size units and 24 inches (610 mm) for block-size units are shown without structural steel or other supporting lintels.
  - 1. Provide built-in-place masonry lintels. Use specially formed bond beam units with reinforcing bars placed as indicated and filled with coarse grout. Temporarily support built-in-place lintels until cured.
- C. Provide minimum bearing of 8 inches (200 mm) at each jamb, unless otherwise indicated.

### 3.10 FLASHING, WEEP HOLES, CAVITY DRAINAGE, AND VENTS

- A. General: Install embedded flashing and weep holes in masonry at shelf angles, lintels, ledges, other obstructions to downward flow of water in wall, and where indicated. Install vents at shelf angles, ledges, and other obstructions to upward flow of air in cavities, and where indicated.
- B. Install flashing as follows, unless otherwise indicated:
  - 1. Prepare masonry surfaces so they are smooth and free from projections that could puncture flashing. Where flashing is within mortar joint, place through-wall flashing on sloping bed of mortar and cover with mortar. Before covering with mortar, seal penetrations in flashing with adhesive, sealant, or tape as recommended by flashing manufacturer.
  - 2. At masonry-veneer walls, extend flashing through veneer, across air space behind veneer, and up face of sheathing at least 8 inches (200 mm); with upper edge tucked under building paper or building wrap, lapping at least 4 inches (100 mm).
  - 3. At lintels and shelf angles, extend flashing a minimum of 6 inches (150 mm) into masonry at each end. At heads and sills, extend flashing 6 inches (150 mm) at ends and turn up not less than 2 inches (50 mm) to form end dams.
  - 4. Interlock end joints of ribbed sheet metal flashing by overlapping ribs not less than 1-1/2 inches (38 mm) or as recommended by flashing manufacturer, and seal lap with elastomeric sealant complying with requirements in Division 7 Section "Joint Sealants" for application indicated.
  - 5. Cut flexible flashing off flush with face of wall after masonry wall construction is completed.

- C. Install weep holes in head joints in exterior wythes of first course of masonry immediately above embedded flashing and as follows:
  - 1. Use specified weep/vent products to form weep holes.
  - 2. Use wicking material to form weep holes above flashing under brick sills. Turn wicking down at lip of sill to be as inconspicuous as possible.
  - 3. Space weep holes 24 inches (600 mm) o.c., unless otherwise indicated.
  - 4. Space weep holes formed from plastic tubing or wicking material 16 inches (400 mm) o.c.
  - 5. Trim wicking material flush with outside face of wall after mortar has set.
- D. Place pea gravel in cavities as soon as practical to a height equal to height of first course above top of flashing, but not less than 2 inches (50 mm), to maintain drainage.
  - 1. Fill cavities full height by placing pea gravel in cavities as masonry is laid so that at any point masonry does not extend more than 24 inches (600 mm) above top of pea gravel.
- E. Place cavity drainage material in cavities to comply with configuration requirements for cavity drainage material in Part 2 "Miscellaneous Masonry Accessories" Article.
- F. Install vents in head joints in exterior wythes at spacing indicated. Use specified weep/vent products to form vents.
  - 1. Close cavities off vertically and horizontally with blocking in manner indicated. Install through-wall flashing and weep holes above horizontal blocking.

### 3.11 REPAIRING, POINTING, AND CLEANING

- A. Remove and replace masonry units that are loose, chipped, broken, stained, or otherwise damaged or that do not match adjoining units. Install new units to match adjoining units; install in fresh mortar, pointed to eliminate evidence of replacement.
- B. Pointing: During the tooling of joints, enlarge voids and holes, except weep holes, and completely fill with mortar. Point up joints, including corners, openings, and adjacent construction, to provide a neat, uniform appearance. Prepare joints for sealant application, where indicated.
- C. In-Progress Cleaning: Clean unit masonry as work progresses by dry brushing to remove mortar fins and smears before tooling joints.
- D. Final Cleaning: After mortar is thoroughly set and cured, clean exposed masonry as follows:
  - 1. Remove large mortar particles by hand with wooden paddles and nonmetallic scrape hoes or chisels.
  - 2. Test cleaning methods on sample wall panel; leave one-half of panel uncleaned for comparison purposes. Obtain Architect's approval of sample cleaning before proceeding with cleaning of masonry.

3. Protect adjacent stone and non-masonry surfaces from contact with cleaner by covering them with liquid strippable masking agent or polyethylene film and waterproof masking tape.
4. Wet wall surfaces with water before applying cleaners; remove cleaners promptly by rinsing surfaces thoroughly with clear water.
5. Clean brick by bucket-and-brush hand-cleaning method described in BIA Technical Notes 20.
6. Clean masonry with a proprietary acidic cleaner applied according to manufacturer's written instructions.
7. Clean concrete masonry by cleaning method indicated in NCMA TEK 8-2A applicable to type of stain on exposed surfaces.
8. Clean stone trim to comply with stone supplier's written instructions.
9. Clean limestone units to comply with recommendations in ILI's "Indiana Limestone Handbook."

### 3.12 MASONRY WASTE DISPOSAL

- A. Salvageable Materials: Unless otherwise indicated, excess masonry materials are Contractor's property. At completion of unit masonry work, remove from Project site.
- B. Waste Disposal per Division 1 "Construction Waste Management"

END OF SECTION 04 8100

## SECTION 055200 - METAL RAILINGS

## PART 1 - GENERAL

## 1.1 SECTION REQUIREMENTS

- A. Structural Performance: Provide railings capable of withstanding structural loads required by ASCE 7.
- B. Submittals: Product Data; Shop Drawings; structural analysis data signed and sealed by a qualified professional engineer registered in the state where Project is located.

## PART 2 - PRODUCTS

## 2.1 METALS

- A. Steel Plates, Shapes, and Bars: ASTM A 36/A 36M.
- B. Steel Pipe: ASTM A 53, Schedule 40.
- C. Brackets, Flanges, and Anchors: Cast or formed metal of same type of material and finish as supported rails, unless otherwise indicated.

## 2.2 RAILING SYSTEMS

- A. Manufacturers
  - 1. Equal to Industrial Metal Supply Co.

## 2.3 FABRICATION

- A. Assemble railing systems in shop to the greatest extent possible. Use connections that maintain structural value of joined pieces.
- B. Form changes in direction of railing members by mitering at elbow bends.
- C. Fabricate railing systems and handrails for connecting members by welding.
- D. Provide manufacturer's standard wall brackets, flanges, miscellaneous fittings, and anchors to connect handrail and railing members to other construction.
- E. Provide wall returns at ends of wall-mounted handrails.

2.4 FINISHES

- A. Steel Railings: Cleaned; shop primed; and painted per painting specification .

PART 3 - EXECUTION

3.1 INSTALLATION

- A. Fit exposed connections accurately together to form tight, hairline joints.
- B. Set railings accurately in location, alignment, and elevation and free of rack.
- C. Coat concealed surfaces of aluminum that will be in contact with cementitious materials or dissimilar metals, with a heavy coat of bituminous paint.
- D. Anchor posts in concrete by forming or core-drilling holes 5 inches (125 mm) deep and 3/4 inch (20 mm) greater than OD of post. Fill annular space between post and concrete with non-shrink, nonmetallic grout.
- E. Attach handrails to wall with wall brackets.

END OF SECTION 055200

SECTION 06 1053 - MISCELLANEOUS ROUGH CARPENTRY

PART 1 - GENERAL

1.1 SECTION REQUIREMENTS

- A. Submittals: Model code evaluation reports for treated wood.

PART 2 - PRODUCTS

2.1 WOOD PRODUCTS, GENERAL

- A. Lumber: Provide dressed lumber, S4S, marked with grade stamp of inspection agency.

2.2 TREATED MATERIALS

- A. Provide preservative-treated materials for the following conditions:
  1. Wood members in connection with roofing, flashing, vapor barriers, and waterproofing.
  2. Concealed members in contact with masonry or concrete.
  3. Wood framing members that are less than 18 inches (460 mm) above the ground.
  4. Wood floor plates that are installed over concrete slabs-on-grade.

2.3 LUMBER

- A. Dimension Lumber:
  1. Maximum Moisture Content: 15 percent.
  2. Interior Partition Framing: Construction, Stud, or No. 3: Mixed southern pine: SPIB.
  3. Other Framing: Construction or No. 2: Southern pine: SPIB.
- B. Miscellaneous Lumber: Construction, or No. 2 grade with 15 percent maximum moisture content of any species. Provide for nailers, blocking, and similar members.

2.4 PLYWOOD BACKING PANELS

- A. Telephone, Information Technology Equipment, and Electrical Equipment Backing Panels: Plywood, Exposure 1, C-D Plugged, fire-retardant treated, not less than 1/2 inch (12.7 mm) thick.

2.5 FASTENERS

- A. Fasteners: Size and type indicated. Where rough carpentry is exposed to weather, in ground contact, or in area of high relative humidity, provide fasteners of Type 304 stainless steel.
  - 1. Power-Driven Fasteners: CABO NER-272.

PART 3 - EXECUTION

3.1 INSTALLATION

- A. Set miscellaneous rough carpentry to required levels and lines, with members plumb, true to line, cut, and fitted. Locate nailers, blocking, and similar supports to comply with requirements for attaching other construction.
- B. Securely attach miscellaneous rough carpentry to substrates, complying with the following:
  - 1. CABO NER-272 for power-driven fasteners.
  - 2. Table R602.3(1), "Fastener Schedule for Structural Members," and Table R602.3(2), "Alternate Attachments," in ICC's International Residential Code for One- and Two-Family Dwellings.

END OF SECTION 06 1053

## SECTION 06 1760 - METAL-PLATE CONNECTED WOOD TRUSSES

## PART 1 - GENERAL

## 1.1 RELATED DOCUMENTS

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

## 1.2 SUMMARY

- A. This Section includes wood roof trusses and truss accessories.
- B. Related Sections include the following:
  - 1. Division 6 Section "Rough Carpentry" for roof sheathing and subflooring and dimension lumber for supplementary framing and permanent bracing.

## 1.3 DEFINITIONS

- A. Metal-Plate-Connected Wood Trusses: Planar structural units consisting of metal-plate-connected members fabricated from dimension lumber and cut and assembled before delivery to Project site.
- B. Lumber grading agencies, and the abbreviations used to reference them, include the following:
  - 1. NELMA - Northeastern Lumber Manufacturers Association.
  - 2. NLGA - National Lumber Grades Authority.
  - 3. SPIB - Southern Pine Inspection Bureau.
  - 4. WCLIB - West Coast Lumber Inspection Bureau.
  - 5. WWPA - Western Wood Products Association.

## 1.4 PERFORMANCE REQUIREMENTS

- A. Structural Performance: Provide metal-plate-connected wood trusses capable of withstanding design loads within limits and under conditions indicated. Refer to Structural drawings.
  - 1. Design Loads: As indicated.
  - 2. Maximum Deflection Under Design Loads:
    - a. Roof Trusses: Vertical deflection under total load of 1/240 of span.
    - b. Roof Trusses: Vertical deflection under live load of 1/360 of span.

## 1.5 SUBMITTALS

- A. Product Data: For metal-plate connectors, metal framing anchors, bolts, and fasteners.
  - 1. Include data for wood-preservative treatment from chemical treatment manufacturer and certification by treating plant that treated materials comply with requirements. Indicate type of preservative used, net amount of preservative retained, and chemical treatment manufacturer's written instructions for handling, storing, installing, and finishing treated material.
- B. Shop Drawings: Show location, pitch, span, camber, configuration, and spacing for each type of truss required; species, sizes, and stress grades of lumber; splice details; type, size, material, finish, design values, orientation, and location of metal connector plates; and bearing details.
  - 1. For installed products indicated to comply with design loads, include structural analysis data signed and sealed by the qualified professional engineer responsible for their preparation.
- C. Product Certificates: For metal-plate-connected wood trusses, signed by officer of truss fabricating firm.
- D. Qualification Data: For metal-plate manufacturer, professional engineer, fabricator, and Installer.

## 1.6 QUALITY ASSURANCE

- A. Metal Connector-Plate Manufacturer Qualifications: A manufacturer that is a member of TPI and that complies with TPI quality-control procedures for manufacture of connector plates published in TPI 1.
  - 1. Manufacturer's responsibilities include providing professional engineering services needed to assume engineering responsibility.
  - 2. Engineering Responsibility: Preparation of Shop Drawings and comprehensive engineering analysis by a qualified professional engineer.
- B. Fabricator Qualifications: Shop that participates in a recognized quality-assurance program that involves inspection by SPIB, Timber Products Inspection, TPI, or other independent testing and inspecting agency acceptable to Architect and authorities having jurisdiction.
- C. Source Limitations for Connector Plates: Obtain metal connector plates through one source from a single manufacturer.
- D. Comply with applicable requirements and recommendations of the following publications:
  - 1. TP1 1, "National Design Standard for Metal Plate Connected Wood Truss Construction."
  - 2. TPI DSB, "Recommended Design Specification for Temporary Bracing of Metal Plate Connected Wood Trusses."

3. TPI HIB, "Commentary and Recommendations for Handling, Installing & Bracing Metal Plate Connected Wood Trusses."

- E. Wood Structural Design Standard: Comply with applicable requirements in AFPA's "National Design Specifications for Wood Construction" and its "Supplement."

#### 1.7 DELIVERY, STORAGE, AND HANDLING

- A. Comply with TPI recommendations to avoid damage and lateral bending. Provide for air circulation around stacks and under coverings.
- B. Inspect trusses showing discoloration, corrosion, or other evidence of deterioration. Discard and replace trusses that are damaged or defective.

#### 1.8 COORDINATION

- A. Time delivery and erection of trusses to avoid extended on-site storage and to avoid delaying progress of other trades whose work must follow erection of trusses.

### PART 2 - PRODUCTS

#### 2.1 DIMENSION LUMBER

- A. Lumber: DOC PS 20 and applicable rules of lumber grading agencies certified by the American Lumber Standards Committee Board of Review.
  1. Factory mark each piece of lumber with grade stamp of grading agency.
  2. Provide dressed lumber, S4S, manufactured to actual sizes required by DOC PS 20 for moisture content specified. Top chords must be 2 x 6, minimum.
  3. Provide dry lumber with 19 percent maximum moisture content at time of dressing.
- B. Grade and Species: Provide visually graded dimension lumber for truss chord and web members, of the following grade and species:
  1. Grade for Chord Members: No. 2.
  2. Grade for Web Members: Same grade as indicated for chord members.
  3. Species: Southern Pine; SPIB.

#### 2.2 METAL CONNECTOR PLATES

- A. General: Fabricate connector plates to comply with TPI 1 from metal complying with requirements indicated below:
- B. Hot-Dip Galvanized Steel Sheet: ASTM A 653/A 653M, G60 (Z180) coating designation; Designation SS, Grade 33, and not less than 0.036 inch (0.9 mm) thick.

### 2.3 FASTENERS

- A. General: Provide fasteners of size and type indicated that comply with requirements specified in this Article for material and manufacture.
  - 1. Where trusses are exposed to weather, in ground contact, or in area of high relative humidity, provide fasteners with hot-dip zinc coating complying with ASTM A 153/A 153M.
- B. Nails, Wire, Brads, and Staples: FS FF-N-105.
- C. Power-Driven Fasteners: CABO NER-272.
- D. Wood Screws: ASME B18.6.1.
- E. Lag Bolts: ASME B18.2.1. (ASME B18.2.3.8M).
- F. Bolts: Steel bolts complying with ASTM A 307, Grade A (ASTM F 568M, Property Class 4.6); with ASTM A 563 (ASTM A 563M) hex nuts and, where indicated, flat washers.

### 2.4 METAL FRAMING ANCHORS

- A. General: Provide framing anchors made from metal indicated, of structural capacity, type, and size indicated, and as follows:
  - 1. Research/Evaluation Reports: Provide products acceptable to authorities having jurisdiction and for which model code research/evaluation reports exist that show compliance of metal framing anchors, for application indicated, with building code in effect for Project.
  - 2. Allowable Design Loads: Provide products with allowable design loads, as published by manufacturer, that meet or exceed those indicated. Manufacturer's published values shall be determined from comprehensive testing performed by a qualified independent testing agency.
- B. Galvanized Steel Sheet: Hot-dip, zinc-coated steel sheet complying with ASTM A 653/A 653M, G60 (Z180) coating designation.
- C. Truss Tie-Downs (Hurricane Ties): As indicated on structural drawings.

### 2.5 FABRICATION

- A. Cut truss members to accurate lengths, angles, and sizes to produce close-fitting joints.
- B. Fabricate metal connector plates to sizes, configurations, thicknesses, and anchorage details required to withstand design loads for types of joint designs indicated.

- C. Assemble truss members in design configuration indicated; use jigs or other means to ensure uniformity and accuracy of assembly with joints closely fitted to comply with tolerances in TPI 1. Position members to produce design camber indicated.
  - 1. Fabricate wood trusses within manufacturing tolerances in TPI 1.
- D. Connect truss members by metal connector plates located and securely embedded simultaneously in both sides of wood members by air or hydraulic press.

### PART 3 - EXECUTION

#### 3.1 INSTALLATION

- A. Install wood trusses only after supporting construction is in place and is braced and secured.
- B. Before installing, splice trusses delivered to Project site in more than one piece.
- C. Hoist trusses in place by lifting equipment suited to sizes and types of trusses required, exercising care not to damage truss members or joints by out-of-plane bending or other causes.
- D. Install and brace trusses according to TPI recommendations and as indicated.
- E. Install trusses plumb, square, and true to line and securely fasten to supporting construction.
- F. Space trusses 24 inches o.c.; adjust and align trusses in location before permanently fastening.
- G. Anchor trusses securely at bearing points; use metal framing anchors. Install fasteners through each fastener hole in metal framing anchor according to manufacturer's fastening schedules and written instructions.
- H. Securely connect each truss ply required for forming built-up girder trusses.
  - 1. Anchor trusses to girder trusses as indicated.
- I. Install and fasten permanent bracing during truss erection and before construction loads are applied. Anchor ends of permanent bracing where terminating at walls or beams.
- J. Install wood trusses within installation tolerances in TPI 1.
- K. Do not cut or remove truss members.
- L. Replace wood trusses that are damaged or do not meet requirements.
  - 1. Do not alter trusses in field.
- M. Contractor is solely responsible for all truss bracing during construction.

END OF SECTION 06 1760

## SECTION 07 2100 - BUILDING INSULATION

## PART 1 - GENERAL

## 1.1 RELATED DOCUMENTS

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

## 1.2 SUMMARY

- A. This Section includes the following:
  - 1. Concealed thermal building insulation.
  - 2. Concealed acoustical building insulation.

## 1.3 SUBMITTALS

- A. General: Submit each item in this Article according to the Conditions of the Contract and Division 1 Specification Sections.
- B. Product Data for each type of insulation product specified.

## 1.4 QUALITY ASSURANCE

- A. Single-Source Responsibility for Insulation Products: Obtain each type of building insulation from a single source with resources to provide products complying with requirements indicated without delaying the Work.
- B. Fire-Test-Response Characteristics: Provide insulation and related materials with the fire-test-response characteristics indicated on Drawings or specified elsewhere in this Section as determined by testing identical products per test method indicated below by UL or another testing and inspecting agency acceptable to authorities having jurisdiction. Identify materials with appropriate markings of applicable testing and inspecting agency.
  - 1. Surface-Burning Characteristics: ASTM E 84.
  - 2. Fire-Resistance Ratings: ASTM E 119.
  - 3. Combustion Characteristics: ASTM E 136.

## 1.5 DELIVERY, STORAGE, AND HANDLING

- A. Protect insulation materials from physical damage and from deterioration by moisture, soiling, and other sources. Store inside and in a dry location. Comply with manufacturer's written instructions for handling, storing, and protecting during installation.
- B. Protect plastic insulation as follows:
  - 1. Do not expose to sunlight, except to extent necessary for period of installation and concealment.
  - 2. Protect against ignition at all times. Do not deliver plastic insulating materials to Project site before installation time.

3. Complete installation and concealment of plastic materials as rapidly as possible in each area of construction.

## PART 2 - PRODUCTS

### 2.1 MANUFACTURERS

- A. Manufacturers: Subject to compliance with requirements, provide insulation products by one of the following:
  1. Glass-Fiber Insulation
    - a. CertainTeed Corporation
    - b. Johns Manville Corporation
    - c. Knauf Fiber Glass
    - d. Owens Corning
  2. Perlite Masonry Insulation:
    - a. Dicapertl Perlite- Block Fil by Dicalite Management Group (1.866.728.3303)

### 2.2 INSULATING MATERIALS

- A. General: Provide insulating materials that comply with requirements and with referenced standards.
  1. Preformed Units: Sizes to fit applications indicated; selected from manufacturer's standard thicknesses, widths, and lengths.
- B. Perlite Masonry Fill Insulation: Treated with water-repellent coating.
- C. Unfaced Mineral-Fiber Blanket Insulation: Sound attenuation insulation combining mineral fibers of type described below with thermosetting resins to comply with ASTM C 665, Type I (blankets without membrane facing).
  1. Mineral-Fiber Type: Fibers manufactured from slag wool or rock wool.
  2. Surface-Burning Characteristics: Maximum flame-spread and smoke-developed indices of 25 and 50, respectively.
  3. Thickness: R30 in attic

## PART 3 - EXECUTION

### 3.1 EXAMINATION

- A. Examine substrates and conditions, with Installer present, for compliance with requirements of Sections in which substrates and related work are specified and to determine if other conditions affecting performance of insulation are satisfactory. Do not proceed with installation until unsatisfactory conditions have been corrected.

### 3.2 PREPARATION

- A. Clean substrates of substances harmful to insulations or vapor retarders, including removing projections capable of puncturing vapor retarders or that interfere with insulation attachment.

### 3.3 INSTALLATION, GENERAL

- A. Comply with insulation manufacturer's written instructions applicable to products and application indicated.
- B. Install insulation that is undamaged, dry, and unsoiled.
- C. Extend insulation in thickness indicated to envelop entire area to be insulated. Cut and fit tightly around obstructions and fill voids with insulation. Remove projections that interfere with placement.
- D. Apply single layer of insulation to produce thickness indicated.

### 3.4 INSTALLATION OF GENERAL BUILDING INSULATION

- A. Apply insulation units to substrates by method indicated, complying with manufacturer's written instructions. If no specific method is indicated, bond units to substrate with adhesive or use mechanical anchorage to provide permanent placement and support of units.
- B. Set kraft-faced thermal insulation blankets with kraft facing toward plywood roof sheathing.
  - 1. Place blankets in cavities formed by framing members to produce a friction fit between edges of insulation and adjoining framing members.
    - a. Provide galvanized chicken wire as required to hold insulation in place between roof trusses.
- C. Install sound attenuation insulation in cavities formed by framing members to produce a friction fit between edges of insulation and adjoining framing members.
- D. Install board insulation on concrete and masonry substrates by adhesive attachment. Seal joints between boards with aluminum foil tape.
- E. Install in strict accordance with manufacturer's specifications and installation guidelines.

### 3.5 PROTECTION

- A. General: Protect installed insulation and vapor retarders from damage due to harmful weather exposures, physical abuse, and other causes. Provide temporary coverings or enclosures where insulation is subject to abuse and cannot be concealed and protected by permanent construction immediately after installation.

END OF SECTION 07 2100

## SECTION 07 4120 - EXPOSED FASTENER PREFORMED METAL ROOF

## PART 1 - GENERAL

## 1.1 DESCRIPTION OF WORK

- A. This section covers the pre-finished, pre-fabricated exposed fastener metal roof and wall system. All metal trim, accessories, fasteners, insulation and sealants indicated on the drawings as part of this section.
- B. Drawings and general provisions of the Contract, including general and Supplementary Conditions and Division 01 Specifications, apply to this section.
- C. Related Work Specified Elsewhere
  - 1. Roof Deck structural steel, flat roof systems, perimeter edge systems. Roof hatches, firestopping not included in this section.

## 1.2 SUMMARY

- A. A. Section Includes
  - 1. Factory formed exposed fastener metal roof and wall panels
- B. Related work specified elsewhere. (Note: select from the below or add appropriate sections)
  - 1. Section 05100 - Structural Steel
  - 2. Section 05200 or 05400 - Steel Joists
  - 3. Section 07600 - Flashing and Sheet Metal

## 1.3 DEFINITIONS

- A. Metal Roof/Wall Panel Assembly: Metal roof/ panels, attachment system components, miscellaneous metal framing, thermal, and accessories necessary for a complete weathertight roofing system.
- B. References:
  - 1. American Society for Testing and Materials (ASTM)
    - a. ASTM A 653: Steel Sheet, Zinc Coated by the Hot Dip Process
    - b. ASTM A 792: Steel Sheet, Aluminum-Zinc Alloy Coated by the Hot Dip Process
    - c. ASTM B 209: Aluminum and Aluminum Alloy Sheet and Plate
    - d. ASTM B370 Standard Specification for Copper Sheet and Strip for Building Construction
  - 2. Sheet Metal and Air Conditioning Contractors National Association (SMACNA)
    - a. SMACNA Architectural Sheet Metal Manual, 1993 edition
  - 3. American Iron and Steel Institute (AISI)
    - a. AISI Cold Formed Steel Design Manual
  - 4. Aluminum Association
    - a. Aluminum Design Manual
  - 5. Metal Construction Association
    - a. Preformed Metal Wall Guidelines
  - 6. Code References
    - a. ASCE, Minimum Loads for Buildings and Other Structures
    - b. BOCA National Building Codes

- c. UBC Uniform Building Code
- d. SBC Standard Building Code

#### 1.4 QUALITY ASSURANCE

- A. MRC Metal Roofing Center and Supply; Foley, AL; 251.970.3320; www.metalroofingcenter.com products establish a minimum of quality required.
- B. Manufacturer and erector shall demonstrate experience of a minimum of five (5) years in this type of project.
- C. Panels shall be factory-produced only. No portable, installer-owned or installer-rented machines will be permitted.

#### 1.5 SUBSTITUTIONS

- A. The material, products and equipment specified in this section establish a standard for required function, dimension, appearance and quality to be met by any proposed substitution.
- B. Manufacturers listed in this section are prequalified manufacturers. Substitution of manufacturer's products for those specified shall not be allowed at any time during construction.

#### 1.6 SYSTEM DESCRIPTION

- A. Material to comply with:
  - 1. ASTM A-792 Standard Specification for Plate Steel Grade 80/D.

#### 1.7 ROOF SYSTEM PERFORMANCE TESTING

- A. General Performance: Metal roof/wall panels shall comply with performance requirements without failure due to defective manufacture, fabrication, installation or other defects in construction.
- B. Roof System shall be designed to meet International Building Code Wind Load requirements for project location.
- C. Panels to meet:
  - 1. Roof/Wall System shall be designed to meet applicable Local Building Codes and the System shall have tested by the Manufacturer per ASTM E-1592 and have the applicable Load Tables published from this testing for loads.

#### 1.8 WARRANTIES

- A. Finish warranty: Refer to project manual for Roof Guarantee and show evidence of deterioration of factory-applied finish within specified warranty period.
  - 1. Exposed Panels Finish - deterioration includes the following:
    - a. Color fading more than 5 hunter units when tested according to ASTM D 2244
    - b. Chalking in excess of a No. 8 rating when tested according to ASTM D 4214
    - c. Cracking, checking, peeling or failure of a paint to adhere to a bare metal.
  - 2. Warranty Period: 20 Years from the date of substantial completion.

#### 1.9 SUBMITTALS

- A. Furnish detailed drawings showing profile and gauge of exterior sheets, location and type of fasteners, location, gauges, shape and method of attachment of all trim locations and types of sealants, and any other details as may be required for a weather-tight installation.
- B. Provide finish samples of all colors specified.
- C. Shop drawings: Show fabrication and installation layouts of metal roof panels, metal wall panels or metal soffit panels, details of edge conditions, side-seam joints, panel profiles, corners, anchorages, trim, flashings, closures and accessories, and special details. Distinguish between factory and field-assembled work
- D. Coordination Drawings: Roof plans, drawn to scale, on which the following are shown and coordinated with each other, based on input from installer of the items involved:
  - 1. Roof panels and attachments
  - 2. Metal trusses, bracings and supports
  - 3. Roof-mounted items including snow guards and items mounted on roof curbs.
- E. LEED Submittals
  - 1. Product Test reports for Credit SS 7.2. For roof panels, indicating that the panels comply with Solar Reflective Index requirement
  - 2. Product data for Credit MR 4.1 and credit MR 4.2: Indicating the percentages by weight of postconsumer and preconsumer recycled content for products having recycled content.

#### 1.10 DELIVERY, STORAGE AND HANDLING

- A. Ordering: Comply with manufacturer's ordering instruction and lead time requirements to avoid construction delays.
- B. Deliver components, sheets, metal roof/wall panels and other manufactured items so as not to be damaged or deformed. Package metal roof/wall panels for protection during transportation and handling.
- C. Unload, store and erect metal roof/wall panels in a manner to prevent bending, warping, twisting and surface damage.
- D. Stack metal roof panels on platforms or pallets, covered with suitable weathertight and ventilated covering. Store metal roof/wall panels to ensure dryness. Do not store metal roof panels in contact with other materials that might cause staining, denting or other surface damage.
- E. Protect strippable protective coating on any metal coated product from exposure to sunlight and high humidity, except to the extent necessary for material installation.

#### 1.11 PROJECT CONDITIONS

- A. Weather Limitations: proceed with installation only when existing and forecasted weather conditions permit metal roof panel work to be performed.
- B. Field Measurements: Verify actual dimensions of construction contiguous with metal roof panels by field measurements before fabrication.

#### 1.12 COORDINATION

- A. Coordinate sizes and locations of roof curbs, equipment supports and roof penetrations with actual equipment provided.
- B. Coordinate metal roof panels with rain drainage work, flashing, trim and construction of decks, parapet walls and other adjoining work to provide a leakproof, secure and noncorrosive installation.

## PART 2 - PRODUCTS

### 2.1 PANEL DESIGN

- A. General: Provide factory-formed, prefinished, lappable exposed fastener, structural ribbed metal roof/wall panel system, that has been pretested and certified by manufacturer to comply with specified requirements under installed conditions.
- B. Roof panels shall be exposed fastener.
- C. Structural Requirements: Engineer panels for structural properties in accordance with latest edition of American Iron and Steel Institute's Cold Formed Steel Design Manual using effective width concept and Aluminum Associations Aluminum Design Manual.
- D. Forming: Use continuous end rolling method. No end laps on panels. No portable roll forming machines will be permitted on this project, no installer-owned or installer-rented machines will be permitted. It is the intent of the Architect to provide Factory-Manufactured panel systems only for this project.
- E. Panels shall be directly fastened to the substrate.
- F. The panel shall have an overlapping sidelap feature.

### 2.2 ACCEPTABLE MANUFACTURERS

- A. This project is detailed around the roofing product of MRC Metal Roofing Center and Supply; Foley, AL; 251.970.3320; [www.metalroofingcenter.com](http://www.metalroofingcenter.com); 5-V Crimp.

### 2.3 MATERIALS AND FINISHES

- A. Preformed roofing panels shall be fabricated of 24 Gauge.
- B. Color shall be Galvalume.
- C. Texture: 5-V Crimp Panel.
- D. Marco LP-2 Vented Ridge (for Ridge Vent).
- E. Finish shall be Galvalume.
- F. If Strippable coating to be applied on the pre-finished panels to the top side to protect the finish during fabrication, shipping and handling, film shall be removed before installation.
- G. Trim: Trim shall be fabricated of the same material and finish to match the profile and will be press broken in lengths of 10 to 12 feet. Trim shall be formed only by the manufacturer of their approved dealer. Trim to be erected in overlapped condition. Use lap strips only as indicated on drawings. Miter conditions shall be factory welded material to match the sheeting. Trim to be fabricated in accordance with standard SMACNA procedure and details.
- H. Closures: shall be pre-molded polyethylene to match the profile of the exposed fastener panel and shall be in lengths as supplied by the panel manufacturer.
- I. Accessories/Fasteners: Fasteners shall be of type, material, size, corrosion resistance, holding power and other properties required to fasten miscellaneous framing members to substrates. Accessories and their fasteners shall be capable of resisting the specified design wind uplift forces and shall allow for thermal movement of the roof panel system. Exposed fasteners shall not restrict free movement of the roof panel system resulting from thermal forces, except at designed points of roof panel fixity
  - 1. Fasteners shall have combination steel and EPDM washers

2. Screws for panel to girt/purlins shall be sufficient to penetrate the supporting member by 1". All fasteners shall be applied in accordance with the fastening schedule as provided by panel manufacturer.
  3. Screws for flashings and sidelaps shall be #14 HHA x 3/4" sheet metal stitch screws. All accessories, flashings and sidelaps shall be fastened 12" OC.
- J. Substrate shall be Plywood
- K. Caulking: Shall be a polyurethane where it is exposed and there is no thermal movement. All caulking and sealing shall be done in a neat manner with excess caulking or sealant removed from exposed surfaces.
- L. Caulking shall be non-skinning, non-hardening gun grade butyl sealant or butyl sealant tape with a minimum thickness of 1/8" where it is concealed and where thermal movement must be accommodated. All caulking or sealing shall be done in a neat manner with excess caulking or sealant removed from exposed surfaces.
- M. Vapor Retarder: retarder with a permeance of 0.05 or less as determined by ASTM 98.

## 2.4 FABRICATION

- A. Comply with dimensions, profile limitations, gauges and fabrication details shown and if not shown, provide manufacturer's standard product fabrication.
- B. Fabricate components of the system in factory, ready for field assembly.
- C. Fabricate components and assemble units to comply with fire performance requirements specified.
- D. Apply specified finishes in conformance with manufacturer's standard, and according to manufacturer's instructions.
- E. Panels are lappable. It is recommended that individual aluminum roof panels not exceed 16' in length and steel roof panels not exceed 32' in length for thermal movement reasons.
- F. Panels shall be roll formed on a stationary industrial type rolling mill to gradually shape the sheet metal. Portable rollformers rented or owned by the installer, are not acceptable.
- G. Provide Ridge Vent with screen compatible with roof panel system.

## PART 3 - EXECUTION

### 3.1 INSPECTION

- A. Examine alignment of structural steel and related supports, primary and secondary roof framing, solid roof sheathing, prior to installation. Components should comply with shop drawings and be smooth, even, sound and free of depressions.
- B. For the record, prepare written report, endorsed by installer, listing conditions detrimental to performance of the Work.
- C. Proceed with installation only after unsatisfactory conditions have been corrected.

### 3.2 FASTENERS

- A. Secure units to supports
- B. Place fasteners as indicated in manufacturer's standards.

### 3.3 INSTALLATION

- A. Panels shall be installed plumb and true in a proper alignment and in relation to the structural framing. The erector must have at least five years successful experience with similar applications.
- B. Install metal panels, fasteners, trim and related sealants in accordance with approved shop drawings and as may be required for a weather-tight installation. Conform to standards set forth in SMACNA architectural sheet metal manuals and approved shop drawings for this project.
- C. Remove all strippable coating and provide a dry-wipe down cleaning of the panels as they are erected.
- D. Install panel system so it is watertight, without waves, warps, buckles or distortions, and allow for thermal movement considerations.
- E. Abrasive devices shall not be used to cut on or near roof or wall panel system.
- F. Apply sealant tape or caulking as necessary at flashing and panel joints to prevent water penetration.
- G. Remove any strippable film immediately upon exposure to direct sunlight.
- H. Vapor retarder: The joints, perimeter, and all openings shall be sealed per the manufacturer's instructions to provide a continuous vapor retarder.
- I. Underlayment (solid substrate):
  - 1. Provide peel and stick ice and watershield membrane equal to GAF with horizontal overlaps and endlaps staggered between layers.
  - 2. Provide ice and water shield membrane at all valley and eave conditions as well as any area at less than a 3:12 slope.
  - 3. Lay parallel to ridge line with 2 1/2" horizontal laps and 6" vertical laps

#### 3.4 DAMAGED MATERIAL

- A. Upon determination of responsibility, repair or replace damaged metal panels and trim to the satisfaction of the Architect and Owner.

END OF SECTION 07 4120

## SECTION 07 6000 – FLASHING AND SHEET METAL

## PART 1 - GENERAL

## 1.1 RELATED DOCUMENTS

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

## 1.2 SUMMARY

- A. This section included the following:
  - 1. Aluminum flashing and counterflashing components.
  - 2. Aluminum copings and drip edges.
  - 3. Aluminum gutters and downspouts.

## 1.3 QUALITY ASSURANCE

- A. The Architectural Sheet Metal Manual as published by the Sheet Metal and Air Conditioning Contractors National Association, Inc., latest edition, and hereinafter referred to as “The SMACNA Manual” shall be used as the standard reference of quality.

## 1.4 SUBMITTALS

- A. Product Data: Manufacturer’s technical product data, installation instructions and general recommendations for each specified sheet material and fabricated product.
- B. Samples: Submit samples of the following flashing, sheet metal, and accessory items:
  - 1. 8-inch-square samples of specified sheet materials to be exposed as finished surfaces.
  - 2. 12-inch-long samples of factory-fabricated products exposed as finished work. Provide complete with specified factory finish.
- C. Shop Drawings: Showing layout, profiles, methods of joining, and anchorage details, including major counterflashings, trim/fascia units, drip edges, gutters and downspouts. Provide layouts at 1/4-inch scale and details at 3-inch scale.

## 1.5 WARRANTY

- A. Sheet Metal Coating: Metal manufacturer shall warrant fluorocarbon coating against peeling, blistering, checking, or cracking; against chalking in excess of numerical rating of 8 when measured in accordance with ASTM D659; and against fading in excess of 5 NBS units.
  - 1. Warranty Period: 20 years from the date of Substantial Completion.

## 1.6 PROJECT CONDITIONS

- A. Coordinate work of this section with interfacing and adjoining work for proper sequencing of each installation. Ensure best possible weather resistance and durability of work and protection of materials and finishes.

## PART 2 – PRODUCTS

### 2.1 METAL MATERIALS

- A. Metal material used in flashing and sheet metal work shall be .050" aluminum sheet, ASTM B 209, alloy 3003 or 3105, Temper H-14 with Kynar 500 fluoropolymer coating unless specifically designated otherwise on the Drawings.
  - 1. Flashing that is completely concealed can be mill finish in lieu of Kynar 500 coating.
  - 2. Isolate aluminum from other materials, including wood, concrete, masonry and dissimilar metals by a protective bituminous coating, SSPC – Paint 12, containing no asbestos or sulfur not less than 15 mils dry film thickness; or, by elastomeric underlayment, rubber or other techniques approved by the Architect.

### 2.2 MISCELLANEOUS MATERIALS

- A. Fasteners: Same metal as flashing/sheet metal or other non-corrosive metal as recommended by sheet manufacturer. Match finish of exposed heads with material being fastened.
  - 1. Nails and screws shall have sufficient length to penetrate all metal and fabric materials and into wood support by  $\frac{3}{4}$ " minimum and shall be capable of 40 lb. each minimum initial withdrawal.
- B. Bituminous Coating: SSPC-Paint 12, solvent-type bituminous mastic, nominally free of sulfur, compounded for 15-mil dry-film-thickness per coat.
- C. Sealant Compound:
  - 1. For sealing joints in metal flashings, copings, etc.,: One-Part Silicone Building Sealant conforming to ASTM C920, Type S, Grade NS, Class 40. Provide one of the following:
    - a. Dow Corning 795 Silicone Building Sealant.
    - b. General Electric Silpruf Sealant.
    - c. Tremco Spectrem 2 Silicone Sealant.
  - 2. Sealant color shall be selected by Architect from manufacturer's full range of standard colors.
- D. Mastic Sealant: Polyisobutylene; non-hardening, non-skinning, non-drying, non-migrating sealant.
- E. Epoxy Seam Sealer: 2-part non-corrosive metal seam cementing compound, recommended by metal manufacturer for exterior/interior non-moving joints including riveted joints.

- F. Metal Accessories: Provide sheet metal clips, straps, anchoring devices, and similar accessory units as required for installation of work, matching or compatible with material being installed, non-corrosive, size and gage required for performance.
  - 1. Aluminum Copings: Provide continuous aluminum cleats as indicated on Drawings.
- G. Roofing Cement: Asbestos free, asphaltic complying with ASTM D4586.

### 2.3 METAL FINISHES

- A. Fluoropolymer Coating: Manufacturer's standard two-coat, thermo-cured, full-strength 70 percent "Kynar 500" coating consisting of a primer and a minimum 0.75 mil dry film thickness top coat with a total minimum dry film thickness of 0.9 mil and 30 percent reflective gloss when tested in accordance with ASTM D523.
  - 1. Durability: Provide coating that has been field tested under normal range of weathering conditions for minimum of 20 years without significant peel, blister, flake, chip, crack, or check in finish; without chalking in excess of No. 8 in accordance with ASTM D659; and without fading in excess of 5 NBS units.
    - a. Applications: All exposed aluminum components.
  - 2. Applicator: Approved licensee of coating manufacturer.
  - 3. Color: As selected by Architect from manufacturer's full range of standard colors.

### 2.4 FABRICATION

- A. Fabrication, General: Shop fabricate to greatest extent possible. Comply with details shown, and with applicable requirements of SMACNA "Architectural Sheet Metal Manual" and other recognized industry practices. Fabricate for waterproof and weather-resistant performance, with expansion provisions for running work, sufficient to permanently prevent leakage, damage, or deterioration of the work. Form work to fit substrates. Comply with material manufacturer instructions and recommendations for forming material. Form exposed sheet metal work without excessive oil-canning, buckling, and tool marks, true to line and levels indicated, with exposed edges folded back to form hems.
- B. Fabricate non-moving seams in sheet metal with flat-lock seams. Seal aluminum seams with epoxy metal seam cement and, where required for strength, rivet seams and joints.
- C. Sealant Joints: Where movable, non-expansion type joints are indicated or required for proper performance of work, form metal to provide for proper installation of elastomeric sealant, in compliance with SMACNA Standards.
- D. Coat back-side of fabricated sheet metal with 15-mil sulfur-free bituminous coating, SSPC-Paint 12, where required to separate metals from corrosive substrates including cementitious materials or absorbent materials; or provide other permanent separation.

- E. Provide for thermal expansion of running sheet metal work, by overlaps of expansion joints in fabricated work. Where required for watertight construction, provide hooked flanges filled with polyisobutylene mastic for 1 inch embedment of flanges. Space joints at intervals of not more than 30 feet for aluminum. Conceal expansion provisions where possible.

### PART 3 – EXECUTION

#### 3.1 INSTALLATION REQUIREMENTS

- A. Anchor work securely in place with noncorrosive fasteners, adhesives, setting compounds, tapes and other materials and devices as recommended by manufacturer of each material or system. Provide for thermal expansion and building movements. Comply with recommendations of "Architectural Sheet Metal Manual" by SMACNA.
- B. Bed flanges of work in a thick coat of bituminous roofing cement where required for waterproof performance.
- C. Install counterflashings in reglets, either by snap-in seal arrangement or by welding in place for anchorage and filling reglet with mastic or elastomeric sealant, as indicated and depending on degree of sealant exposure.
- D. Install roof drip edges with flanges extending back up the slope of the roof at least 3 inches. Flanges shall be nailed to roof sheathing with aluminum or hot-dip galvanized nails at 4 inches on center, maximum.
- E. Performance: Watertight and weatherproof performance of flashing and sheet metal work is required.

#### 3.2 CLEANING AND PROTECTION

- A. Clean exposed metal surfaces, removing substances that might cause corrosion of metal or deterioration of finishes.
- B. Protection: Advise Contractor of required procedures for surveillance and protection of flashings and sheet metal work during construction to ensure that work will be without damage or deterioration other than normal weathering at time of Substantial Completion.

END OF SECTION 07 6000

## SECTION 07 7100 - ROOF SPECIALTIES

## PART 1 - GENERAL

## 1.1 SECTION REQUIREMENTS

- A. Submittals: Product Data, Shop Drawings, and color Samples.

## PART 2 - PRODUCTS

## 2.1 MATERIALS

- A. Aluminum Sheet: ASTM B 209 (ASTM B 209M), alloy and temper as recommended by manufacturer for use intended and finish indicated.
- B. Aluminum Extrusions: ASTM B 221 (ASTM B 221M), alloy and temper as recommended by manufacturer for use intended and finish indicated.
- C. Aluminum Finish: Class I, color anodic finish; AA-M12C22A42/A44; complying with AAMA 611.
- D. Stainless-Steel Sheet: 3 (directional satin) finish.
- E. Prepainted, Zinc-Coated Steel Sheet: ASTM A 653/A 653M, G90 (Z275) coating designation, structural quality, and prepainted by the coil-coating process to comply with ASTM A 755/A 755M.
  - 1. Finish: High-performance organic; three-coat fluoropolymer system with finish coats containing at least 70 percent polyvinylidene fluoride resin by weight.

## 2.2 ROOF SPECIALTIES

- A. General: Provide materials and types of fasteners, protective coatings, separators, sealants, and other miscellaneous items required by manufacturer for a complete installation.
- B. Fasciae: Manufactured, two-piece fascia consisting of metal fascia cover and a continuous anchor bar with integral drip-edge cleat to engage fascia cover. Provide mitered and welded corner units. Fabricate from exposed metal indicated below.
  - 1. Aluminum: 0.080 inch (2.0 mm) thick.
- C. Gutters and Downspouts:
  - 1. Gutters: Manufactured formed gutter, with mitered and welded or soldered corner units, end caps, outlet tubes, and other accessories. Elevate back edge at least 1 inch (25 mm) above front gutter rim. Furnish with flat-stock gutter straps and gutter support brackets and expansion joints and expansion-joint covers fabricated from same metal as gutters. Fabricate from exposed metal indicated below.
    - a. Gutter Style: Equal to High Front Quad Gutter.
    - b. Aluminum: 0.063 inch (1.6 mm) thick with baked Kynar finish.
  - 2. Downspouts: Round with mitered elbows, manufactured from the following exposed metal. Furnish wall brackets of same material and finish as downspouts, with anchors.

- a. Formed Aluminum: 0.063 inch (1.6 mm) thick with baked Kynar finish.

### PART 3 - EXECUTION

#### 3.1 INSTALLATION

- A. Coordinate with installation of roof decks and other substrates to produce a watertight assembly capable of withstanding inward and outward loading pressures, and thermal and lateral loads.
- B. Coat back side of aluminum roof specialties with bituminous coating where they will contact wood, ferrous metal, or cementitious construction.
- C. Expansion Provisions: Install running lengths not exceeding 12 feet (3.6 m), to allow controlled expansion for movement of metal components, and to prevent water leakage, deformation, or damage.

END OF SECTION 07 7100

## SECTION 07 9200 - JOINT SEALANTS

## PART 1 - GENERAL

## 1.1 RELATED DOCUMENTS

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

## 1.2 SUMMARY

- A. This Section includes joint sealants for the following locations:
  - 1. Exterior joints in vertical surfaces and nontraffic horizontal surfaces as indicated below:
    - a. Control and expansion joints in unit masonry.
    - b. Control and expansion joints in Portland cement plaster.
    - c. Perimeter joints between materials listed above and frames of doors and windows.
    - d. Control and expansion joints in ceiling and overhead surfaces.
    - e. Other joints as indicated.
  - 2. Exterior joints in horizontal traffic surfaces as indicated below:
    - a. Control, expansion, and isolation joints in cast-in-place concrete slabs.
    - b. Other joints as indicated.
  - 3. Interior joints in vertical surfaces and horizontal nontraffic surfaces as indicated below:
    - a. Control and expansion joints on exposed interior surfaces of exterior walls.
    - b. Perimeter joints of exterior openings where indicated.
    - c. Vertical control joints on exposed surfaces of interior unit masonry and concrete walls and partitions.
    - d. Perimeter joints between interior wall surfaces and frames of interior doors and windows.
    - e. Sealing exposed perimeter joints and countertop-to-backsplash joints in plastic laminate casework.
    - f. Other joints as indicated.
  - 4. Interior joints in horizontal traffic surfaces as indicated below:
    - a. Control and expansion joints in cast-in-place concrete slabs.
    - b. Other joints as indicated.
- B. Related Sections: The following Sections contain requirements that relate to this Section:
  - 1. Division 7 Section "Flashing and Sheetmetal" for sealants used in sheetmetal work.
  - 2. Division 8 Section "Glass and Glazing" for sealants used in glazing.

### 1.3 SYSTEM PERFORMANCE REQUIREMENTS

- A. Provide elastomeric joint sealants that have been produced and installed to establish and to maintain watertight and airtight continuous seals without causing staining or deterioration of joint substrates.

### 1.4 SUBMITTALS

- A. General: Submit the following in accordance with Conditions of Contract.
- B. Product data from manufacturers for each joint sealant product required.
- C. Samples for initial selection purposes in form of manufacturer's standard bead samples, consisting of strips of actual products showing full range of colors available, for each product exposed to view.
- D. Certificates from manufacturers of joint sealants attesting that their products comply with specification requirements and are suitable for the use indicated.
- E. Provide and maintain a file of manufacturer's instructions for each of the products used.

### 1.5 QUALITY ASSURANCE

- A. Installer Qualifications: Engage an experienced Installer who has completed joint sealant applications similar in material, design, and extent to that indicated for Project that have resulted in construction with a record of successful in-service performance.
- B. Single Source Responsibility for Joint Sealant Materials: Obtain joint sealant materials from a single manufacturer for each different product required.

### 1.6 DELIVERY, STORAGE, AND HANDLING

- A. Deliver materials to Project site in original unopened containers or bundles with labels indicating manufacturer, product name and designation, color, expiration period for use, pot life, curing time, and mixing instructions for multicomponent materials.
- B. Store and handle materials in compliance with manufacturer's recommendations to prevent their deterioration or damage due to moisture, high or low temperatures, contaminants, or other causes.

### 1.7 PROJECT CONDITIONS

- A. Environmental Conditions: Do not proceed with installation of joint sealants under the following conditions:
  - 1. When ambient and substrate temperature conditions are outside the limits permitted by joint sealant manufacturer.

2. When joint substrates are wet.
- B. Joint Width Conditions: Do not proceed with installation of joint sealants where joint widths are less than allowed by joint sealant manufacturer for application indicated.
- C. Joint Substrate Conditions: Do not proceed with installation of joint sealants until contaminants capable of interfering with their adhesion are removed from joint substrates.

## 1.8 SEQUENCING AND SCHEDULING

- A. Sequence installation of joint sealants in existing interior concrete pavement to occur prior to application of clear concrete sealing compound where indicated or scheduled on drawings.

## PART 2 – PRODUCTS

### 2.1 MATERIALS, GENERAL

- A. Compatibility: Provide joint sealants, joint fillers, and other related materials that are compatible with one another and with joint substrates under conditions of service and application, as demonstrated by sealant manufacturer based on testing and field experience.
- B. Colors: Provide color of exposed joint sealants to comply with the following:
  1. Provide selections made by Architect from manufacturer's full range of standard colors for products of type indicated.

### 2.2 ELASTOMERIC JOINT SEALANTS

- A. Elastomeric Sealant Standard: Provide manufacturer's standard chemically curing elastomeric sealants that comply with ASTM C 920, including those requirements referencing ASTM C 920 classifications for Type, Grade, Class, and Uses.
- B. Products: Subject to compliance with requirements, provide one of the products specified.
- C. Single Part Pourable Urethane Sealant for use in horizontal joints in floor slabs, sidewalks, and concrete pavement. Provide one of the following:
  1. "Vulkem 45"; Mameco International, Inc.
  2. "NR-201 Urexpan"; Pecora Corp.
  3. "Sonolastic SL1"; Sonneborn Building Products.
- D. Single Part Nonsag Urethane Sealant for use in sealing hollow metal door frames to adjoining wall surfaces, roof flashing and edge metal installations, and general purpose exterior sealing except where silicone is specified:
  1. "Vulkem 921"; Tremco.
  2. "Dynatrol 1"; Pecora Corp.
  3. "Sika Flex-1a"; Sika Corp.
  4. "Sonolastic NP 1"; Sonneborn Building Products.

- E. Medium-Modulus Neutral-Curing Silicone Sealant for use in all exterior masonry control and expansion joints, and for perimeter sealing of aluminum windows and storefronts.
  - 1. 791; Dow Corning (accommodates joint movement of  $\pm 50$  percent).
    - a. Apply to masonry and concrete with Dow Corning 1200 Primer.

### 2.3 LATEX JOINT SEALANTS

- A. Acrylic-Emulsion Sealant: Manufacturer's standard, one part, nonsag, mildew-resistant, acrylic-emulsion sealant complying with ASTM C 834, formulated to be paintable and recommended for exposed applications on interior locations involving joint movement of not more than plus or minus 5 percent. Provide at intersections of interior door and window frames and adjoining wall surfaces.
  - 1. "AC-20"; Pecora Corp.
  - 2. "Sonolac"; Sonneborn Building Products.
- B. Acrylic Latex Sealant with Silicone: Colored acrylic latex caulk with silicone for sealing joints between casework and building and between countertops and backsplashes. Color shall be selected by Architect to match color of laminated plastic surfaces.
  - 1. "Form Fill Adhesive Caulk".
  - 2. "ColorRITE Caulking Spectrum".
  - 3. "ColorFlex"; Kampel.

### 2.4 ACOUSTICAL JOINT SEALANT

- A. Acoustical sealant for Exposed and Concealed Joints: Manufacturer's standard nonsag, paintable, nonstaining latex sealant complying with ASTM C 834 and the following:
  - 1. Product effectively reduces airborne sound transmission through perimeter joints and openings in building construction as demonstrated by testing representative assemblies according to ASTM E 90.
  - 2. Install at perimeter joints around all electrical boxes in acoustically-rated walls and all drywall ceilings throughout Music Building 1 and Building 1 Addition, and elsewhere as indicated on drawings.
- B. Manufacturer – Provide one of the following:
  - 1. AC-20FTR Acoustical and Insulation Sealant; Pecora Corporation
  - 2. Sheetrock Acoustical Sealant; USG Corp.

### 2.5 MILDEW – RESISTANT SILICONE SEALANT

- A. One-part mildew-resistant interior sealant designed to seal nonporous interior building surfaces including tubs, sinks, lavatories, and urinals at perimeter intersection with finished walls.
- B. Manufacturer – Provide one of the following:
  - 1. Dow Corning 786 Mildew-Resistant Silicone Sealant.
  - 2. Sanitary SCS1700 Sealant; G.E. Silicones

### 2.6 JOINT SEALANT BACKING

- A. General: Provide sealant backings of material and type that are nonstaining; 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. Plastic Foam Joint Fillers: Preformed, compressible, resilient, nonstaining, nonwaxing, nonextruding strips of flexible plastic foam of either material indicated below and of size, shape, and density to control sealant depth and otherwise contribute to producing optimum sealant performance:
  - 1. Closed-cell polyethylene foam, nonabsorbent to liquid water and gas, nonoutgassing in unruptured state.
  - 2. Proprietary, reticulated, closed-cell polymeric foam, nonoutgassing, with a density of 2.5 pcf (40 kg/cu. m) and tensile strength of 35 psi (240 kPa) per ASTM D 1623, and with water absorption less than 0.02 g/cc per ASTM C 1083.
- C. Bond-Breaker Tape: Polyethylene tape or other plastic tape as 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.

## 2.7 MISCELLANEOUS MATERIALS

- A. Primer: Material recommended by joint sealant manufacturer where required for adhesion of sealant to joint substrates indicated, as determined from preconstruction joint sealant-substrate tests and field tests.
- B. Cleaners for Nonporous Surfaces: Chemical cleaners acceptable to manufacturers of sealants and sealant backing materials, free of oily residues or other substances capable of staining or harming in any way joint substrates and adjacent nonporous surfaces, and formulated to promote optimum adhesion of sealants with joint substrates.
- C. Masking Tape: Nonstaining, nonabsorbent material compatible with joint sealants and surfaces adjacent to joints.

## PART 3 - EXECUTION

### 3.1 EXAMINATION

- A. Examine joints indicated to receive joint sealants, with Installer present, for compliance with requirements for joint configuration, installation tolerances, and other conditions affecting joint sealant performance. Do not proceed with installation of joint sealants until unsatisfactory conditions have been corrected.

### 3.2 PREPARATION

- A. Surface Cleaning of Joints: Clean out joints immediately before installing joint sealants to comply with recommendations of joint sealant manufacturer 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 concrete, masonry, unglazed surfaces of ceramic tile, and similar 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 metal, glass, porcelain enamel, glazed surfaces of ceramic tile, and other nonporous surfaces with chemical cleaners or other means that do not stain, harm substrates, or leave residues capable of interfering with adhesion of joint sealants.
- B. Joint Priming: Prime joint substrates where indicated or where recommended by joint sealant manufacturer based on preconstruction joint sealant-substrate tests or prior experience. Apply primer to comply with joint sealant manufacturer's recommendations. Confine primers to areas of joint sealant bond; do not allow spillage or migration onto adjoining surfaces.
- C. Masking Tape: Use masking tape where required to prevent contact of sealant with adjoining surfaces that otherwise would be permanently stained or damaged by such contact or by cleaning methods required to remove sealant smears. Remove tape immediately after tooling without disturbing joint seal.

### 3.3 INSTALLATION OF JOINT SEALANTS

- A. General: Comply with joint sealant manufacturer's printed installation instructions applicable to products and applications indicated, except where more stringent requirements apply.
- B. Sealant Installation Standard: Comply with recommendations of ASTM C 1193 for use of joint sealants as applicable to materials, applications, and conditions indicated.
- C. Installation of Sealant Backings: Install sealant backings to comply with the following requirements:
  - 1. Install joint fillers of type indicated to provide support of sealants during application and at position required to produce the cross-sectional shapes and depths of installed sealants relative to joint widths that allow optimum sealant movement capability.
    - a. Do not leave gaps between ends of joint fillers.
    - b. Do not stretch, twist, puncture, or tear joint fillers.
    - c. Remove absorbent joint fillers that have become wet prior to sealant application and replace with dry material.
  - 2. Install bond breaker tape between sealants where backer rods are not used between sealants and joint fillers or back of joints.

- D. Installation of Sealants: Install sealants by proven techniques that result in sealants directly contacting and fully wetting joint substrates, completely filling recesses provided for each joint configuration, and providing uniform, cross-sectional shapes and depths relative to joint widths that allow optimum sealant movement capability. Install sealants at the same time sealant backings are installed.
- E. Tooling of Nonsag Sealants: Immediately after sealant application and prior to time skinning or curing begins, tool sealants to form smooth, uniform beads of configuration indicated, to eliminate air pockets, and to ensure contact and adhesion of sealant with sides of joint. Remove excess sealants from surfaces adjacent to joint. Do not use tooling agents that discolor sealants or adjacent surfaces or are not approved by sealant manufacturer.
  - 1. Provide concave joint configuration per Figure 5A in ASTM C 1193, unless otherwise indicated.

### 3.4 CLEANING

- A. Clean off excess sealants or sealant smears adjacent to joints as work progresses by methods and with cleaning materials approved by manufacturers of joint sealants and of products in which joints occur.

### 3.5 PROTECTION

- A. Protect joint sealants during and after curing period from contact with contaminating substances or from damage resulting from construction operations or other causes so that they are without deterioration or damage at time of Substantial Completion. If, despite such protection, damage or deterioration occurs, cut out and remove damaged or deteriorated joint sealants immediately so that and installations with repaired areas are indistinguishable from original work.

END OF SECTION 07 9200

## SECTION 08 1110 - STANDARD STEEL DOORS AND FRAMES

## PART 1 - GENERAL

## 1.1 RELATED DOCUMENTS

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

## 1.2 SUMMARY

- A. This Section includes the following:
  - 1. Standard hollow-metal steel doors.
  - 2. Standard hollow-metal steel frames.
  
- B. Related Sections: The following Sections contain requirements that relate to this Section:
  - 1. Division 4 Section "Unit Masonry" for building anchors into and grouting frames in masonry construction.
  - 2. Division 8 Section "Flush Wood Doors" for solid-core wood doors installed in steel frames.
  - 3. Division 8 Section "Door Hardware" for door hardware and weatherstripping.
  - 4. Division 8 Section "Glazing" for glass in steel doors and sidelights.
  - 5. Division 9 Section "Painting" for field painting primed doors and frames.

## 1.3 DEFINITIONS

- A. Minimum Thickness: Minimum thickness of base metal without coatings.

## 1.4 SUBMITTALS

- A. Product Data: Include construction details, material descriptions, core descriptions, label compliance, fire-resistance rating, and finishes for each type of steel door and frame specified.
  
- B. Shop Drawings:
  - 1. In addition to requirements below, provide a schedule of standard steel doors and frames using same reference numbers for details and openings as those on Drawings:
    - a. Elevations of each door design.
    - b. Details of doors, including vertical and horizontal edge details.

- c. Frame details for each frame type, including dimensioned profiles.
- d. Details and locations of reinforcement and preparations for hardware.
- e. Details of each different wall opening condition.
- f. Details of anchorages, accessories, joints, and connections.

#### 1.5 QUALITY ASSURANCE

- A. Installer Qualifications: An employer of workers trained and approved by manufacturer.
- B. Source Limitations: Obtain standard steel doors and frames through one source from a single manufacturer.
- C. Fire-Rated Door Assemblies: Assemblies complying with NFPA 80 that are listed and labeled by a testing and inspecting agency acceptable to authorities having jurisdiction, for fire-protection ratings indicated.
  - 1. Test Pressure: Test at atmospheric (neutral) pressure according to NFPA 252 or UL 10B.
- D. Smoke-Control Door Assemblies: Comply with NFPA 105 or UL 1784.

#### 1.6 DELIVERY, STORAGE, AND HANDLING

- A. Deliver doors and frames palletized, wrapped, or crated to provide protection during transit and Project-site storage. Do not use nonvented plastic.
- B. Deliver welded frames with two removable spreader bars across bottom of frames, tack welded to jambs and mullions.
- C. Store doors and frames under cover at Project site. Place units in a vertical position with heads up, spaced by blocking, on minimum 4-inch- high wood blocking. Avoid using nonvented plastic or canvas shelters that could create a humidity chamber.
  - 1. If wrappers on doors become wet, remove cartons immediately. Provide minimum 1/4-inch space between each stacked door to permit air circulation.

#### 1.7 PROJECT CONDITIONS

- A. Field Measurements: Verify openings by field measurements before fabrication and indicate measurements on Shop Drawings.

#### 1.8 COORDINATION

- A. Coordinate installation of anchorages for standard steel frames. Furnish setting drawings, templates, and directions for installing anchorages, including sleeves, concrete inserts, anchor bolts, and items with integral anchors, that are to be embedded in concrete or masonry. Deliver such items to Project site in time for installation.

## PART 2 - PRODUCTS

### 2.1 MANUFACTURERS

- A. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
1. Ceco Door Products.
  2. Curries Company; an Assa Abloy Group Company.
  3. Windsor Republic Doors.
  4. Steelcraft; an Ingersoll-Rand Company.
  5. Hollow Metal, Inc.

### 2.2 MATERIALS

- A. Cold-Rolled Steel Sheet: ASTM A 1008/A 1008M, Commercial Steel (CS), Type B; suitable for exposed applications.
- B. Hot-Rolled Steel Sheet: ASTM A 1011/A 1011M, Commercial Steel (CS), Type B; free of scale, pitting, or surface defects; pickled and oiled.
- C. Metallic-Coated Steel Sheet: ASTM A 653/A 653M, Commercial Steel (CS), Type B; with minimum A60 (ZF180) zinc-iron-alloy (galvannealed) coating designation.
- D. Supports and Anchors: After fabricating, galvanize units to be built into exterior walls according to ASTM A 153/A 153M, Class B.
- E. Inserts, Bolts, and Fasteners: Provide items to be built into exterior walls, hot-dip galvanized according to ASTM A 153/A 153M.

### 2.3 STANDARD STEEL DOORS

- A. General: Provide doors of design indicated, not less than thickness indicated; fabricated with smooth surfaces, without visible joints or seams on exposed faces, unless otherwise indicated. Comply with ANSI A250.8.
1. Design: As indicated on Drawings.
  2. Core Construction: Manufacturer's standard kraft-paper honeycomb, polystyrene, polyurethane, mineral-board, or vertical steel-stiffener core that produces doors complying with ANSI A250.8.
    - a. Fire Door Core: As required to provide fire-protection ratings indicated.
  3. Vertical Edges for Single-Acting Doors: Beveled edge
    - a. Beveled Edge: 1/8 inch in 2 inches.

4. Top and Bottom Edges: Closed with flush (at top), inverted (at bottom), 0.042-inch-thick end closures or channels of same material as face sheets.
  5. Tolerances: Comply with SDI 117, "Manufacturing Tolerances for Standard Steel Doors and Frames."
- B. Exterior and Interior Doors: Face sheets fabricated from A-60 galvanized steel sheet. Provide doors complying with requirements indicated below by referencing ANSI A250.8 for level and model and ANSI A250.4 for physical-endurance level:
1. Level 3 and Physical Performance Level A (Extra Heavy Duty), Model 2 (Seamless), 16 gage (.053 inch).
- C. Hardware Reinforcement: Fabricate reinforcement plates from same material as door face sheets to comply with the following minimum sizes:
1. Hinges: Minimum 0.123 inch thick by 1-1/2 inches wide by 6 inches longer than hinge, secured by not less than 6 spot welds.
  2. Pivots: Minimum 0.167 inch thick by 1-1/2 inches wide by 6 inches longer than hinge, secured by not less than 6 spot welds.
  3. Lock Face, Flush Bolts, Closers, and Concealed Holders: Minimum 0.067 inch thick.
  4. All Other Surface-Mounted Hardware: Minimum 0.067 inch thick.
- D. Fabricate concealed stiffeners and hardware reinforcement from either cold- or hot-rolled steel sheet.

## 2.4 STANDARD STEEL FRAMES

- A. General: Comply with ANSI A250.8 and with details indicated for type and profile.
- B. Exterior and Interior Frames: Fabricated from A-60 galvanized steel sheet.
1. Fabricate frames with mitered or coped and continuously welded face corners.
  2. Frames for Level 3 Steel Doors: 16 gage (.053 inch) thick steel sheet.
- C. Hardware Reinforcement: Fabricate reinforcement plates from same material as frames to comply with the following minimum sizes:
1. Hinges: Minimum 0.123 inch thick by 1-1/2 inches wide by 6 inches longer than hinge, secured by not less than 6 spot welds.
  2. Pivots: Minimum 0.167 inch thick by 1-1/2 inches wide by 6 inches longer than hinge, secured by not less than 6 spot welds.
  3. Lock Face, Flush Bolts, Closers, and Concealed Holders: Minimum 0.067 inch thick.
  4. All Other Surface-Mounted Hardware: Minimum 0.067 inch thick.
- D. Supports and Anchors: Fabricated from electrolytic zinc-coated or metallic-coated steel sheet.
- E. Jamb Anchors:

1. Masonry Type: Adjustable strap-and-stirrup anchors to suit frame size, not less than 0.042 inch thick, with corrugated or perforated straps not less than 2 inches wide by 10 inches long.
  2. Postinstalled Expansion Type for In-Place Concrete Masonry: minimum 3/8-inch-diameter bolts with expansion shields or inserts. Provide pipe spacer from frame to wall, with throat reinforcement plate, welded to frame at each anchor location.
- F. Fabricate concealed stiffeners and hardware reinforcement from either cold- or hot-rolled steel sheet.
- G. Plaster Guards: Formed from same material as frames, not less than 0.016-inch thick.

## 2.5 FABRICATION

- A. General: Fabricate standard steel doors and frames to be rigid and free of defects, warp, or buckle. Accurately form metal to required sizes and profiles, with minimum radius for thickness of metal. Where practical, fit and assemble units in manufacturer's plant. To ensure proper assembly at Project site, clearly identify work that cannot be permanently factory assembled before shipment.
- B. Standard Steel Doors:
1. Exterior Doors: Provide weep-hole openings in bottom of exterior doors to permit moisture to escape. Seal joints in top edges of doors against water penetration.
- C. Standard Steel Frames: Where frames are fabricated in sections due to shipping or handling limitations, provide alignment plates or angles at each joint, fabricated of same thickness metal as frames.
1. Welded Frames: Weld flush face joints continuously; grind, fill, dress, and make smooth, flush, and invisible.
  2. Provide countersunk, flat- or oval-head exposed screws and bolts for exposed fasteners, unless otherwise indicated.
  3. Plaster Guards: Weld guards to frame at back of hardware mortises in frames installed in concrete or masonry.
  4. Jamb Anchors: Provide number and spacing of anchors as follows:
    - a. Masonry Type: Locate anchors not more than 18 inches from top and bottom of frame. Space anchors not more than 32 inches o.c. Provide three anchors per jamb.
    - b. Postinstalled Expansion Type: Locate anchors not more than 6 inches from top and bottom of frame. Space anchors not more than 26 inches o.c.
  5. Door Silencers: Except on weather-stripped doors, drill stops to receive door silencers as follows. Provide plastic plugs to keep holes clear during construction.
    - a. Single-Door Frames: Drill stop in strike jamb to receive three door silencers.

- D. Hardware Preparation: Factory prepare standard steel doors and frames to receive templated mortised hardware; include cutouts, reinforcement, mortising, drilling, and tapping.
  - 1. All locations shall be based upon Steelcraft standards.
  - 2. Reinforce doors and frames to receive nontemplated mortised and surface-mounted door hardware.
  - 3. Comply with applicable requirements in ANSI A250.6 and ANSI/DHI A115 Series specifications for door and frame preparation for hardware. Locate hardware according to ANSI A250.8.

## 2.6 STEEL FINISHES

- A. General: Comply with NAAMM's "Metal Finishes Manual for Architectural and Metal Products" for recommendations for applying and designating finishes.
  - 1. Finish standard steel door and frames after assembly.
- B. Galvannealed Steel Surface Preparation: Clean surfaces with nonpetroleum solvent so surfaces are free of oil and other contaminants. After cleaning, apply a conversion coating suited to the organic coating to be applied over it. Clean welds, mechanical connections, and abraded areas, and apply galvanizing repair paint specified below to comply with ASTM A 780.
  - 1. Galvanizing Repair Paint: High-zinc-dust-content paint for regalvanizing welds in steel, complying with SSPC-Paint 20.
- C. Factory Priming for Field-Painted Finish: Apply shop primer specified below immediately after surface preparation and pretreatment. Apply a smooth coat of even consistency to provide a uniform dry film thickness of not less than 0.7 mils.
  - 1. Shop Primer: Manufacturer's standard, fast-curing, lead- and chromate-free primer complying with ANSI A250.10 acceptance criteria; recommended by primer manufacturer for substrate; compatible with substrate and field-applied finish paint system indicated; and providing a sound foundation for field-applied topcoats despite prolonged exposure.

## PART 3 - EXECUTION

### 3.1 EXAMINATION

- A. Examine substrates, areas, and conditions, with Installer present, for compliance with requirements for installation tolerances and other conditions affecting performance of standard steel doors and frames.
  - 1. Examine roughing-in for embedded and built-in anchors to verify actual locations of standard steel frame connections before frame installation.
  - 2. Proceed with installation only after unsatisfactory conditions have been corrected.

### 3.2 PREPARATION

- A. Remove welded-in shipping spreaders installed at factory.
- B. Prior to installation and with installation spreaders in place, adjust and securely brace standard steel door frames for squareness, alignment, twist, and plumb to the following tolerances:
  - 1. Squareness: Plus or minus 1/16 inch, measured at door rabbet on a line 90 degrees from jamb perpendicular to frame head.
  - 2. Alignment: Plus or minus 1/16 inch, measured at jambs on a horizontal line parallel to plane of wall.
  - 3. Twist: Plus or minus 1/16 inch, measured at opposite face corners of jambs on parallel lines, and perpendicular to plane of wall.
  - 4. Plumbness: Plus or minus 1/16 inch, measured at jambs on a perpendicular line from head to floor.
- C. Drill and tap doors and frames to receive nontemplated mortised and surface-mounted door hardware.

### 3.3 INSTALLATION

- A. General: Provide doors and frames of sizes, thicknesses, and designs indicated. Install standard steel doors and frames plumb, rigid, properly aligned, and securely fastened in place; comply with Drawings and manufacturer's written instructions.
- B. Standard Steel Frames: Install standard steel frames for doors of size and profile indicated. Comply with SDI 105.
  - 1. Set frames accurately in position; plumbed, aligned, and braced securely until permanent anchors are set. After wall construction is complete, remove temporary braces, leaving surfaces smooth and undamaged.
    - a. At fire-protection-rated openings, install frames according to NFPA 80.
    - b. Remove temporary braces necessary for installation only after frames have been properly set and secured.
    - c. Check plumb, squareness, and twist of frames as walls are constructed. Shim as necessary to comply with installation tolerances.
  - 2. In-Place Concrete or Masonry Construction: Secure frames in place with postinstalled expansion anchors. Countersink anchors, and fill and make smooth, flush, and invisible on exposed faces.
  - 3. Installation Tolerances: Adjust standard steel door frames for squareness, alignment, twist, and plumb to the following tolerances:
    - a. Squareness: Plus or minus 1/16 inch, measured at door rabbet on a line 90 degrees from jamb perpendicular to frame head.
    - b. Alignment: Plus or minus 1/16 inch, measured at jambs on a horizontal line parallel to plane of wall.

- c. Twist: Plus or minus 1/16 inch, measured at opposite face corners of jambs on parallel lines, and perpendicular to plane of wall.
  - d. Plumbness: Plus or minus 1/16 inch, measured at jambs at floor.
- C. Standard Steel Doors: Fit hollow-metal doors accurately in frames, within clearances specified below. Shim as necessary.
  - 1. Non-Fire-Rated Standard Steel Doors:
    - a. Jambs and Head: 1/8 inch plus or minus 1/16 inch.
    - b. Between Edges of Pairs of Doors: 1/8 inch plus or minus 1/16 inch.
    - c. Between Bottom of Door and Top of Threshold: Maximum 3/8 inch.
    - d. Between Bottom of Door and Top of Finish Floor (No Threshold): Maximum 3/4 inch.
  - 2. Fire-Rated Doors: Install doors with clearances according to NFPA 80.
  - 3. Smoke-Control Doors: Install doors according to NFPA 105.

#### 3.4 ADJUSTING AND CLEANING

- A. Final Adjustments: Check and readjust operating hardware items immediately before final inspection. Leave work in complete and proper operating condition. Remove and replace defective work, including standard steel doors or frames that are warped, bowed, or otherwise unacceptable.
- B. Clean grout and other bonding material off standard steel doors and frames immediately after installation.
- C. Prime-Coat Touchup: Immediately after erection, sand smooth rusted or damaged areas of prime coat and apply touchup of compatible air-drying primer.
- D. Galvannealed Surfaces: Clean abraded areas and repair with galvanizing repair paint according to manufacturer's written instructions.

END OF SECTION 08 1110

## SECTION 08 2110 - FLUSH WOOD DOORS

## PART 1 - GENERAL

## 1.1.1 RELATED DOCUMENTS

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

## 1.2 SUMMARY

- A. This Section includes the following:
  - 1. Solid core doors with wood veneer faces.
  - 2. Factory fitting flush wood doors to frames and factory machining for hardware.

## 1.3 SUBMITTALS

- A. General: Submit each item in this Article according to the Conditions of the Contract.
- B. Product data for each type of door, including details of core and edge construction, trim for openings and louvers, and factory-finishing specifications.
- C. Shop drawings indicating location and size of each door, elevation of each kind of door, details of construction, location and extent of hardware blocking, fire ratings, and other pertinent data.
  - 1. For factory-machined doors, indicate dimensions and locations of cutouts for locksets and other cutouts adjacent to light and louver openings.
- D. Samples for Initial Selection: Color charts consisting of actual materials in small sections for the following:
  - 1. Faces of Factory-Finished Doors: Show the full range of colors available for stained finishes.
- E. Samples for Verification:
  - 1. Factory finishes applied to actual door face materials, approximately 8 by 10 inches, for each material and finish. For each wood species and transparent finish, provide set of three samples showing typical range of color and grain to be expected in the finished work.

## 1.4 QUALITY ASSURANCE

- A. Quality Standard: Comply with the following standard:
  - 1. AWI Quality Standard: Architectural Woodwork Quality Standards@ of the Architectural Woodwork Institute for grade of door, core, construction, finish, and other requirements.
- B. Fire-Rated Wood Doors: Provide wood doors that comply with NFPA 80; are identical in materials and construction to units tested in door and frame assemblies per ASTM E 152; and are labeled and listed by UL, Warnock Hersey, or another testing and inspection agency acceptable to authorities having jurisdiction.
- C. Single-Source Responsibility: Obtain doors from one source and by a single manufacturer.

## 1.5 DELIVERY, STORAGE, AND HANDLING

- A. Protect doors during transit, storage, and handling to prevent damage, soiling, and deterioration. Comply with requirements of referenced standard and manufacturer's instructions.
- B. Identify each door with individual opening numbers as designated on shop drawings, using temporary, removable, or concealed markings.

#### 1.6 PROJECT CONDITIONS

- A. Conditioning: Do not deliver or install doors until conditions for temperature and relative humidity have been stabilized and will be maintained in storage and installation areas during the remainder of the construction period to comply with the following requirements applicable to Project's geographical location:
  - 1. AWI quality standard Section 100-S-11 "Relative Humidity and Moisture Content."

#### 1.7 WARRANTY

- A. General Warranty: Door manufacturer's warranty specified in this Article shall not deprive the Owner of other rights the Owner may have under other provisions of the Contract Documents and shall be in addition to, and run concurrent with, other warranties made by the Contractor under requirements of the Contract Documents.
- B. Door Manufacturer's Warranty: Submit written agreement on door manufacturer's standard form signed by manufacturer, Installer, and Contractor, agreeing to repair or replace defective doors that have warped (bow, cup, or twist) more than 1/4 inch in a 42-by-84-inch section or that show telegraphing of core construction in face veneers exceeding 0.01 inch in a 3-inch span, or do not conform to tolerance limitations of referenced quality standards.
  - 1. Warranty shall also include installation and finishing that may be required due to repair or replacement of defective doors where defect was not apparent prior to hanging.
  - 2. Warranty shall be in effect during the following period of time after date of Substantial Completion.
    - a. Solid Core Interior Doors: One year.

### PART 2 - PRODUCTS

#### 2.1 MANUFACTURERS

- A. Manufacturer: Subject to compliance with requirements, provide doors by one of the following:
  - 1. Solid Core Doors:
    - a. Algoma Hardwoods, Inc.
    - b. Buell Door Company
    - c. Chappell Door Company
    - d. Eggers Industries

- e. Marshfield Door Systems
- f. Mohawk Flush Doors, Inc.
- g. VT Industries, Inc.

## 2.2 INTERIOR FLUSH WOOD DOORS

- A. Solid Core Doors for Painted Finish: Comply with the following requirements:
  - 1. Faces: Running, book-matched, rotary-cut, white birch.
  - 2. A.W.I. Grade: Premium.
  - 3. Construction: PC 5 (Particleboard core, 5 ply, with core bonded to faces).
  - 4. Core: Particleboard core, ANSI A208.1, Grade LD-2.
  - 5. Bonding: Stiles and rails bonded to core, then entire unit abrasive planed before veneering.
- B. Fire-Rated Solid Core Doors: Comply with the following requirements:
  - 1. Faces and Grade: Provide faces and grade to match non-fire-rated doors in same area of building, unless otherwise indicated.
  - 2. Construction: Manufacturer's standard core construction as required to provide fire-resistance rating indicated.
  - 3. Blocking: Provide composite blocking designed to maintain fire resistance of door but with improved screw-holding capability of same thickness as core and with minimum dimensions as follows:
    - a. 5-inch top rail blocking.
    - b. 5-inch bottom rail blocking.
    - c. 5-by-18-inch lock blocks.
    - d. 5-inch midrail blocking.

## 2.3 LOUVERS AND LIGHT FRAMES

- A. Metal Louvers:
  - 1. Blade Type: Vision-proof, inverted V.
  - 2. Metal and Finish: Galvanized steel, 0.0396 inch thick, hot-dip zinc coated and factory primed for paint finish.
- B. Fire Door Louvers: Metal louvers with fusible link and closing device, listed and labeled for use in doors with fire rating of one and one-half hours and less.
- C. Metal Frames for Light Openings: Manufacturer's standard frame formed of 0.0478-inch thick, cold-rolled steel sheet; factory primed and approved for use in doors including fire rated doors where indicated.

## 2.4 FABRICATION

- A. Fabricate flush wood doors to comply with following requirements:
  - 1. Factory fit doors to suit frame-opening sizes indicated, with the following uniform clearances and bevels:
    - a. Comply with clearance requirements of referenced quality standard for fitting.

- b. Comply with requirements of NFPA 80 for fire-resistance-rated doors.
  - 2. Factory machine doors for hardware that is not surface applied. Locate hardware to comply with DHI-WDHS-3. Comply with final hardware schedules, door frame shop drawings, DHI A115-W series standards, and hardware templates.
    - a. Coordinate measurements of hardware mortises in metal frames to verify dimensions and alignment before proceeding with factory machining.
  - B. Openings: Cut and trim openings through doors to comply with applicable requirements of referenced standards for kind(s) of door(s) required.
    - 1. Light Openings: Trim openings with moldings of wood.
    - 2. Louvers: Factory install solid wood louvers in prepared openings.
- 2.5 FACTORY FINISHING
- A. General: Comply with AWI's "Architectural Woodwork Quality Standards Illustrated" for factory finishing.
  - B. Primed for Paint.

### PART 3 - EXECUTION

#### 3.1 EXAMINATION

- A. Examine installed door frames prior to hanging door:
  - 1. Verify that frames comply with indicated requirements for type, size, location, and swing characteristics and have been installed with plumb jambs and level heads.
  - 2. Reject doors with defects.
- C. Do not proceed with installation until unsatisfactory conditions have been corrected.

#### 3.2 INSTALLATION

- A. Hardware: For installation see Division 8 Section "Door Hardware."
- B. Manufacturer's Instructions: Install wood doors to comply with manufacturer's instructions and referenced quality standard and as indicated.
  - 1. Install fire-rated doors in corresponding fire-rated frames according to requirements of NFPA 80.
  - 2. Fitting Clearances for Non-Fire-Rated Doors: Provide 1/8 inch at jambs and heads, 1/16 inch per leaf at meeting stiles for pairs of doors, and 1/8 inch from bottom of door to top of decorative floor finish or covering. Where threshold is shown or scheduled, provide 1/4-inch clearance from bottom of door to top of threshold.
  - 3. Fitting Clearances for Fire-Rated Doors: Comply with NFPA 80.
- C. Factory-Fitted Doors: Align in frames for uniform clearance at each edge.

3.3 ADJUSTING AND PROTECTION

- A. Operation: Rehang or replace doors that do not swing or operate freely.
- B. Finished Doors: Refinish or replace doors damaged during installation.
- C. Protect doors as recommended by door manufacturer to ensure that wood doors will be without damage or deterioration at the time of Substantial Completion.

END OF SECTION 08 2110

## SECTION 08 4100 - ALUMINUM ENTRANCES AND STOREFRONTS

## PART 1 – GENERAL

## 1.1 RELATED DOCUMENTS

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

## 1.2 SUMMARY

- A. This Section includes the following:

1. Exterior entrance systems (hurricane-resistant).
2. Interior storefront swing entrance systems .
3. Exterior Curtain Wall Systems (hurricane-resistant).
4. Interior sliding door unit.

ALL ABOVE SHALL BE BY SAME MANUFACTURER. Single source responsibility

- B. Related sections include the following:

1. Division 7 Section "Joint Sealants" for sealing between framing and masonry.
2. Division 8 Section Door Hardware@ for lock cylinders.

## PART 1 - PART 2 - PRODUCTS

## 1.1 ALUMINUM-FRAMED STOREFRONTS

1. Manufacturer Equal to:

- A. Address: Kawneer Company, Inc.  
555 Guthridge Court,  
Technology Park/Atlanta,  
Norcross, GA 30092  
Tel: 770 449 5555  
Fax: 770 734 1560

2. System(s): Equal to:

- a. Kawneer Aluminum Hurricane Resistant Exterior Entrances.
  1. Series: 350 IR Entrances
- b. Kawneer Aluminum Interior swing entrances.
  1. Series: 190 Narrow Stile (with Transoms)
- c. Kawneer Windows.
  1. Series: 8400TL Thermal Window (Fixed)

Aluminum: Alloy and temper recommended by manufacturer for type of use and permadize finish; ASTM B 209 (ASTM B 209M) sheet; ASTM B 221 (ASTM B 221M) extrusions.

- A. Glazing: 1 5/16" Thick Insulated Low -E impact glazing at exterior curtainwall; Specified in Division 08 Section "Glazing."
- B. Sealants and Joint Fillers: For joints at perimeter of systems as specified in Division 07 Section "Joint Sealants."
- C. Framing Members: Manufacturer's standard extruded-aluminum framing members of thickness required and reinforced as required to support imposed loads.

- D. Doors: 1-3/4-inch- (44.5-mm-) thick glazed doors with minimum 0.125-inch- (3.2-mm-) thick, extruded tubular rail and stile members, mechanically fastened corners with reinforcing brackets that are deep penetration and fillet welded or that incorporate concealed tie-rods, snap-on extruded-aluminum glazing stops, and preformed gaskets.
  - 1. Exterior Doors: Provide compression weather stripping at fixed stops. At other locations, provide sliding weather stripping retained in adjustable strip mortised into door edge.
  - 2. Hardware: By door manufacturer except key cylinders as specified in Division 08 Section "Door Hardware".
- E. Fasteners and Accessories: Compatible with adjacent materials, corrosion-resistant, nonstaining, and nonbleeding. Use concealed fasteners except for application of door hardware.
- F. Fabrication: Fabricate framing in profiles indicated for flush glazing (without projecting stops). Provide subframes and reinforcing of types indicated or, if not indicated, as required for a complete system. Factory assemble components to greatest extent possible. Disassemble components only as necessary for shipment and installation.
  - 1. Door Framing: Reinforce to support imposed loads. Factory assemble door and frame units and factory install hardware to greatest extent possible. Reinforce door and frame units for hardware indicated. Cut, drill, and tap for factory-installed hardware before finishing components.
  - 2. Aluminum Finish: Comply with NAAMMs "Metal Finishes Manual for Architectural and Metal Products." Color: Shall be Kawneer's 50% Kynar Permardize to match clear anodized finish. Sterling Grey or Light Sequin.

### 2.3 SYSTEM DESCRIPTION

- A. General: Provide aluminum entrance and storefront systems capable of withstanding loads and thermal and structural movement requirements indicated without failure, based on testing manufacturer's standard units in assemblies similar to those indicated for this Project. Failure includes the following:
  - 1. Air infiltration and water penetration exceeding specified limits.
  - 2. Framing members transferring stresses, including those caused by thermal and structural movement, to glazing units.
- B. Glazing: Physically and thermally isolate glazing from framing members.
- C. Wind Loads: Unless otherwise provided on the structural drawings, provide entrance and storefront systems, including anchorage, capable of withstanding wind-load design pressures calculated according to the requirements of ASCE 7-98 and the International Building Code 2009. Refer to cladding and components windload pressure chart on structural notes page of plans.
  - 1. Design Wind Velocity = 160 mph.
  - 2. Importance factor = 1.15.

3. Exposure = D.
4. Deflection of framing members in a direction normal to wall plane is limited to 1/175 of clear span or 3/4 inch, whichever is smaller, unless otherwise indicated.
6. Static-Pressure Test Performance: Provide entrance and storefront systems that do not evidence material failures, structural distress, failure of operating components to function normally, or permanent deformation of main framing members exceeding 0.2 percent of clear span when tested according to ASTM E 330.
  - a. Test Pressure: 150 percent of inward and outward wind-load design pressures.
  - b. Duration: As required by design wind velocity; fastest 1 mile of wind for relevant exposure category.
- D. Hurricane-Resistance Test Performance: Provide entrance and storefront systems that pass large and small missile-impact tests, as required by systems' location above grade, and cyclic-pressure tests according to The International Building Code 2009, Section 1609.1.4.
- E. Dead Loads: Provide entrance- and storefront-system members that do not deflect an amount which will reduce glazing bite below 75 percent of design dimension when carrying full dead load.
  1. Provide a minimum 1/8-inch clearance between members and top of glazing or other fixed part immediately below.
  2. Provide a minimum 1/16-inch clearance between members and operable windows and doors.
- F. Live Loads: Provide entrance and storefront systems, including anchorage, that accommodate the supporting structures' deflection from uniformly distributed and concentrated live loads indicated without failure of materials or permanent deformation.
- G. Engineering Responsibility: Storefront subcontractor shall engage a registered structural engineer to design connections, member reinforcements, and fastening to building structure, and prepare design calculations and engineering data.
- H. Air Infiltration: Provide entrance and storefront systems with permanent resistance to air leakage through fixed glazing and frame areas of not more than 0.06 cfm/sq. ft. of fixed wall area when tested according to ASTM E 283 at a static-air-pressure difference of 1.57 lbf/sq. ft
- I. Water Penetration: Provide entrance and storefront systems that do not evidence water leakage through fixed glazing and frame areas when tested according to ASTM E 331 at minimum differential pressure of 20 percent of inward-acting wind-load design pressure as defined by ASCE 7, "Minimum Design Loads for Buildings and Other Structures," but not less than 6.24 lbf/sq. ft. Water leakage is defined as follows:
  1. Uncontrolled water infiltrating systems or appearing on systems' normally exposed interior surfaces from sources other than condensation. Water controlled by flashing and gutters that is drained back to the exterior and cannot damage adjacent materials or finishes is not water leakage.
- J. Thermal Movements: Provide entrance and storefront systems, including anchorage, that accommodate thermal movements of systems and supporting elements resulting from the following maximum change (range) in ambient and surface temperatures without buckling, dam-

aging stresses on glazing, failure of joint sealants, damaging loads on fasteners, failure of doors or other operating units to function properly, and other detrimental effects.

1. Temperature Change (Range): 100 deg F ambient; 150 deg F material surfaces.

K. Structural-Support Movement: Provide entrance and storefront systems that accommodate structural movements including, but not limited to, sway and deflection.

L. Dimensional Tolerances: Provide entrance and storefront systems that accommodate dimensional tolerances of building frame and other adjacent construction.

## 2.4 SUBMITTALS

A. Product Data: For each product specified. Include details of construction relative to materials, dimensions of individual components, profiles, and finishes.

B. Shop Drawings: For entrance and storefront systems. Show details of fabrication and installation, including plans, elevations, sections, details of components, provisions for expansion and contraction, and attachments to other work. Show elevations at 2 A scale and details at 3" scale.

1. Shop drawings shall include large-scale anchorage details indicating attachment to slabs, walls, and overhead structure.

2. Submit calculations, structural properties, connection information and product information to verify that the system performance and anchorage can successfully resist wind loads. All calculations shall be signed and sealed by a registered professional structural engineer.

3. For entrance systems, include hardware schedule and indicate operating hardware types, quantities, and locations.

## 2.5 QUALITY ASSURANCE

A. Installer Qualifications: Engage an experienced installer to assume engineering responsibility and perform work of this Section who has specialized in installing entrance and storefront systems similar to those required for this Project and who is acceptable to manufacturer.

1. Engineering Responsibility: Prepare data for entrance and storefront systems, including Shop Drawings, based on testing and engineering analysis of manufacturer's standard units in assemblies similar to those indicated for this Project.

B. Source Limitations: Obtain each type of entrance and storefront system through one source from a single manufacturer.

C. Product Options: Drawings indicate size, profiles, and dimensional requirements of entrance and storefront systems and are based on the specific systems indicated.

1. Do not modify intended aesthetic effect, as judged solely by Architect, except with Architect's approval and only to the extent needed to comply with performance requirements. Where modifications are proposed, submit comprehensive explanatory data to Architect for review.

## 2.6 PROJECT CONDITIONS

- A. Field Measurements: Verify dimensions by field measurements before fabrication and indicate measurements on Shop Drawings. Coordinate fabrication schedule with construction progress to avoid delaying the Work.

## PART 3 – PRODUCTS

### 3.1 MANUFACTURERS

- A. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
  1. Kawneer Company, Inc.
  2. Old Castle Envelope/ Vistawall Architectural Products.
  3. YKK AP America

### 3.2 MATERIALS

- A. Aluminum: Alloy and temper recommended by manufacturer for type of use and finish indicated, complying with the requirements of standards indicated below.
  1. Sheet and Plate: ASTM B 209.
  2. Extruded Bars, Rods, Shapes, and Tubes: ASTM B 221.
  3. Extruded Structural Pipe and Tubes: ASTM B 429.
  4. Bars, Rods, and Wire: ASTM B 211.
- B. Steel Reinforcement: Complying with ASTM A 36 for structural shapes, plates, and bars; ASTM A 611 for cold-rolled sheet and strip; or ASTM A 570 for hot-rolled sheet and strip.
- C. Glazing shall be provided by aluminum entrance manufacturer as follows:
  1. Glass must be laminated glass product of the type included in the entrance assembly that was tested for hurricane resistance.
  2. Glass shall be 9/16" thick consisting of a 1/4" thick, fully tempered outer lite as selected by Architect, a .090" thick PVB plastic interlayer, and a 1/4" thick, fully tempered inner lite of clear glass. (For exterior entrance doors).
  3. Refer to 08800 for remainder of glass and glazing.
- D. Glazing Gaskets: Manufacturer's standard pressure-glazing system of black, resilient glazing gaskets, setting blocks, and shims or spacers, fabricated from an elastomer of type and in hardness recommended by system and gasket manufacturer to comply with system performance requirements. Provide gasket assemblies that have corners sealed with sealant recommended by gasket manufacturer.
  1. Provide silicone sealant in lieu of glazing gasket if required by entrance manufacturer for hurricane-resistant construction.
- E. Framing system gaskets, sealants, and joint fillers as recommended by manufacturer for joint type.

### 3.3 COMPONENTS

- A. Doors: Provide manufacturer's standard 1-3/4-inch- thick glazed doors with minimum 0.125-inch- thick, extruded tubular rail and stile members. Mechanically fasten corners with reinforcing brackets that are deep penetration and fillet welded or that incorporate concealed tie-rods.
  - 1. Glazing Stops and Gaskets: Provide manufacturer's standard snap-on extruded-aluminum glazing stops and preformed gaskets.
  - 2. Stile Design: Medium stile; 3-1/2-inch nominal width at exterior
  - 4. Stile Design: Narrow stile: 2-inch nominal at interior
- B. Brackets and Reinforcements: Provide manufacturer's standard brackets and reinforcements that are compatible with adjacent materials. Provide non-staining, nonferrous shims for aligning system components.
- C. Fasteners and Accessories: Manufacturer's standard corrosion-resistant, non-staining, non-bleeding fasteners and accessories compatible with adjacent materials.
  - 1. Reinforce members as required to retain fastener threads.
  - 2. Do not use exposed fasteners, except for hardware application. For hardware application, use countersunk Phillips flat-head machine screws finished to match framing members or hardware being fastened, unless otherwise indicated.
- D. Weather Stripping: Manufacturer's standard replaceable weather stripping as follows:
  - 1. Compression Weather Stripping: Molded neoprene complying with ASTM D 2000 requirements or molded PVC complying with ASTM D 2287 requirements.
  - 2. Sliding Weather Stripping: Wool, polypropylene, or nylon woven pile with nylon-fabric or aluminum-strip backing complying with AAMA 701 requirements.

### 3.4 HARDWARE

- A. General: Provide heavy-duty hardware units indicated in sizes, number, and type recommended by manufacturer for entrances indicated.
- B. Continuous Gear Hinges as tested with impact door assembly at exterior doors and 1 ½ pair of ball bearing butt hinges at interior doors.
- C. Closers, General: Comply with manufacturer's recommendations for closer size, depending on door size, exposure to weather, and anticipated frequency of use.
  - 1. Hold Open: Adjustable.
  - 2. Furnish LCN 4040 with applicable drop plates
- D. Door Stops: ANSI/BHMA A156.16, Grade 1, floor- or wall-mounted door stop, as appropriate for door location indicated, with integral rubber bumper.
- E. Mortise Cylinders: Cylinders are specified in Section 08710 - Door Hardware.

- F. Deadlatch Locks: Manufacturer's standard mortise deadlatch with minimum 2 inch long latch bolt and auxiliary bolt located below latch bolt and complying with ANSI/BHMA A156.5, Grade 1 requirements (interior doors).
  - G. Vertical-Rod Exit Devices: At all doors, provide concealed, vertical-rod exit device complying with UL 305 requirements, with 2-point top and bottom latching that is released by a full-width crash bar or when locked down (dogged) by lock cylinder or retracting screws beneath housing.
    - 1. Device shall comply with hurricane-resistant entrance system requirements.
  - H. Pull Handles: As selected by Architect from manufacturer's full range of pull handles and plates.
  - I. Thresholds: At exterior doors, provide manufacturer's standard threshold with cutouts coordinated for operating hardware, with anchors and jamb clips, and not more than 2-inch- high, with beveled edges providing a floor level change with a slope of not more than 1:2, and in the following material:
    - 1. Material: Aluminum mill finish
  - J. Weather Sweeps: Manufacturer's standard weather sweep for application to exterior door bottoms and with concealed fasteners on mounting strips.
- 3.5 FABRICATION
- A. General: Fabricate components that, when assembled, will have accurately fitted joints with ends coped or mitered to produce hairline joints free of burrs and distortion. After fabrication, clearly mark components to identify their locations in Project according to Shop Drawings.
    - 1. Fabricate components for screw-spline frame construction.
  - B. Forming: Form shapes with sharp profiles, straight and free of defects or deformations, before finishing.
  - C. Prepare components to receive concealed fasteners and anchor and connection devices.
  - D. Fabricate components to drain water passing joints and condensation and moisture occurring or migrating within the system to the exterior.
  - E. Glazing Channels: Provide minimum clearances for thickness and type of glass indicated according to FGMA's "Glazing Manual."
  - F. Metal Protection: Where aluminum will contact dissimilar metals, protect against galvanic action by painting contact surfaces with primer or by applying sealant or tape recommended by manufacturer for this purpose. Where aluminum will contact concrete or masonry, protect against corrosion by painting contact surfaces with bituminous paint.
  - G. Storefront: Fabricate framing in profiles indicated for flush glazing (without projecting stops). Provide subframes and reinforcing of types indicated or, if not indicated, as required for a complete, hurricane-resistant system. Factory assemble components to greatest extent possible. Disassemble components only as necessary for shipment and installation.

- H. Entrances: Fabricate door framing in profiles indicated. Reinforce as required to support imposed loads. Factory assemble door and frame units and factory install hardware to greatest extent possible. Reinforce door and frame units as required for installing hardware indicated. Cut, drill, and tap for factory-installed hardware before finishing components.
  - 1. Provide compression weatherstripping at fixed stops.

### 3.6 ALUMINUM FINISHES

- A. High-Performance Organic Finish: AA-C12C42R1x (Chemical Finish: cleaned with inhibited chemicals; Chemical Finish: acid-chromate-fluoride-phosphate conversion coating; Organic Coating: as specified below). Prepare, pretreat, and apply coating to exposed metal surfaces to comply with coating and resin manufacturers' written instructions.
  - 1. Fluoropolymer Two-Coat System: Manufacturer's standard two-coat, thermocured system consisting of specially formulated inhibitive primer and fluoropolymer color topcoat containing not less than 50 percent polyvinylidene fluoride resin by weight; complying with AAMA 2604.
    - a. Color: Permadize Sterling Grey or Light Sequin

### 3.7 STEEL PRIMING FOR STEEL REINFORCEMENT

- A. General: Comply with NAAMM's "Metal Finishes Manual for Architectural and Metal Products" for recommendations relative to applying primer.
- B. Surface Preparation: Perform manufacturer's standard cleaning operations to remove dirt, oil, grease, or other contaminants that could impair paint bond. Remove mill scale and rust, if present, from uncoated steel.
- B. Priming: Apply manufacturer's standard corrosion-resistant primer immediately after surface preparation and pretreatment.

## PART 4 – EXECUTION

### 4.1 EXAMINATION

- A. Examine areas, with Installer present, for compliance with requirements for installation tolerances and other conditions affecting performance of entrance and storefront systems. Do not proceed with installation until unsatisfactory conditions have been corrected.

### 4.2 STOREFRONT INSTALLATION

- A. General: Comply with manufacturer's written instructions for protecting, handling, and installing entrance and storefront systems. Do not install damaged components. Fit frame joints to produce hairline joints free of burrs and distortion. Rigidly secure non-movement joints. Seal joints watertight.
- B. Metal Protection: Where aluminum will contact dissimilar metals, protect against galvanic action by painting contact surfaces with primer or by applying sealant or tape recommended by

manufacturer for this purpose. Where aluminum will contact concrete or masonry, protect against corrosion by painting contact surfaces with bituminous paint.

- C. Install components to drain water passing joints and condensation and moisture occurring or migrating within the system to the exterior.
  - D. Set continuous sill members and flashing in a full sealant bed to provide weathertight construction, unless otherwise indicated.
  - E. Install framing components plumb and true in alignment with established lines and grades without warp or rack of framing members.
  - F. Install entrances plumb and true in alignment with established lines and grades without warp or rack. Lubricate operating hardware and other moving parts according to hardware manufacturers' written instructions.
    - 1. Install surface-mounted hardware according to manufacturer's written instructions using concealed fasteners to greatest extent possible.
  - G. Install glazing to comply with requirements of Division 8 Section "Glazing," unless otherwise indicated.
  - H. Install perimeter sealant, using compatible backer rod where indicated on drawings.
  - I. Erection Tolerances: Install entrance and storefront systems to comply with the following maximum tolerances:
    - 1. Variation from Plane: Limit variation from plane or location shown to 1/8 inch in 12 feet; 1/4 inch over total length.
    - 2. Alignment: Where surfaces abut in line, limit offset from true alignment to 1/16 inch. Where surfaces meet at corners, limit offset from true alignment to 1/32 inch.
    - 3. Diagonal Measurements: Limit difference between diagonal measurements to 1/8 inch.
- 4.3 ADJUSTING AND CLEANING
- A. Adjust doors and hardware to provide tight fit at contact points and weather stripping, smooth operation, and weathertight closure.
  - B. Remove excess sealant and glazing compounds, and dirt from surfaces.
- 4.4 PROTECTION
- A. Provide final protection and maintain conditions, in a manner acceptable to manufacturer and Installer, to ensure entrance and storefront systems are without damage or deterioration at the time of Substantial Completion.

END OF SECTION 08 4110



## SECTION 08 8000 – GLAZING

## PART 1 - GENERAL

## 1.1 RELATED DOCUMENTS

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

## 1.2 SUMMARY

- A. This Section includes glazing for the following products, including those specified in other Sections where glazing requirements are specified by reference to this Section:
  - 1. Window units.
  - 2. Vision lites.
  - 3. Entrances and other doors.
  - 4. Fixed and Fire-Rated Glass
  - 5. Curtain Wall and Storefront Systems
  - 6. Sliding Door units
- B. Related Sections: The following sections contain requirements that relate to this Section.
  - 1. Glass for aluminum entrances and storefronts is specified in Division 8 Section “Aluminum Entrances and Storefronts”.

## 1.3 DEFINITIONS

- A. Manufacturer is used in this Section to refer to a firm that produces primary glass or fabricated glass as defined in the referenced glazing standard.

## 1.4 SUBMITTALS

- A. General: Submit the following according to Conditions of Contract and Division 1 Specification Sections.
- B. Product data for each glass product and glazing material indicated.
- C. Samples for verification purposes of 12-inch square samples of each type of glass indicated except for clear monolithic glass products, and 12-inch long samples of each color required (except black) for each type of sealant or gasket exposed to view. Install sealant or gasket sample between two strips of material representative in color of the adjoining framing system.
- D. Product certificates signed by glazing materials manufacturers certifying that their products comply with specified requirements.
  - 1. Separate certifications are not required for glazing materials bearing manufacturer's permanent labels designating type and thickness of glass, provided labels represent a quality control program of a recognized certification agency or independent testing agency acceptable to authorities having jurisdiction.

### 1.5 QUALITY ASSURANCE

- A. Glazing Publications: Comply with published recommendations of glass product manufacturers and organizations below, except where more stringent requirements are indicated. Refer to these publications for glazing terms not otherwise defined in this Section or in referenced standards.
  - 1. FGMA Publications: "FGMA Glazing Manual."
- B. Safety Glass: Products complying with ANSI Z97.1 and testing requirements of 16 CFR Part 1201 for Category II materials.
  - 1. Subject to compliance with requirements, provide safety glass permanently marked with certification label of Safety Glazing Certification Council (SGCC) or other certification agency acceptable to authorities having jurisdiction.
- C. Fire-Resistive Glazing Products for Door Assemblies: Products identical to those tested per ASTM E 152, labeled and listed by UL or another testing and inspecting agency acceptable to authorities having jurisdiction.
- D. Fire-Resistive Glazing Products for Window Assemblies: Products identical to those tested per ASTM E 163, labeled and listed by UL or another testing and inspecting agency acceptable to authorities having jurisdiction.
- E. Glazier Qualifications: Engage an experienced glazier who has completed glazing similar in material, design, and extent to that indicated for Project with a record of successful in-service performance.
- F. Single-Source Responsibility for Glass: Obtain glass from one source for each product indicated below:
  - 1. Primary glass of each (ASTM C 1036) type and class indicated.
  - 2. Heat-treated glass of each (ASTM C 1048) condition indicated.
- G. Single-Source Responsibility for Glazing Accessories: Obtain glazing accessories from one source for each product and installation method indicated.

### 1.6 DELIVERY, STORAGE, AND HANDLING

- A. Protect glazing materials to comply with manufacturer's directions and as needed to prevent damage to glass and glazing materials from condensation, temperature changes, direct exposure to sun, or other causes.

### 1.7 PROJECT CONDITIONS

- A. Environmental Conditions: Do not proceed with glazing when ambient and substrate temperature conditions are outside the limits permitted by glazing materials manufacturer or when glazing channel substrates are wet from rain, frost, condensation, or other causes.

## PART 2 - PRODUCTS

## 2.1 PRIMARY FLOAT GLASS PRODUCTS

- A. Float Glass: ASTM C 1036, Type I (transparent glass, flat), and Quality q3 (glazing select).

## 2.2 HEAT-TREATED FLOAT GLASS

- A. Uncoated, Clear, Heat-Treated Float Glass: ASTM C 1048, Condition A (uncoated surfaces), Type I (transparent glass, flat), Class 1 (clear), Quality q3 (glazing select), kind as indicated below, 1/4" thick:

1. Kind FT (fully tempered) in the following locations:
  - a. Interior door vision panels in doors in non fire-rated openings.
  - b. Interior windows in non fire-rated openings.
  - c. All interior storefront glass.
  - d. Interior sliding door units
2. Manufacturers: Subject to compliance with requirements, provide heat-treated glass by one of the following companies.
  - a. AFG Industries, Inc.
  - b. Ford Glass Division
  - c. Guardian Industries Corp.
  - d. HGP & Affiliates, Inc.
  - e. Pilkington LOF
  - f. PPG Industries, Inc.
  - g. Saint-Gobain
  - h. Viracon, Inc.

- B. Large Missile Impact-Resistant, Laminated Glass, ASTM C 1172.

1. Kind LT (fully tempered or heat strengthend) in the following locations:
  - a. All exterior storefront glass as shown on schedule (below 30 feet).
  - b. Exterior vision lites.
1. Glass shall be 1 5/16" thick insulated consisting of a 1/4" thick, fully tempered outer lite of Viracon "clear" (or as otherwise selected from the manufacturer's full color range for colored glass) Tinted glass, 1/2" airspace, 1/4" thick HS, a .090" thick PVB plastic interlayer, and a 1/4" thick HS inner lite of clear glass (9/16" total inboard lite).

## 2.3 ELASTOMERIC GLAZING SEALANTS

- A. General: Provide products of type indicated, complying with the following requirements:
1. Compatibility: Select glazing sealants and tapes of proven compatibility with other materials they will contact, including glass products, seals of insulating glass units, and glazing channel substrates, under conditions of installation and service, as demonstrated by testing and field experience.
  2. Suitability: Comply with sealant and glass manufacturer's recommendations for selecting glazing sealants and tapes that are suitable for applications indicated and conditions existing at time of installation.
  3. Colors: Provide color of exposed joint sealants to comply with the following:

- a. Provide selections made by Architect from manufacturer's full range of standard colors for products of type indicated.
- B. Elastomeric Glazing Sealant Standard: Provide manufacturer's standard chemically curing, elastomeric sealants that comply with ASTM C 920 requirements.

#### 2.4 GLAZING TAPES

- A. Back-Bedding Mastic Glazing Tape: Preformed, butyl-based elastomeric tape with a solids content of 100 percent, nonstaining and nonmigrating in contact with nonporous surfaces, with or without spacer rod as recommended by tape and glass manufacturers for application indicated, packaged on rolls with a release paper backing, and complying with AAMA 800.
- B. Expanded Cellular Glazing Tape: Closed-cell, polyvinyl chloride foam tape, factory coated with adhesive on both surfaces, packaged on rolls with release liner protecting adhesive, and complying with AAMA 800 for product 810.5.

#### 2.5 GLAZING GASKETS

- A. Lock-Strip Gaskets: Neoprene extrusions in size and shape indicated, fabricated into frames with molded corner units and zipper lock strips, complying with ASTM C 542, black.
- B. Dense Compression Gaskets: Molded or extruded gaskets of material indicated below, complying with standards referenced with name of elastomer indicated below, and of profile and hardness required to maintain watertight seal:
  - 1. Neoprene, ASTM C 864.
  - 2. EPDM, ASTM C 864.
  - 3. Silicone, ASTM C 1115.
  - 4. Thermoplastic polyolefin rubber, ASTM C 1115.
  - 5. Any material indicated above.
- C. Soft Compression Gaskets: Extruded or molded closed-cell, integral-skinned gaskets of material indicated below, complying with ASTM C 509, Type II, black, and of profile and hardness required to maintain watertight seal:
  - 1. Neoprene.
  - 2. EPDM.
  - 3. Silicone.
  - 4. Thermoplastic polyolefin rubber.
  - 5. Any material indicated above.

#### 2.6 MISCELLANEOUS GLAZING MATERIALS

- A. General: Provide products of material, size, and shape complying with referenced glazing standard, requirements of manufacturers of glass and other glazing materials involved for glazing application indicated, and with a proven record of compatibility with surfaces contacted in installation.
- B. Cleaners, Primers and Sealers: Type recommended by sealant or gasket manufacturer.

- C. Setting Blocks: Elastomeric material with a Shore A durometer hardness of 85 plus or minus 5.
- D. Spacers: Elastomeric blocks or continuous extrusions with a Shore A durometer hardness required by glass manufacturer to maintain glass lites in place for installation indicated.
- E. Edge Blocks: Elastomeric material of hardness needed to limit glass lateral movement (side-walking).

## 2.7 FABRICATION OF GLASS AND OTHER GLAZING PRODUCTS

- A. Fabricate glass and other glazing products in sizes required to glaze openings indicated for Project, with edge and face clearances, edge and surface conditions, and bite complying with recommendations of product manufacturer and referenced glazing standard as required to comply with system performance requirements.

## PART 3 - EXECUTION

### 3.1 EXAMINATION

- A. Examine glass framing, with glazier present, for compliance with the following:
  - 1. Manufacturing and installation tolerances, including those for size, squareness, offsets at corners.
  - 2. Presence and functioning of weep system where required.
  - 3. Minimum required face or edge clearances.
  - 4. Effective sealing between joints of glass-framing members.
- B. Do not proceed with glazing until unsatisfactory conditions have been corrected.

### 3.2 PREPARATION

- A. Clean glazing channels and other framing members receiving glass immediately before glazing. Remove coatings that are not firmly bonded to substrates.

### 3.3 GLAZING, GENERAL

- A. Comply with combined recommendations of manufacturers of glass, sealants, gaskets, and other glazing materials, except where more stringent requirements are indicated, including those in referenced glazing publications.
- B. Glazing channel dimensions as indicated on Drawings provide necessary bite on glass, minimum edge and face clearances, and adequate sealant thicknesses, with reasonable tolerances. Adjust as required by Project conditions during installation.
- C. Protect glass from edge damage during handling and installation as follows:
  - 1. Use a rolling block in rotating glass units to prevent damage to glass corners. Do not impact glass with metal framing. Use suction cups to shift glass units within openings; do not raise or drift glass with a pry bar. Rotate glass lites with flares or bevels on bot-

- tom horizontal edges so edges are located at top of opening, unless otherwise indicated by manufacturer's label.
2. Remove damaged glass from Project site and legally dispose of off site. Damaged glass is glass with edge damage or other imperfections that, when installed, weaken glass and impair performance and appearance.
- D. Apply primers to joint surfaces where required for adhesion of sealants, as determined by pre-construction sealant-substrate testing.
- E. Install elastomeric setting blocks in sill rabbets, sized and located to comply with referenced glazing standard, unless otherwise required by glass manufacturer. Set blocks in thin course of compatible sealant suitable for heel bead.
- F. Do not exceed edge pressures stipulated by glass manufacturers for installing glass lites.
- G. Provide spacers for glass sizes larger than 50 united inches (length plus height) as follows:
1. Locate spacers inside, outside, and directly opposite each other. Install correct size and spacing to preserve required face clearances, except where gaskets and glazing tapes are used that have demonstrated ability to maintain required face clearances and comply with system performance requirements.
  2. Provide 1/8-inch minimum bite of spacers on glass and use thickness equal to sealant width. With glazing tape, use thickness slightly less than final compressed thickness of tape.
- H. Provide edge blocking to comply with requirements of referenced glazing publications, unless otherwise required by glass manufacturer.
- I. Set glass lites in each series with uniform pattern, draw, bow, and similar characteristics.
- J. Square cut wedge-shaped gaskets at corners and install gaskets in manner recommended by gasket manufacturer to prevent corners from pulling away; seal corner joints and butt joints with sealant recommended by gasket manufacturer.
- 3.4 TAPE GLAZING
- A. Position tapes on fixed stops so that when compressed by glass their exposed edges are flush with or protrude slightly above sightline of stops.
- B. Install tapes continuously but not in one continuous length. Do not stretch tapes to make them fit opening.
- C. Where framing joints are vertical, cover these joints by applying tapes to heads and sills first and then to jambs. Where framing joints are horizontal, cover these joints by applying tapes to jambs and then to heads and sills.
- D. Place joints in tapes at corners of opening with adjoining lengths butted together, not lapped. Seal joints in tapes with compatible sealant approved by tape manufacturer.

- E. Do not remove release paper from tape until just before each lite is installed.
- F. Center glass lites in openings on setting blocks and press firmly against tape by inserting dense compression gaskets formed and installed to lock in place against faces of removable stops. Start gasket applications at corners and work toward centers of openings.

### 3.5 GASKET GLAZING (DRY)

- A. Fabricate compression gaskets in lengths recommended by gasket manufacturer to fit openings exactly, with stretch allowance during installation.
- B. Secure compression gaskets in place with joints located at corners to compress gaskets producing a weathertight seal without developing bending stresses in glass. Seal gasket joints with sealant recommended by gasket manufacturer.
- C. Install gaskets so they protrude past face of glazing stops.

### 3.6 SEALANT GLAZING (WET)

- A. Install continuous spacers between glass lites and glazing stops to maintain glass face clearances and to prevent sealant from extruding into glass channel weep systems until sealants cure. Secure spacers in place and in position to control depth of installed sealant relative to edge clearance for optimum sealant performance.
- B. Force sealants into glazing channels to eliminate voids and to ensure complete wetting or bond of sealant to glass and channel surfaces.
- C. Tool exposed surfaces of sealants to provide a substantial wash away from glass. Install pressurized gaskets to protrude slightly out of channel to eliminate dirt and moisture pockets.

### 3.7 PROTECTION AND CLEANING

- A. Protect exterior glass from breakage immediately after installation by attaching crossed streamers to framing held away from glass. Do not apply markers to glass surface. Remove nonpermanent labels, and clean surfaces.
- B. Protect glass from contact with contaminating substances resulting from construction operations including weld splatter. If, despite such protection, contaminating substances do come into contact with glass, remove them immediately as recommended by glass manufacturer.
- C. Examine glass surfaces adjacent to or below exterior concrete and other masonry surfaces at frequent intervals during construction, but not less than once a month, for build-up of dirt, scum, alkali deposits, or stains, and remove as recommended by glass manufacturer.
- D. Remove and replace glass that is broken, chipped, cracked, abraded, or damaged in any way, including natural causes, accidents and vandalism, during construction period.

- E. Wash glass on both faces in each area of Project not more than 4 days prior to date scheduled for inspections that establish date of Substantial Completion. Wash glass as recommended by glass manufacturer.

END OF SECTION 08 8000

## SECTION 09 5110 - ACOUSTICAL PANEL CEILINGS

## PART 1 - GENERAL

## 1.1 RELATED DOCUMENTS

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

## 1.2 SUMMARY

- A. This Section includes ceilings composed of acoustical panels and exposed suspension systems.

## 1.3 SUBMITTALS

- A. General: Submit each item in this Article according to the Conditions of the Contract.
- B. Product data for each type of product specified.
- C. Samples for initial selection in the form of manufacturer's color charts consisting of actual acoustical panels or sections of panels and sections of suspension system members showing the full range of colors, textures, and patterns available for each ceiling assembly indicated.
- D. Samples for verification of each type of exposed finish required, prepared on samples of size indicated below. Where finishes involve normal color and texture variations, include sample sets showing the full range of variations expected.
  - 1. 6-inch square samples of each acoustical panel type, pattern, and color.
  - 2. Set of 12-inch long samples of exposed suspension system members, including moldings, for each color and system type required.
- E. Product test reports from a qualified independent testing agency that are based on its testing of current products for compliance of acoustical panel ceilings and components with requirements.

## 1.4 QUALITY ASSURANCE

- A. Installer Qualifications: Engage an experienced Installer who has completed acoustical panel ceilings similar in material, design, and extent to that indicated for this Project and with a record of successful in-service performance.

## 1.5 DELIVERY, STORAGE, AND HANDLING

- A. Deliver acoustical panels and suspension system components to Project site in original, unopened packages and store them in a fully enclosed space where they will be protected against damage from moisture, direct sunlight, surface contamination, and other causes.
- B. Before installing acoustical panels, permit them to reach room temperature and a stabilized moisture content.
- C. Handle acoustical panels carefully to avoid chipping edges or damaging units in any way.

**1.6 PROJECT CONDITIONS**

- A. Space Enclosure and Environmental Limitations: Do not install acoustical panel ceilings until spaces are enclosed and weatherproof, wet-work in spaces is completed and dry, work above ceilings is complete, and ambient temperature and humidity conditions are being maintained at the levels required by manufacturer(s) to eliminate sagging or curling of ceiling panels.

**1.7 COORDINATION**

- A. Coordinate layout and installation of acoustical panels and suspension system components with other construction that penetrates ceilings or is supported by them, including light fixtures, HVAC equipment, fire-suppression system components (if any), and partition assemblies (if any).

**1.8 EXTRA MATERIALS**

- A. Furnish extra materials described below that match products installed, are packaged with protective covering for storage, and are identified with labels clearly describing contents.
1. Acoustical Ceiling Units: Furnish quantity of full-size units equal to 2.0 percent of amount installed.

**PART 2 - PRODUCTS****2.1 ACOUSTICAL CEILING UNITS, GENERAL:**

- A. Standard for Acoustical Ceiling Units: Provide manufacturer's standard units of configuration indicated that comply with ASTM E 12643 classifications as designated by reference to types, patterns, acoustical ratings, and light reflectances, unless otherwise indicated.
- B. Products: Subject to compliance with requirements, provide one of the following:
1. ACT 1: Vinylclad ceiling Tile (Item #670) Armstrong World Industries, or approved equal.
  2. ACT 2: "Cortega" ceiling Tile (Item #769) Armstrong World Industries, or approved equal.

**2.4 METAL SUSPENSION SYSTEMS, GENERAL**

- A. Metal Suspension System Standard: Provide manufacturer's standard metal suspension systems of types, structural classifications, and finishes indicated that comply with applicable ASTM C 635 requirements.
- B. Finishes and Colors: Provide manufacturer's standard factory-applied finish for type of system indicated.
- C. Attachment Devices: Size for 5 times the design load indicated in ASTM C 635, Table 1, Direct Hung unless otherwise indicated.
- D. Wire Hangers, Braces, and Ties: Provide wires complying with the following requirements:
1. Zinc-Coated Carbon Steel Wire: ASTM A 641 (ASTM A 641M), Class 1 zinc coating, soft temper.
  2. Size: Select wire diameter so that its stress at 3 times the hanger design load (ASTM C 635, Table 1, Direct Hung) will be less than the yield stress of wire, but provide not less than 0.106-inch diameter (12 gage) wire.

- E. Sheet-Metal Edge Moldings and Trim: Type and profile indicated, or if not indicated, manufacturer's standard moldings for edges and penetrations that fit acoustical panel edge details and suspension systems indicated; formed from sheet metal of same material and finish as that used for exposed flanges of suspension system runners.
  - 1. ACT: Wall Molding
    - a. Provide compatible trim for Prelude grid.

## 2.5 NON-FIRE-RESISTANCE-RATED, DIRECT-HUNG SUSPENSION SYSTEMS

- A. Wide-Face, Capped, Double-Web, Steel Suspension System: Main and cross runners roll formed from hot dipped galvanized, cold-rolled steel sheet, with prefinished 15/16-inch wide metal caps on flanges; other characteristics as follows:
  - 1. Structural Classification: Intermediate-duty system.
  - 2. End Condition of Cross Runners: Override (stepped) type.
  - 3. Cap Material and Finish: Hot dipped galvanized steel sheet painted white.
- B. Products: Subject to compliance with requirements, provide one of the following:
  - 1. Standard Grid.
    - a. Armstrong Industries: "Prelude XL"; 15/16" (white)
- C. Warranty: Manufacturer's standard limited 10-year warranty against rusting of grid.

## PART 3 - EXECUTION

### 3.1 EXAMINATION

- A. Examine substrates and structural framing to which acoustical panel ceilings attach or abut, with Installer present, for compliance with requirements specified in this and other Sections that affect ceiling installation and anchorage. Do not proceed with installation until unsatisfactory conditions have been corrected.

### 3.2 PREPARATION

- A. Coordination: Furnish layouts for cast-in-place anchors, clips, and other ceiling anchors whose installation is specified in other Sections.
  - 1. Furnish cast-in-place anchors and similar devices to other trades for installation well in advance of time needed for coordinating other work.
- B. Measure each ceiling area and establish the layout of acoustical panels to balance border widths at opposite edges of each ceiling. Avoid using less-than-half-width panels at borders, and conform to the layout shown on reflected ceiling plans.

### 3.3 INSTALLATION

- A. General: Install acoustical panel ceilings to comply with publications referenced below per manufacturer's instructions and CISCA "Ceiling Systems Handbook."
  - 1. Standard for Ceiling Suspension System Installations: Comply with ASTM C 636.

- B. Suspend ceiling hangers from building's structural members and as follows:
1. Install hangers plumb and free from contact with insulation or other objects within ceiling plenum that are not part of the supporting structure or of the ceiling suspension system.
  2. Splay hangers only where required to miss obstructions; offset resulting horizontal forces by bracing, countersplaying, or other equally effective means.
  3. Where width of ducts and other construction within ceiling plenum produces hanger spacings that interfere with the location of hangers at spacings required to support standard suspension system members, install supplemental suspension members and hangers in the form of trapezes or equivalent devices. Size supplemental suspension members and hangers to support ceiling loads within performance limits established by referenced standards and publications.
  4. Secure wire hangers to ceiling suspension members and to supports above with a minimum of 3 tight turns. Connect hangers either directly to structures or to inserts, eye screws, or other devices that are secure, that are appropriate for substrate, and that will not deteriorate or otherwise fail due to age, corrosion, or elevated temperatures.
  5. Do not attach hangers to steel roof deck. Attach hangers to structural members.
  6. Space hangers not more than 48 inches o.c. along each member supported directly from hangers, unless otherwise shown; and provide hangers not more than 8 inches from ends of each member.
- C. Install edge moldings and trim of type indicated at perimeter of acoustical ceiling area and where necessary to conceal edges of acoustical panels.
1. Screw attach moldings to substrate at intervals not over 16 inches o.c. and not more than 3 inches from ends, leveling with ceiling suspension system to a tolerance of 1/8 inch in 12 feet. Miter corners accurately and connect securely.
  2. Do not use exposed fasteners, including pop rivets, on moldings and trim.
- D. Install suspension system runners so they are square and securely interlocked with one another. Remove and replace dented, bent, or kinked members.
- E. Install acoustical panels with undamaged edges and fitted accurately into suspension system runners and edge moldings. Scribe and cut panels at borders and penetrations to provide neat, precise fit.
1. Arrange directionally patterned acoustical panels as follows:
    - a. Install panels with pattern running in one direction parallel to long axis of space.
  2. For square-edged panels, install panels with edges fully hidden from view by flanges of suspension system runners and moldings.

### 3.4 CLEANING

- A. Clean exposed surfaces of acoustical panel ceilings, including trim, edge moldings, and suspension system members. Comply with manufacturer's instructions for cleaning and touchup of minor finish damage. Remove and replace ceiling components that cannot be successfully cleaned and repaired to permanently eliminate evidence of damage.

END OF SECTION 09 5110

## SECTION 09 9000 - PAINTING

## PART 1 - GENERAL

## 1.1 RELATED DOCUMENTS

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

## 1.2 SUMMARY

- A. This Section includes surface preparation and field painting of the following:
  - 1. Exposed exterior items and surfaces.
  - 2. Exposed interior items and surfaces.
  - 3. Surface preparation, priming, and finish coats specified in this Section are in addition to shop priming and surface treatment specified in other Sections.
- B. Paint exposed surfaces, except where the paint schedules indicate that a surface or material is not to be painted or is to remain natural. If the paint schedules do not specifically mention an item or a surface, paint the item or surface the same as similar adjacent materials or surfaces whether or not schedules indicate colors. If the schedules do not indicate color or finish, the Architect will select from paint manufacturer's standard colors and finishes available.
- C. Do not paint prefinished items, concealed surfaces, finished metal surfaces, operating parts, and labels.
  - 1. Labels: Do not paint over Underwriters Laboratories (UL), Factory Mutual (FM), or other code-required labels or equipment name, identification, performance rating, or nomenclature plates.

## 1.3 DEFINITIONS

- A. General: Standard coating terms defined in ASTM D 16 apply to this Section.
  - 1. Flat refers to a lusterless or matte finish with a gloss range below 15 when measured at an 85-degree meter.
  - 2. Eggshell refers to low-sheen finish with a gloss range between 5 and 20 when measured at a 60-degree meter.
  - 3. Satin refers to low-sheen finish with a gloss range between 15 and 35 when measured at a 60-degree meter.
  - 4. Semigloss refers to medium-sheen finish with a gloss range between 30 and 65 when measured at a 60-degree meter.
  - 5. Full gloss refers to high-sheen finish with a gloss range more than 65 when measured at a 60-degree meter.

#### 1.4 SUBMITTALS

- A. Product Data: For each paint system specified. Include block fillers and primers.
  - 1. Material List: Provide an inclusive list of required coating materials. Indicate each material and cross-reference specific coating, finish system, and application. Identify each material by manufacturer's catalog number and general classification.
  - 2. Manufacturer's Information: Provide manufacturer's technical information, including label analysis and instructions for handling, storing, and applying each coating material proposed for use.
- B. Samples for Initial Selection: Manufacturer's color charts showing the full range of colors available for each type of finish-coat material indicated.

#### 1.5 QUALITY ASSURANCE

- A. Applicator Qualifications: Engage an experienced applicator who has completed painting system applications similar in material and extent to that indicated for this Project with a record of successful in-service performance.
- B. Source Limitations: Obtain block fillers, primers, and undercoat materials for each coating system from the same manufacturer as the finish coats.
- C. Benchmark Samples (Mockups): Provide a full-coat benchmark finish sample of each type of coating and substrate required on the Project. Comply with procedures specified in PDCA P5.
  - 1. The Architect will select one room surface to represent surfaces and conditions for each type of coating and substrate to be painted.
    - a. Wall Surfaces: Provide samples on at least 100 sq. ft. of wall surface.
    - b. Small Areas and Items: The Architect will designate an item or area as required.
  - 2. After permanent lighting and other environmental services have been activated, apply coatings in this room or to each surface according to the Schedule or as specified. Provide required sheen, color, and texture on each surface.
  - 3. Final approval of colors will be from job-applied samples.

#### 1.6 DELIVERY, STORAGE, AND HANDLING

- A. Deliver materials to the Project Site in manufacturer's original, unopened packages and containers bearing manufacturer's name and label, and the following information:
  - 1. Product name or title of material.
  - 2. Product description (generic classification or binder type).
  - 3. Manufacturer's stock number and date of manufacture.
  - 4. Contents by volume, for pigment and vehicle constituents.
  - 5. Thinning instructions.
  - 6. Application instructions.
  - 7. Color name and number.
  - 8. VOC content.

- B. Store materials not in use in tightly covered containers in a well-ventilated area at a minimum ambient temperature of 45 deg F. Maintain containers used in storage in a clean condition, free of foreign materials and residue.
  - 1. Protect from freezing. Keep storage area neat and orderly. Remove oily rags and waste daily. Take necessary measures to ensure that workers and work areas are protected from fire and health hazards resulting from handling, mixing, and application.

#### 1.7 PROJECT CONDITIONS

- A. Apply water-based paints only when the temperature of surfaces to be painted and surrounding air temperatures are between 50 and 90 deg F.
- B. Apply solvent-thinned paints only when the temperature of surfaces to be painted and surrounding air temperatures are between 45 and 95 deg F.
- C. Do not apply paint in rain, fog, or mist; or when the relative humidity exceeds 85 percent; or at temperatures less than 5 deg F above the dew point; or to damp or wet surfaces.
  - 1. Painting may continue during inclement weather if surfaces and areas to be painted are enclosed and heated within temperature limits specified by manufacturer during application and drying periods.

### PART 2 - PRODUCTS

#### 2.1 MANUFACTURERS

- A. Unless otherwise specified, paint materials and systems specified herein are those of Porter Paint Co. (Porter) and/or Sherwin Williams. Subject to compliance with requirements, equivalent materials and systems by one of the following manufacturers are also acceptable:
  - 1. Devoe and Reynolds Co. (Devoe).
  - 2. Benjamin Moore and Co. (Moore).
  - 3. Pratt and Lambert (P & L).
  - 4. Glidden.
  - 5. Sherwin Williams
  - 6. ICI Paints

#### 2.2 PAINT MATERIALS, GENERAL

- A. Material Compatibility: Provide block fillers, primers, undercoats, and finish-coat 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.
- B. Material Quality: Provide manufacturer's best-quality paint material of the various coating types specified. Paint-material containers not displaying manufacturer's product identification will not be acceptable.
- C. Colors: Provide color selections made by the Architect.

### 2.3 LEAD CONTENT

- A. The paint shall comply with the latest requirements of the Federal Government for maximum allowable lead content. Such compliance shall be stated on the MSDS and container clearly identifying the product.

### 2.4 VOC COMPLIANCE

- A. The paint shall comply with the latest requirements of Federal, Florida State, City or Local Government requirements for the maximum allowable VOC content at the time of purchase. Such compliance shall be stated on the MSDS and container clearly identifying the product.

## PART 3 - EXECUTION

### 3.1 EXAMINATION

- A. Examine substrates, areas, and conditions, with the Applicator present, under which painting will be performed for compliance with paint application requirements.
  - 1. Do not begin to apply paint until unsatisfactory conditions have been corrected and surfaces receiving paint are thoroughly dry.
  - 2. Start of painting will be construed as the Applicator's acceptance of surfaces and conditions within a particular area.
- B. Coordination of Work: Review other Sections in which primers are provided to ensure compatibility of the total system for various substrates. On request, furnish information on characteristics of finish materials to ensure use of compatible primers.
  - 1. Notify the Architect about anticipated problems using the materials specified over substrates primed by others.

### 3.2 PREPARATION

- A. General: Remove hardware and hardware accessories, plates, machined surfaces, lighting fixtures, and similar items already installed that are not to be painted. If removal is impractical or impossible because of the size or weight of the item, provide surface-applied protection before surface preparation and painting.
  - 1. After completing painting operations in each space or area, reinstall items removed using workers skilled in the trades involved.
- B. Cleaning: Before applying paint or other surface treatments, clean the substrates of substances that could impair the bond of the various coatings. Remove oil and grease before cleaning.
  - 1. Schedule cleaning and painting so dust and other contaminants from the cleaning process will not fall on wet, newly painted surfaces.
- C. Surface Preparation: Clean and prepare surfaces to be painted according to manufacturer's written instructions for each particular substrate condition and as specified.
  - 1. Provide barrier coats over incompatible primers or remove and reprime.
  - 2. Cementitious Materials: Prepare concrete and concrete masonry surfaces to be painted. Remove efflorescence, chalk, dust, dirt, grease, oils, and release agents. Roughen as required to remove glaze. If hardeners or sealers have been used to improve curing, use mechanical methods of surface preparation.

- a. Use abrasive blast-cleaning methods if recommended by paint manufacturer.
  - b. Determine alkalinity and moisture content of surfaces by performing appropriate tests. If surfaces are sufficiently alkaline to cause the finish paint to blister and burn, correct this condition before application. Do not paint surfaces where moisture content exceeds that permitted in manufacturer's written instructions.
3. Wood: Clean surfaces of dirt, oil, and other foreign substances with scrapers, mineral spirits, and sandpaper, as required. Sand surfaces exposed to view smooth and dust off.
    - a. Seal tops, bottoms, and cutouts of unprimed wood doors with a heavy coat of varnish or sealer immediately on delivery.
  4. Ferrous Metals: Clean ungalvanized ferrous-metal surfaces that have not been shop coated; remove oil, grease, dirt, loose mill scale, and other foreign substances. Use solvent or mechanical cleaning methods that comply with the Steel Structures Painting Council's (SSPC) recommendations.
    - a. Touch up bare areas and shop-applied prime coats that have been damaged. Wire-brush, clean with solvents recommended by paint manufacturer, and touch up with the same primer as the shop coat.
  5. Galvanized Surfaces: Clean galvanized surfaces with nonpetroleum-based solvents so surface is free of oil and surface contaminants. Remove pretreatment from galvanized sheet metal fabricated from coil stock by mechanical methods.
- D. Materials Preparation: Mix and prepare paint materials according to manufacturer's written instructions.
1. Maintain containers used in mixing and applying paint in a clean condition, free of foreign materials and residue.
  2. Stir material before application to produce a mixture of uniform density. Stir as required during application. Do not stir surface film into material. If necessary, remove surface film and strain material before using.
  3. Use only thinners approved by paint manufacturer and only within recommended limits.

### 3.3APPLICATION

- A. General: Apply paint according to manufacturer's written instructions. Use applicators and techniques best suited for substrate and type of material being applied.
1. Paint colors, surface treatments, and finishes are indicated in the schedule.
  2. Do not paint over dirt, rust, scale, grease, moisture, scuffed surfaces, or conditions detrimental to formation of a durable paint film.
  3. Provide finish coats that are compatible with primers used.
  4. The term "exposed surfaces" includes areas visible when permanent or built-in fixtures, convector covers, grilles, and similar components are in place. Extend coatings in these areas, as required, to maintain the system integrity and provide desired protection.
  5. Paint surfaces behind movable equipment and furniture the same as similar exposed surfaces. Before the final installation of equipment, paint surfaces behind permanently fixed equipment or furniture with prime coat only.
  6. Paint interior surfaces of ducts with a flat, nonspecular black paint where visible through registers or grilles.

7. Paint back sides of access panels and removable or hinged covers to match exposed surfaces.
  8. Finish exterior doors on tops, bottoms, and side edges the same as exterior faces.
  9. Sand lightly between each succeeding enamel or varnish coat.
- B. Scheduling Painting: Apply first coat to surfaces that have been cleaned, pretreated, or otherwise prepared for painting as soon as practicable after preparation and before subsequent surface deterioration.
1. The number of coats and the film thickness required are the same regardless of application method. Do not apply succeeding coats until the previous coat has cured as recommended by the manufacturer. If sanding is required to produce a smooth, even surface according to manufacturer's written instructions, sand between applications.
  2. Omit primer on metal surfaces that have been shop primed and touchup painted.
  3. If undercoats, stains, or other conditions show through final coat of paint, apply additional coats until paint film is of uniform finish, color, and appearance. Give special attention to ensure edges, corners, crevices, welds, and exposed fasteners receive a dry film thickness equivalent to that of flat surfaces.
  4. Allow sufficient time between successive coats to permit proper drying. Do not recoat surfaces until paint has dried to where it feels firm, does not deform or feel sticky under moderate thumb pressure, and where application of another coat of paint does not cause the undercoat to lift or lose adhesion.
- C. Application Procedures: Apply paints and coatings by brush, roller, spray, or other applicators according to manufacturer's written instructions. All metal surfaces shall be sprayed except that piping, conduit, and ductwork may be brushed or rolled.
1. Brushes: Use brushes best suited for the type of material applied. Use brush of appropriate size for the surface or item being painted.
  2. Rollers: Use rollers of carpet, velvet back, or high-pile sheep's wool as recommended by the manufacturer for the material and texture required.
  3. Spray Equipment: Use airless spray equipment with orifice size as recommended by the manufacturer for the material and texture required.
- D. Minimum Coating Thickness: Apply paint materials no thinner than manufacturer's recommended spreading rate. Provide the total dry film thickness of the entire system as recommended by the manufacturer.
- E. Electrical items to be painted include, but are not limited to, the following:
1. Exposed conduit and fittings.
  2. Exterior switchgear.
- F. Block Fillers: Apply block fillers to concrete masonry block at a rate to ensure complete coverage with pores filled.
- G. Prime Coats: Before applying finish coats, apply a prime coat of material, as recommended by the manufacturer, to material that is required to be painted or finished and that has not been prime coated by others. Recoat primed and sealed surfaces where evidence of suction spots or unsealed

areas in first coat appears, to ensure a finish coat with no burn through or other defects due to insufficient sealing.

- H. Pigmented (Opaque) Finishes: Completely cover surfaces as necessary to provide a smooth, opaque surface of uniform finish, color, appearance, and coverage. Cloudiness, spotting, holidays, laps, brush marks, runs, sags, ropiness, or other surface imperfections will not be acceptable.
- I. Transparent (Clear) Finishes: Use multiple coats to produce a glass-smooth surface film of even luster. Provide a finish free of laps, runs, cloudiness, color irregularity, brush marks, orange peel, nail holes, or other surface imperfections.
  - 1. Provide satin finish for final coats.
- J. Stipple Enamel Finish: Roll and redistribute paint to an even and fine texture. Leave no evidence of rolling, such as laps, irregularity in texture, skid marks, or other surface imperfections.
- K. Completed Work: Match approved samples for color, texture, and coverage. Remove, refinish, or repaint work not complying with requirements.

### 3.4 FIELD QUALITY CONTROL

- A. The Owner reserves the right to invoke the following test procedure at any time and as often as the Owner deems necessary during the period when paint is being applied:
  - 1. The Owner will engage the services of an independent testing agency to sample the paint material being used. Samples of material delivered to the Project will be taken, identified, sealed, and certified in the presence of the Contractor.
  - 2. The testing agency will perform appropriate tests for the following characteristics as required by the Owner:
    - a. Quantitative material analysis.
    - b. Abrasion resistance.
    - c. Apparent reflectivity.
    - d. Flexibility.
    - e. Washability.
    - f. Absorption.
    - g. Accelerated weathering.
    - h. Dry opacity.
    - i. Accelerated yellowness.
    - j. Recoating.
    - k. Skinning.
    - l. Color retention.
    - m. Alkali and mildew resistance.
  - 3. The Owner may direct the Contractor to stop painting if test results show material being used does not comply with specified requirements. The Contractor shall remove noncomplying paint from the site, pay for testing, and repaint surfaces previously coated with the rejected paint. If necessary, the Contractor may be required to remove rejected paint from previously painted surfaces if, on repainting with specified paint, the 2 coatings are incompatible.

### 3.5 CLEANING

- A. Cleanup: At the end of each workday, remove empty cans, rags, rubbish, and other discarded paint materials from the site.
  - 1. After completing painting, clean glass and paint-spattered surfaces. Remove spattered paint by washing and scraping. Be careful not to scratch or damage adjacent finished surfaces.

### 3.6 PROTECTION

- A. Protect work of other trades, whether being painted or not, against damage by painting. Correct damage by cleaning, repairing or replacing, and repainting, as approved by Architect.
- B. Provide "Wet Paint" signs to protect newly painted finishes. Remove temporary protective wrappings provided by others to protect their work after completing painting operations.
  - 1. At completion of construction activities of other trades, touch up and restore damaged or defaced painted surfaces. Comply with procedures specified in PDCA P1.

### 3.7 PAINT SCHEDULE

- A. General: Provide the following paint systems for the various substrates, as indicated.
  - 1. Exterior and Interior Hollow Metal Doors, Door Frames, and Window Frames: Semi-Gloss Acrylic Enamel Finish.
    - a. Prime Coat: Spot Prime Scratched or Abraded Areas Only – Rust Inhibitive Alkyd Metal Primer.
      - 1) Porter: 296 Glyptex Rust Inhibitive Metal Primer.
    - b. First and Second Finish Coats: Semi-Gloss Acrylic Enamel.
      - 1) Porter: 919 Advantage 900 Interior/Exterior Semi-Gloss Acrylic Enamel.
  - 2. Exterior Galvanized Metal: Acrylic Gloss Exterior Paint.
    - a. Preparation: Wipe down with naphtha; apply Porter: 5 Galva-Prep; wash clean.
    - b. Prime Coat: Rust Inhibitive Primer.
      - 1) Porter: 215 Rust Screen Acrylic Metal Primer.
    - c. First and Second Finish coats: High-Sheen Gloss Acrylic Enamel.
      - 1) Porter: 619 Acri-Shield Gloss Exterior Acrylic Paint.
  - 3. Exterior Concrete Block: Flat Acrylic Paint
    - a. Prime Coat: Protectosil CHEM-TRETE; PB VOC by EVONIK INDUSTRIES
    - b. First and Second Finish Coats: Flat Acrylic Exterior Paint.
      - 1) Porter 520 Series Acri-Shield Flat Exterior Acrylic paint.

4. Interior Concrete Block:
  - a. Prime Coat: Block Filler.
    - 1) Porter: 896 Acri-Fil Block Filler.
  - b. First and Second Finish Coats: Semi-Gloss Acrylic Epoxy.
    - 1) Porter: 9549 Porter Guard WB Acrylic Epoxy.
  
5. Interior Gypsum Drywall Ceilings and Walls; Satin-Gloss Vinyl Acrylic Paint.
  - a. Prime Coat: Vinyl Acrylic Drywall Sealer.
    - 1) Porter: 426 Vinyl Acrylic Drywall Sealer.
  
  - b. First and Second Finish Coats: Satin-Gloss Vinyl Acrylic Paint.
    - 1) Porter: 999 Silken Touch Teflon-Modified Vinyl Acrylic Interior Paint.
  
6. Exterior Aluminum; Satin Acrylic Enamel Finish.
  - a. Preparation: Acid Etch with Porter: 33 Aluma-Prep.
  - b. Prime Coat:
    - 1) Porter: 215 Rust Screen Acrylic Metal Primer.
  - c. First Finish Coat: Satin Acrylic Exterior Paint.
    - 1) Porter: 739 Acri-Shield Satin Exterior Acrylic paint.
  
7. Interior Concrete Slab for Workout Rooms:
  - a. Equal to Sherwin Williams Armorseal 8100 Series 2-part epoxy.
  
8. Interior Concrete Slab Locker Area; Janitor; Men and Women Locker Rooms:
  - a. Equal to American Safety Technologies; AS-175 Antislip Water Based Epoxy

END OF SECTION 09 9000

## SECTION 10 1400 – SIGNAGE

## PART 1 - GENERAL

## 1.1 RELATED DOCUMENTS

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

## 1.2 SUMMARY

- A. This Section includes the following signs:
  - 1. Panel signs.
  - 2. Dimensional letters and numbers.
  - 3. Post-mounted metal disabled parking space signs.

## 1.3 SUBMITTALS

- A. General: Submit the following according to the Conditions of the Contract.
- B. Product data for each type of sign specified, including details of construction relative to materials, dimensions of individual components, profiles, and finishes.
- C. Shop drawings showing fabrication and erection of signs. Include plans, elevations, and large-scale sections of typical members and other components. Show anchors, grounds, layout, reinforcement, accessories, and installation details.
  - 1. Provide message list for each sign required, including large-scale details of wording and lettering layout.
  - 2. Templates: Furnish full-size spacing templates for individually mounted dimensional letters and numbers.
- D. Samples: Provide the following samples of each sign component for initial selection of color, pattern and surface texture as required and for verification of compliance with requirements indicated.
  - 1. Samples for initial selection of color, pattern, and texture:
    - a. Cast Acrylic Sheet and Melamine Sheet: Manufacturer's color charts consisting of actual sections of material including the full range of colors available for each material required.
    - b. Aluminum: Samples of each finish type and color, on 6-inch-long sections of extrusions and not less than 4-inch squares of sheet or plate, showing the full range of colors available.

2. Samples for verification of color, patterns, and texture selected and compliance with requirements indicated:
  - a. Cast Acrylic Sheet and Melamine Sheet: Provide a sample panel not less than 8-1/2 inches by 11 inches for each material, color, texture, and pattern required. On each panel include a representative sample of the graphic image process required, showing graphic style, and colors and finishes of letters, numbers, and other graphic devices.
  - b. Dimensional Letters: Provide full-size representative samples of each dimensional letter type required, showing letter style, color, and material finish and method of attachment.

#### 1.4 QUALITY ASSURANCE

- A. Sign Fabricator Qualifications: Firm experienced in producing signs similar to those indicated for this Project, with a record of successful in-service performance, and sufficient production capacity to produce sign units required without causing delay in the Work.
- B. Single-Source Responsibility: For each separate sign type required, obtain signs from one source of a single manufacturer.
- C. All signs shall conform to all requirements of the Americans with Disabilities Act Accessibility Guidelines for Buildings and Facilities, Articles 4.1.2 (7) and 4.30.1 through 4.30.7 (1) inclusive.

#### 1.5 PROJECT CONDITIONS

- A. Field Measurements: Take field measurements prior to preparation of shop drawings and fabrication to ensure proper fitting. Show recorded measurements on final shop drawings. Coordinate fabrication schedule with construction progress to avoid delay.

### PART 2 - PRODUCTS

#### 2.1 MANUFACTURERS

- A. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
  1. Manufacturers of Panel Signs:
    - a. Andco Industries Corp.
    - b. APCO Graphics, Inc.
    - c. ASI Sign Systems, Inc.
    - d. Best Manufacturing Company
    - e. Mohawk Sign Systems

## 2. Manufacturers of Dimensional Letters:

- a. Andco Industries Corp.
- b. A.R.K. Ramos Manufacturing Company, Inc.
- c. ASI Sign Systems, Inc.
- d. Metal Arts
- f. The Southwell Company

## 2.2 PANEL SIGNS FOR ROOM IDENTIFICATION

- A. Panel signs shall be minimum 1/8" thick (excluding thickness of raised sign letters) melamine or acrylic plastic with 1/32" thick raised characters with Grade 2 Braille.
- B. At sign manufacturer's option, the minimum 1/8" thickness of the panel can be achieved by laminating a base layer of melamine or acrylic to the top layer containing the integral raised characters. Edges shall be ground smooth.
- C. The characters and background of signs shall be eggshell, matte, or other non-glare finish. Characters and symbols shall contrast with the background – either light characters on a dark background or dark characters on a light background. Submit manufacturer's standard palette of colors meeting these requirements to Architect for selection.
- D. Graphics and text are to be etched to achieve correctly spaced and accurately reproduced sharp, true characters and Braille. The text shall be an integral part of the sign and not applied to the plate with adhesive or chemicals. Text height is to be determined within the range of 5/8" up to 2". Graphics are etched into the face prior to the application of the background color.
- E. Room identification signs are to be provided for MEN and WOMEN Restrooms, JANITOR ROOM; and as otherwise indicated on drawings.
- F. In addition to a room name sign provide pictograms of the international symbol of accessibility.

Example:

Room Name Sign: Men's Restroom

Pictogram: Accessibility Symbol

- G. Fabrication; the sign size shall be approximately 4" x 8". Sign edges are to be straight and free from saw marks or any other imperfections. Corners shall be rounded, with 1/4" to 3/8" radius.

### 2.3 DIMENSIONAL LETTERS AND NUMBERS

- A. Cast Letters and Numbers: Form individual letters and numbers by casting aluminum. Produce characters with smooth, flat faces, sharp corners, and precisely formed lines and profiles, free from pits, scale, sand holes, or other defects. Cast lugs into the back of characters and tap to receive threaded mounting studs. Comply with requirements indicated for finish, style, and size.
- B. Finish: High gloss polyurethane enamel in custom matched colors (two, maximum) to be selected by Architect.
- C. Typeface: CALIBRI.
- D. Sizes: 6" high x ½" thick; 8" high x 1/2" thick; in locations indicated on drawings.

### 2.4 DISABLED PARKING SPACE SIGNS

- E. Post mounted handicapped parking space signs shall be provided for each accessible parking space as indicated on the drawings.
- F. Signs shall be constructed of 18 gauge bonderized steel with baked enamel finish and screen printed copy.
- G. Signs shall bear the international symbol of accessibility of top half of sign (blue background with white symbol) and the caption "PARKING BY DISABLED PERMIT ONLY" on the bottom half of the sign (white background with blue lettering). In addition, sign shall state "\$258 FINE, F.S. 318.14."
- H. Main sign size to be 12" wide x 18" high, with 12" wide by 6" high separate sign stating fine mounted below main sign.
- I. Posts to be galvanized steel "U" channel; weight 2.5 lbs. Per foot minimum. Height to be 12 feet overall.

## PART 3 - EXECUTION

### 3.1 INSTALLATION

- A. General: Locate sign units and accessories where indicated, using mounting methods of the type described and in compliance with the manufacturer's instructions.
- B. Install signs level, plumb, and at the height indicated, with sign surfaces free from distortion or other defects in appearance.
- C. Room Identification Signs: Mount on adjoining walls and locate signs adjacent to the latch side of the door. In case of conflicts with closely spaced doors, with vision panels or where there is no wall space to the latch side of the door, notify Architect. Verify all sign locations with Architect prior to installation.

- D. Wall Mounted Signs: Attach signs to wall surfaces using a minimum of two stainless steel screws. For exterior signs, use four stainless steel screws. Use expansion shields for screws set in masonry; use "Molly" type hollow wall fasteners for screws set in gypsum board or plaster.
- E. Mounting shall be at a height of 60" to the centerline of the sign (to centerline of top sign when two signs are mounted one above the other).
- F. Dimensional Letters and Numbers: Letters to be mounted on custom-formed curved aluminum tube or angle mechanically fastened to Mapes aluminum canopy. Lighting fixture and rough in work shall also be included in this allowance. Details to be provided at later date.
- G. Projected Mounting: Mount letters at a 1" projection distance from the wall surface indicated.
- H. Disabled Parking Space Signs: Install in locations and at mounting heights indicated on drawings.

### 3.2 CLEANING AND PROTECTION

- A. After installation, clean soiled sign surfaces according to the manufacturer's instruction. Protect units from damage until acceptance by the Owner.

END OF SECTION 101400

## SECTION 10 5220 - FIRE EXTINGUISHERS, CABINETS, AND ACCESSORIES

## PART 1 – GENERAL

## 1.1 RELATED DOCUMENTS

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

## 1.2 SUMMARY

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

## 1.3 SUBMITTALS

- A. General: Submit the following according to the Conditions of the Contract.
- B. Product data for cabinets include rough-in dimensions, details showing mounting methods, relationships of box and trim to surrounding construction, door hardware, cabinet type and materials, trim style, door construction, panel style, and materials.
- C. Samples for initial selection purposes in the form of manufacturer's color charts consisting of sections of units showing full range of colors, textures, and patterns available for each type of cabinet finish indicated or exposed to view.

## 1.4 QUALITY ASSURANCE

- A. Single-Source Responsibility: Obtain extinguishers and cabinets from one source from a single manufacturer.
- B. UL-Listed Products: Fire extinguishers shall be UL listed with UL listing mark for type, rating, and classification of extinguisher.

## PART 2 – PRODUCTS

## 2.1 MANUFACTURERS

- A. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
  - 1. J.L. Industries.
  - 2. Larsen's Manufacturing Co.
  - 3. Modern Metal Products by Muckle.
  - 4. Potter-Roemer, Inc.
  - 5. Samson Metal Products, Inc.

## 2.2 FIRE EXTINGUISHERS

- A. General: Provide fire extinguishers for each cabinet and other locations indicated, in colors and finishes selected by Architect from manufacturer's standard, that comply with authorities having jurisdiction.

- B. Multipurpose Dry Chemical Type: UL-rated 2-A:10:B:C, 5-lb nominal capacity, in enameled steel container.

### 2.3 CABINETS

- A. Construction: Manufacturer's standard box, with trim, frame, door, and hardware to suit cabinet type, trim style, and door style indicated. Weld joints and grind smooth. Miter and weld perimeter door frames.
- B. Fire-Rated Cabinets: UL listed with UL listing mark with fire-resistance rating of wall where it is installed. Provide wherever cabinet is to be installed in a fire-rated wall or partition.
- C. Cabinet Type: Suitable for containing the following:
  - 1. Fire extinguisher.
- D. Cabinet Mounting: Suitable for the following mounting conditions:
  - 1. Surface-Mounted.
- E. Trim Style: Fabricate trim in one piece with corners mitered, welded, and ground smooth.
  - 1. Exposed Trim: One-piece combination trim and perimeter door frame overlapping surrounding wall surface with exposed trim face and wall return at outer edge (backbend).
    - a. Provide 2-1/2 inch rolled edge.
- F. Door Material and Construction: Manufacturer's standard door construction, of material indicated, coordinated with cabinet types and trim styles selected.
  - 1. Enameled Steel: Manufacturer's standard finish, hollow steel door construction with tubular stiles and rails.
- G. Identify fire extinguisher in cabinet with FIRE EXTINGUISHER lettering applied to door. Provide lettering to comply with authorities having jurisdiction for letter style, color, size, spacing, and location.
  - 1 Application Process: Silk screen.
  - 2. Lettering Style: Horizontal
  - 3. Lettering Color: White.
- H. Door Style: Manufacturer's standard design.
  - 1. Full-Glass Panel: Tempered glass, 1/8 inch thick.
- I. Door Hardware: Provide manufacturer's standard door-operating hardware of proper type for cabinet type, trim style, and door material and style indicated. Provide either lever handle with cam-action latch, or exposed or concealed door pull and friction latch. Provide concealed or continuous-type hinge permitting door to open 180 degrees.

### 2.4 FINISHES FOR CABINETS, GENERAL

- A. Comply with NAAMM "Metal Finishes Manual" for recommendations relative to applying and designating finishes.
- B. Protect mechanical finishes on exposed surfaces from damage by applying temporary strippable protective covering prior to shipping.

### 2.5 STEEL CABINET FINISHES

- A. Surface Preparation: Solvent-clean surfaces complying with SSPS-SP 1 to remove dirt, oil, grease, and other contaminants that could impair paint bond. Remove mill scale and rust, if present, from uncoated steel, complying with SSPC-SP 5 (white metal blast cleaning) or SSPC-SP 8 (pickling).
- B. Factory-Priming for Field-Painted Finish: Apply shop primer specified below immediately following surface preparation and pretreatment.

1. Shop Primer: Manufacturer's or fabricator's standard fast-curing, lead-free, universal primer, selected for resistance to normal atmospheric corrosion, for compatibility with substrate and field-applied finish paint system indicated, and for capability to provide a sound foundation for field-applied topcoats despite prolonged exposure.
- C. Baked-Enamel Finish: Immediately after cleaning and pretreatment, apply manufacturer's standard two-coat baked-enamel finish consisting of prime coat and thermosetting topcoat. Comply with paint manufacturer's instructions for applying and baking to achieve a minimum dry film thickness of 2.0 mils.
  1. Color: White. Paint the following:
    - a. Exterior of cabinet.
    - b. Interior of cabinet.

### PART 3 – EXECUTION

#### 3.1 EXAMINATION

- A. Examine walls and partitions for thickness and framing for cabinets to verify cabinet depth and mounting prior to cabinet installation.
- B. Do not proceed until unsatisfactory conditions have been corrected.

#### 3.2 INSTALLATION

- A. Follow manufacturer's printed instructions for installation.
- B. Install in locations indicated. Each extinguisher requires a cabinet. Mount cabinet with bottom edge of trim located 32" above finished floor.
  1. Prepare recesses in walls for cabinets as required by type and size of cabinet and style of trim and to comply with manufacturer's instructions. Recesses in masonry walls shall be neatly sawcut.
  2. Fasten mounting brackets and cabinets to structure, square and plumb.

END OF SECTION 10 5220

## SECTION 10 2800 - TOILET, BATH, AND LAUNDRY ACCESSORIES

## PART 1 - GENERAL

## 1.1 SECTION REQUIREMENTS

- A. Submittals: Product Data.

## PART 2 - PRODUCTS

## 2.1 MATERIALS

- A. Stainless Steel: ASTM A 666, Type 304, No. 4 finish (satin), 0.0312-inch (0.8-mm) minimum nominal thickness, unless otherwise indicated.
- B. Mirror Glass: ASTM C 1036, Type I, Class 1, Quality q2, nominal 6.0 mm thick, with silvering, electroplated copper coating, and protective organic coating complying with FS DD-M-411.
- C. Galvanized Steel Mounting Devices: ASTM A 153/A 153M, hot-dip galvanized after fabrication.
- D. Fasteners: Screws, bolts, and other devices of same material as accessory unit, tamper and theft resistant when exposed, and of galvanized steel when concealed.

## 2.2 TOILET AND BATH ACCESSORIES

- A. Paper Towel Dispenser:

- 1. Manufacturer: Bobrick "Contura" Series
- 2. Model #: B-4262
- 3. Mounting: Surface Mounted
- 4. Finish: Satin Stainless

- B. Waste Receptacle:

- 1. Manufacturer: Bobrick
- 2. Model #: B-2300
- 3. Mounting: Floor-standing Open-Top Waste Receptacle
- 4. Finish: Satin Stainless

- C. Soap Dispenser:

- 1. Manufacturer: Bobrick "Contura" Series
- 2. Model #: B-4112
- 3. Mounting: Surface mounted per manufacturer's recommendation
- 4. Finish: Satin Stainless

## D. Toilet Tissue Dispenser:

1. Manufacturer: Bobrick "Contura" Series
2. Model #: B-4288
3. Mounting: Surface mounted per manufacturer's recommendation
4. Finish: Satin Stainless

## E. Grab Bars:

1. Manufacturer: Bobrick
2. Model #: B-5806 Series-See plans for straight bar lengths (36" and 42")
3. Finish: Satin Finish
4. Mounting: Surface mounted per manufacturer's recommendation
5. Gripping Surfaces: Smooth, satin finish.
6. Outside Diameter: 1-1/2 inches for medium-duty applications.

## F. Accessible Mirror Unit:

1. Manufacturer: Bobrick
2. Model #: B-293
3. Mounting: Surface mounted per manufacturer's recommendation
4. Finish: Satin Stainless

## G. Tissue Holder:

1. Manufacturer: Delta- Botanical Series
2. Model #: 76050-MC
3. Finish: Matte Chrome

## H. Sanitary Napkin Disposal:

1. Manufacturer: Bobrick
2. Model #: B-270
3. Mounting: Surface mounted per manufacturer's recommendation
4. Finish: Satin Stainless

## I. Baby Changing Station (if applicable):

1. Manufacturer: Bobrick; Koala Kare
2. Model #: KB110-SSWM
3. Mounting: Surface mounted per manufacturer's recommendation (provide blocking as required).
4. Finish: Satin Stainless

3.1 INSTALLATION

- A. Install accessories using fasteners appropriate to substrate indicated and recommended by unit manufacturer. Install units level, plumb, and firmly anchored in locations and at heights indicated.
  - 1. Install grab bars to withstand a downward load of at least 250 lbf (1112 N), when tested according to method in ASTM F 446.
- B. Adjust accessories for unencumbered, smooth operation and verify that mechanisms function properly. Replace damaged or defective items. Remove temporary labels and protective coatings.

END OF SECTION 10 8010

MECHANICAL  
SPECIFICATIONS  
15000



## SECTION 15 1000 - GENERAL REQUIREMENTS FOR MECHANICAL WORK

## PART 1 GENERAL

## 1.01 GENERAL SCOPE OF WORK:

- A. This project is for providing new HVAC equipment for the Field House Addition at the Orange Beach High School. It is intended that specifically identified equipment shall be installed new to ensure complete and functional systems. More specifically, equipment included in this scope of work shall include, but is not limited to:

Packaged Air-Conditioning Units

Ductwork

Grilles, Registers, & Diffusers

Exhaust Fans

Insulation

- B. The contract drawings specifically describe the work required for each unit of equipment. The contract specifications specifically describe the products to be provided. All documents shall serve as an integral part of the other and be considered as one. Any conflicts between these documents shall be resolved prior to bidding. It is expected the worst case description (i.e.- more expensive, higher quantity) shall take precedence in the event of a discrepancy.

## 1.02 GENERAL REQUIREMENTS

- A. Scope of Section: Include all materials, equipment, and labor necessary for complete and properly functioning mechanical installations in accordance with local and state codes, contract drawings and as specified in all 15000 series of these specifications.

## 1.03 DRAWINGS

- A. Mechanical drawings indicate the general arrangement and extent of work. Exact locations and arrangements of materials and equipment shall be determined in the field prior to beginning any work to conform in the best possible manner with the surroundings and with the adjoining work of other trades. References to locations of equipment, devices or fixtures shall be verified in the field with actual dimensions and not by scaling drawings.

## 1.04 COORDINATION OF WORK

- A. Prior to installation, coordinate all work with work of other trades and with field conditions in sufficient detail to preclude interferences between the work of different trades and to insure necessary clearances at equipment. Work requiring necessarily fixed locations such as graded piping shall take precedence over work not requiring such fixed locations and shall establish permissible routing of services associated with the latter. Should work be performed without adequate coordination so that interferences occur between work of different trades, Contractor shall eliminate such interferences by requiring necessary rework by the trades involved. Such rework shall meet approval of Engineer and shall incur no additional cost to Owner.
- B. The Contractor shall coordinate the contract drawings and specifications for all other trades, and shall report any discrepancies between them to the Engineer and obtain from him written instructions for changes necessary in the mechanical or electrical work. All work shall be installed in cooperation with all other trades. Before installation, the Contractor shall make proper provision to avoid interferences in a manner approved by the Engineer. All changes

required in the work of the Contractor due to his neglect shall be corrected by the Contractor at his own expense.

#### 1.05 CODES, PERMITS, TAXES

- A. Governing Law: Refer to "General Conditions". Work shall meet requirements of applicable codes, ordinances, rules and regulations, in effect at time of signing contract of any body or bodies having jurisdiction, including utilities.
- B. The Contractor shall comply with all county, district, municipal, or local building codes, interpretations, buildings permits to include but not be limited to the latest editions of:
  - ASHRAE, 2012 "HVAC Systems and Equipment" - Chapter 19, Duct Construction
  - SMACNA Standards for Duct Construction
  - International Building Code – 2015
  - International Plumbing Code – 2015
  - International Mechanical Code – 2015
  - International Fuel Gas Code - 2015
  - NFPA-90A (2009) - Installation of Air Conditioning and Ventilation Systems
  - Local Municipal Codes
- C. The Contractor shall obtain and pay for all required permits, inspections, and certificates of inspection. Certificates of inspection shall be delivered to the Architect/Engineer/Owner upon completion of the job.
- D. Correction of Work: Work done contrary to above requirements shall be corrected at no additional cost to Owner.
- E. Permits, Fees and Taxes: Refer to "General Conditions". Secure and pay for all necessary permits, inspections, licenses, meters, connections, etc. that may be required; pay all required taxes. Owner shall pay any environmental impact fee incurred. Certificates of inspection shall be delivered to Architect/Engineer upon completion of project. Per the State of Alabama Building Commission Administrative Rule 170X-8 Collection of User Fees, the Permit Fee shall be included in the Contractor's bid and be paid by the Contractor.

#### 1.06 DISCREPANCIES

- A. In case of differences between drawings and specifications, or where drawings and/or specifications are not clear or definite, the subject shall be referred to Engineer for clarification and instructions. Such items should be directed to Engineer prior to taking bids.

#### 1.07 SUBMITTALS

- A. Refer to Section "General Requirements".
- B. Material List: Within thirty (30) days of award of contract, Contractor submit a complete list of materials to be provided for the mechanical work. List shall include manufacturer's name and catalog number or series for each item on list.
- C. Shop Drawings: Before commencing work, submit drawings of all mechanical materials and equipment to be furnished under this contract. In addition, submit other drawings or diagrams, dimensioned and in correct scale, requested by Engineer to clarify the work intended to show its relationship to adjacent work or work of other trades. Drawings shall

clearly indicate all characteristics, special modifications or features, and exceptions to or deviations from contract requirements.

- D. Samples: Submit samples of materials upon request for approved substitutions and as listed elsewhere herein. Samples shall duplicate materials, workmanship, and finish of products intended for installation.

#### 1.08 RECORD DRAWINGS

- A. Provide in accordance with "General Requirements" section.

#### 1.09 INSTRUCTIONS

- A. Personnel: After completion of installation, competent personnel shall be furnished to instruct Owner's personnel in operation and maintenance of systems.
- B. Written: Furnish three (3) copies of instructions for operating various systems, including complete description of functions and operations of each piece of equipment, automatic control hook-up. Control devices shall be identified and their actual location in building noted on diagrams. Include cleaning, oiling, and greasing instructions of each item of equipment. Spare parts list and source of supply shall be identified for each item of equipment. Furnish in loose leaf hardboard 3-ring binders to Engineer (for delivery to Owner).

#### 1.10 FINAL CHECK

- A. Before submitting proposals, each bidder shall examine all drawings and specifications issued by the Engineer and shall examine the site of work. He shall be fully informed as to character of his work and coordination of his work with that of other trades. No consideration will be given at a later date for alleged misunderstandings as to requirements of work, materials to be furnished or conditions required by nature of site.

#### 1.11 FOUNDATIONS

- A. The Contractor shall furnish all special foundations and supports for equipment which he installs and which are separate and distinct from building construction as shown by Engineers drawings. Support equipment from structures in a manner acceptable to the Engineer.

#### 1.12 SAFETY PROVISIONS

- A. Belt, pulleys, chains, gears, couplings, projecting set screws, keys and other rotating parts located so that any person may come in close proximity thereto, shall be fully enclosed or properly guarded.

#### 1.13 RELATED WORK

- A. The following items of material and labor incidental to or related to the work will be provided as follows:
  - B. Cutting and patching of existing building structure for location of pipes, air ducts, etc., shall be provided by this Contractor. Patching and finishes shall be performed by affected trades.
  - C. Furring around pipes, ducts, etc., shall be by General Contractor.
  - D. All exposed metal work shall be coated or painted with a corrosion resistant material. Coordinate procedure and color with Architect.
  - E. All electrical power wiring, conduit, etc., for motors and motor starters shall be furnished and installed by the electrical contractor. Electrical automatic control devices, relays, etc., required for electrical interlock for operation of system shall be furnished complete by this

Contractor in strict accordance with all requirements of wiring specifications as a part of the control system. Motor starters shall be provided under this section of this specification.

## PART 2 PRODUCTS

### 2.01 GENERAL

- A. Quality: Conform to the quality and features specified and indicated on drawings. Where material or equipment is indicated or necessary, but not specifically described in the specifications or drawings, such shall conform to the quality and features of similar items so described or otherwise indicated.

### 2.02 SLEEVES

#### A. Pipe Sleeves:

1. Walls and Partitions: Sleeves 8" Diameter and Smaller (Above Grade): Mild steel or plastic built into wall, partition or beam sized to pass pipe and covering, leaving a clear space of ¼" minimum between covering and sleeves.
2. Floors (Above Grade): 14-gauge galvanized steel or plastic, set before floor is poured, sized to pass pipe and covering, leaving a clear space of ¼" between covering and sleeve, and shall extend ½" above finished floor.
3. Exterior (Below Grade): PVC pipe, size and weight indicated for passage of piping and conduit under paving and walks. Set at a depth to prevent damage by traffic, and mark location (so that they may be recovered when necessary).
4. Duct Sleeves: Sleeves or openings sized to pass mechanical ducts and coverings of framed construction in roof, walls and partitions.
5. Sealing of Sleeves:
  - a. Below Grade: Caulk annular space between pipe and sleeve using oakum and poured lead both sides minimum 1" deep to make floor penetration watertight.
  - b. Above Grade: Make openings around pipes, etc., passing through sleeves draft-free and vermin-proof by packing solidly using mineral wool or glass fiber.

### 2.03 SUPPORTING DEVICES

#### A. Inserts:

1. Preset Type: Malleable iron with removable interchangeable nuts having lateral adjustment of not less than 1". Continuous inserts shall have a capacity of 2000 lbs. per foot and shall be hooked over reinforcing. Acceptable: C-B Universal Fig. 282; Unistrut Products Co., P-300; Binkley B-32-1.
2. Afterset Types: Self-drilling style expansion shields shall be used in concrete and brick. Toggle bolts shall be used on block walls and partitions.

#### B. Steel Framing:

1. Support hangers from bar joists with clamps or other means acceptable to Architect. Refer to Construction Drawings for limitations and requirements for providing reinforcing of joists at hanging points.
2. Hangers shall be plumb within ½" in 4' and spaced as required for the service intended.
3. Where unforeseen conditions necessitate additional hangers, install same in locations subject to Architect's approval.

## C. Stud Partitions:

1. All anchorage shall be to studs or solid blocking built into the wall.

## D. Equipment, Piping and Duct Hangers:

1. Provide angles, brackets, clamps, anchors, braces, frames, rods and other miscellaneous steel items as necessary for support of equipment and piping specified herein.
2. All piping, ducts, etc., shall be run parallel with the lines of the building, unless otherwise shown or noted on the drawings. The different service pipes, valves, fittings, etc., shall be so installed that after the covering is applied there will be not less than ½" clear space between the finished covering and other work, and between the finished covering of parallel adjacent pipes. Hangers shall be so spaced to prevent sag and to permit proper drainage. Exact location of piping, ducts, etc., shall be coordinated between subcontractors so that there will be no interference.

## 2.04 FLOOR, WALL AND CEILING PLATES OR ESCUTCHEONS

- A. Furnish escutcheons or fabricated plates or collars and install at each location where pipe or duct passes through a finished surface. Escutcheons for flush sleeves shall be equal to Benton & Caldwell No. 3A chromium plated brass; for sleeves extending above floor shall be equal to Benton & Caldwell No. 36 chrome plated brass. Collars or plates for ducts and large diameter insulated pipe shall be fabricated of 18-gauge galvanized copper bearing steel, secured to structure and neatly fitted around duct or pipe.

## 2.05 ACCESS DOORS

- A. Each door shall be equipped with two flush, screwdriver operated cam latches and other than Style "M" shall be finished to match adjacent surface. Door sizes shall be applicable to the access required for normal service. Doors shall be manufactured by the Inryco/Milcor or an acceptable equal, as follows:

<u>Location</u>	<u>Milcor Style</u>
Drywall	"DW"
Masonry or Tile	"M-Stainless"
Acoustical Tile	"AT"
Plaster	"K"
Fire-rated Wall	"Fire Rated"

- B. Furnish as necessary for access to concealed valves, cleanouts, unions, expansion joints, dampers, coils, junction boxes, etc., where no other means of access is shown or specified.

## 2.06 BELT DRIVES

- A. Each motor driven machine not direct connected shall be equipped with V-belt drive. Belts shall be of correct cross section to fit properly in sheave grooves. Belts for each drive shall be carefully matched. Sheaves shall be of cast iron or steel, bored to fit properly on shafts and secured with keys of proper size. Variable and adjustable pitch sheaves shall be furnished for fans and shall be selected to that required rpm will be obtained with sheave set approximately in mid-position. Rating of each drive shall be as recommended by manufacturer for service, but shall be at least 1.5 times nameplate rating of motor.

- B. Mechanical Contractor shall be responsible for providing and installing all necessary sheaves required to properly balance systems.

#### 2.07 BELT AND COUPLING GUARDS

- A. Equip each belt drive with a guard constructed of #12 U.S. standard gauge  $\frac{3}{4}$ " diamond mesh steel wire screen or equivalent, welded to  $\frac{1}{2}$ " steel angle frames which shall enclose all belts and sheaves. Tops and bottoms of guards shall be of #18 U.S. standard gauge steel. Braces or supports must not "bridge" sound and vibration isolators. Guards shall be designed with adequate provision for movement of motor required to adjust belt tension. Provide means to permit oiling, use of speed counters, and other maintenance and testing operations with guard in place. All direct drive equipment shall have coupling guards in accordance with Florida Department of Business Regulation safety regulations.

#### 2.08 PAINTING AND MARKING

- A. Painting: Painting of equipment, pipe, and ducts (insulated or un-insulated) shall be as specified in Section "Painting". Touch up of shop coats shall be performed under section furnishing equipment and shall match equipment factory finishes.
- B. Marking:
  - 1. Pipes: All utility piping above and below the ceiling shall be stenciled with name of service to indicate the use of pipe and with arrows to indicate direction of flow. Stencils shall be applied after final painting is completed. In lieu of stencils, pipe identification labels similar to "Brady" may be used. Bands shall be color coded. Markings shall be in accordance with ANSI Standard A-12.1.
  - 2. Equipment: Fans, ducts, etc., shall be stenciled as specified above. Small equipment such as starters, control devices, etc., shall be neatly labeled with  $\frac{3}{4}$ " engraved, plastic labels, white letters on black background.

#### 3.01 ELECTRICAL

- A. General: Unless specified otherwise, motors, starters, and control devices shall be furnished under the division of the specifications that covers the driven equipment. Motor starters shall be installed by the electrical contractor except where as an integral part of the equipment. Reference electrical plan for location of starters relative to specific equipment. All electrical power wiring, conduits, and connections shall be provided under the Electrical Section. Contractor furnishing driven equipment shall coordinate wiring diagrams with contract requirements and shall furnish coordinated wiring diagrams for installation.
- B. Motors: Unless otherwise specified, each motor shall have sufficient capacity to start and operate the machine it drives without exceeding the motor nameplate ratings the speed required. (Except that the NEMA standard service factor may be applied to motors that are water or refrigerant cooled). The horsepower specified are those estimated to be required by the equipment when operating at specified duties and efficiencies. If the actual horsepower for the equipment to be furnished differs from that specified or indicated on drawings, it shall be the responsibility of the Section furnishing equipment to insure that proper size feeders, breakers, etc., are provided at no change in contract cost. Motors shall be rated for continuous duty, at 100% of nameplate rating with a service factor of 1.15. Squirrel cage induction motors shall have normal starting torque, full voltage low starting current, constant speed continuous duty type. Motors shall be wound for specified voltage.
- C. Starters shall be furnished under this section of the specification:

1. General: As specified with modifications and accessories as indicated in other Sections of this specification or by control diagrams on drawings. Starters shall have proper rating for motors controlled.
2. Over Current Protection: Contacts shall break each ungrounded line to the motor. A thermal Over current device shall be provided in each ungrounded line. All contacts shall open simultaneously upon tripping of any Over current device.
3. Magnetic Starters: For motors of  $\frac{1}{2}$  HP or larger, combination type with unfused disconnect switch, unless specified otherwise in other sections. Each starter shall have a control transformer with fused 120 volt maximum control circuit. Control transformer shall be of adequate capacity for all controls on the circuit. Starters shall have on-off-automatic switches in cover.
4. Manual Starters: Provide for motors through  $\frac{3}{4}$  HP unless specified otherwise under equipment specifications.
5. All starters shall be provided with hand-off-auto switches, normally open and normally closed auxiliary contact.

END OF SECTION 15100

## SECTION 15 2000 - TESTING AND BALANCING AIR AND WATER DISTRIBUTION SYSTEMS

## PART 1 GENERAL

## 1.01 GENERAL REQUIREMENTS

- A. The General Conditions, Supplementary Conditions and Division 1, General Requirements, apply.
- B. This portion of work is to be included in the base bid.

## 1.02 QUALITY ASSURANCE

- A. Testing Agency:
  1. Submit name, address, and qualifications of testing agency to Architect/Engineer for approval prior to start of testing.
  2. All system adjustments, test and balances are to be performed by a company regularly and exclusively engaged in this work. Agency shall be a member in good standing of the Associates Air Balance Council (AABC).
  3. Procedures shall be as outlined in the latest AABC Publication for total system balance.

## 1.03 SUBMITTALS

- A. Test Reports: After completion, submit three (3) hard copies of the certified copies of test and balance report to the Architect/Engineer for review and as a project record document.

## 1.04 JOB CONDITIONS

- A. Commencement of Test: Do not begin balancing until the systems have been completed and are in full working order, or at the direction of the Architect/Engineer, place any part thereof in operation for the purpose of balancing.
- B. Plans and Data: Furnish the balance agency one (1) complete set of all approved up-to-date mechanical plans and shop drawings of all cooling, heating and air distribution equipment.

## 1.05 FIELD QUALITY CONTROL

- A. Performance Data: Record the following data and submit to the Architect/Engineer.
  1. System Component Capacity: Record and calculate all data necessary to demonstrate capacity under actual operating conditions, and adjust dampers, valves, control valves and machine drives to obtain a suitable operating balance for each system. Record data for each item of equipment simultaneously with data from all associated equipment together with coincident outside air-dry bulb temperatures to permit evaluation of total system performance. Data to include the following:
    - a. Supply, return and outside air quantities for each air conditioning and ventilation system.
    - b. Air volumes and velocities for each fan, cooling coil and air cleaning assembly.
    - c. Entering and leaving air dry bulb and wet bulb temperature for each cooling and heating coil (if integral to air handler).
    - d. Static pressures for all air handling units.
    - e. Actual voltage and current input for each motor.
  2. Mechanical contractor is responsible for providing and installing all necessary sheaves required to properly balance systems.

## 1.06 COORDINATION

- A. It shall be the test and balance sub-contractor's responsibility to coordinate with the Owner, design consultant, general contractor, HVAC sub-contractor and Owner's controls vendor to ensure all parties are informed of progress toward completion as well as difficulties encountered toward that end.

1.07 TEMPERATURE CONTROLS

- A. Set adjustments of all controllers to operate according to existing operating sequence. Make four hour temperature traverse of each area or zone. Provide testing agency personnel with instruments to verify reports to Architect.

1.08 FINAL TEST

- A. At conclusion of testing agency's work, demonstrate to the Architect/Engineer that the equipment is mechanically sound, that the systems deliver the rated output without objectionable noise, distress or vibration, and that the temperature controls are functioning properly.

END OF SECTION 15 2000

## SECTION 15 4000 - PLUMBING

## PART 1 - GENERAL

## 1.01 SCOPE OF WORK

- A. The work to be performed under this section of the Specification shall include all labor, materials, equipment, transportation, construction, facilities, and incidentals necessary for the proper execution and completion of all Plumbing work as shown and indicated on the Contract Drawings, and/or specified herein with the intent that the installation shall be complete in every respect and ready for use.

## 1.02 GUARANTEE

- A. All materials and equipment provided and/or installed under this section of the specifications shall be guaranteed for a period of one year from the date of acceptance of the work by the Owner. Should any trouble develop during this period due to defective materials or faulty workmanship, the Contractor shall furnish all necessary labor and materials to correct the trouble without any cost to the Owner.

## 1.03 CODES AND REGULATIONS

- A. All work performed under this section shall conform with all local governing regulations, and in case of conflicting requirements, the most stringent shall apply. Minimum requirements shall be the International Plumbing Code. All electrically operated equipment specified in this section shall comply with the National Electrical Code.
- B. Should it be found that any part of the work shown or specified is not in accordance with local regulations, the Architect shall be so advised at the time of bidding and all work installed as required to meet the local codes.
- C. The Contractor shall comply with the latest revisions of all county, district, municipal, or local building codes, interpretations, buildings permits to include but not be limited to:

International Building Code - 2015  
International Mechanical Code - 2015  
International Plumbing Code – 2015  
International Fuel Gas Code - 2015  
Local Municipal Codes

## 1.04 FEES AND PERMITS

- A. The Plumbing Subcontractor shall obtain and pay for all permits, fees for inspection, and other charges that may be necessary for fully completing the work. The Plumbing Subcontractor shall make all necessary tests required by City, County, or State authorities, legal regulations, and/or the Architect, and return to the Architect any

certificates of approval issued in this district for plumbing work, etc. signed by the inspector in charge of each particular part of the work.

#### 1.05 RESPONSIBILITY OF BIDDER

- A. Each bidder shall visit the site of the proposed work and fully acquaint himself with conditions relating to the construction requirements so that he may fully understand the facilities, difficulties and restrictions contingent upon the execution of the work under this contract. The failure or omission of any bidder to receive or examine any form, instrument, addendum or other document shall in no way relieve any bidder from his obligations with respect to his bid or the contract. The submission of a bid shall be taken as prima facia evidence of compliance with this paragraph and that he has included in his proposal every item of cost necessary for a complete installation of plumbing operations strictly as planned, specified, and intended.

#### 1.06 PIPING

- A. Provide pipe sleeves through masonry construction, and install escutcheon plates around exposed piping in all rooms.
- B. Soil, waste, and vent lines shall be Schedule 40 PVC-DWV in accordance with Commercial Standards CS272-65 or ASTM Standards D2665-68. Soil, waste, and vent lines penetrating a fire rated wall or floor shall be service weight cast iron at the point of penetration only.
- C. Waste and vent piping within a return air plenum shall be no-hub service weight cast iron in accordance with CISPI Standard 301 and ASTM A-888. Piping within walls and below grade shall be Schedule 40 PVC-DWV in accordance with Commercial Standards CS272-65 or ASTM Standards D2665-68.
- D. All plastic pipe shall bear the NSF Seal of Approval, and such other markings as required by the aforementioned standards.
- E. Above slab cold water and hot water piping shall be Type "L" hard copper with sweated joints, using wrought fittings and non-corrosive flux. Below slab cold water piping shall be type "K" soft copper tubing.

#### 1.07 PIPE SUPPORT

- A. Hangers: Support all suspended piping with clevis type hangers equal to Grinnell #260, 5'-0" o.c. Architect shall approve all methods of attachment of hangers to construction. Hangers in contact with copper piping shall be copper, or copper plated.
- B. Vertical Support: Steel bar base clamped to pipe or grip strut channel with offset clamps. Support members to be of same material as supported material where possible.

#### 1.08 PIPING PLACEMENT

- A. Place in most direct manner permitted by construction, free of unnecessary offsets. Changes in direction by means of standard fittings.
- B. Grade 2" waste lines 1/4" per foot and 3" and 4" waste lines 1/8" per foot for positive flow. Secure all piping to structure.
- C. Soil Pipe: Support to firm earth below floor slabs.
  - 1. Changes in direction of drainage pipe shall be made by means of suitable bends and branches of Y's and long sweeps. Short radius quarter bends are prohibited.
  - 2. Connections to vertical soil pipe from all connections in horizontal soil pipe to be made by "Y" fittings.
  - 3. Do not begin work until elevation of final connection point is verified and grading of entire system can be determined (even if final connection is specified under another section).
- D. Vent Pipes:
  - 1. Main soil pipe stacks to be extended up through the building full size with increaser through roof per code.
  - 2. Connect branch vents into main stacks with connections not less than 4 feet above the highest fixture.
  - 3. All vent stacks shall be connected at the bottom to main drainage system and all horizontal runs shall be graded so as to discharge all water or condensation.
- E. Water Piping: Place supply pipes as shown or as directed in neat arrangement and parallel or at right angles to walls, joists, etc.
  - 1. Place air chamber extensions 12" long on top of all risers and one pipe size larger than the riser.
  - 2. Place shock absorbers at each fixture group as recommended by manufacturer. Shock absorbers shall be PDI certified.
  - 3. Place valves on all water pipe risers and branch lines at point where risers and branch lines connect to main water lines.

## PART 2 - PRODUCTS

### 2.01 WATER PIPING

- A. All water piping, unless otherwise shown or specified shall be copper pipe Type L or K as specified having a wall thickness of not less than .035 inches. It shall be clean, round, straight, and true to size, free from flaws and other defects.
- B. All fittings on copper pipe shall be copper. The pipe and fittings shall be thoroughly cleaned before inserting into the joint and then soldered with lead free solder.

#### 2.02 RAINWATER, DRAINAGE SYSTEM

- A. This work is limited to runouts from base of gutter down spouts to points 5'-0" beyond building walls.
- B. Piping Below Grade: Schedule 40 PVC pipe and drainage pattern fittings of corresponding weight with solvent weld joints, grading, etc., as specified for sanitary piping.
- C. NOTE: See site plans for limit of storm drainage by this contractor. Outside work by utility contractor. No work is required where down spouts spill on splash blocks.

#### 2.03 GAS PIPING

- A. All piping above grade shall be Schedule 40 black steel ASTM 120. Fittings shall be 150 pound black malleable screw pattern for all sizes 2" and smaller.
- B. All piping shall be installed in accordance with NFPA recommendations and the International Fuel Gas Code complete with all necessary appurtenances.
- C. Horizontal piping shall grade with a slope of 1" on 40 feet-0" to drip legs at all low points as required. Drips shall be provided at all low points and at bottom of risers. Drips shall be same size as the piping where installed and shall be a minimum of 12" long.
- D. Use ground joint unions in all screw piping joints.

#### 2.04 UNIONS

- A. Unions shall be provided on inlet and outlet of all apparatus and equipment. Where valves are adjacent to equipment, unions shall be on downstream side of valves.
- B. Unions in copper pipe shall be cast bronze, WOG pattern, ground joint, 150 psi type.
- C. Unions in steel pipe shall be malleable iron, WOG female pattern brass seat, ground joint, 150 psi type.
- D. Unions connecting dissimilar metals shall be dielectric type.

#### 2.05 TRAP PRIMER DISTRIBUTION UNIT

- A. A trap primer distribution system shall be equal to Precision Plumbing Products DU series to serve fixtures. Unit shall be installed per manufacturer's instructions.
- B. Trap Primer: Install on flush valves and fixture supplies where indicated:
  - 1. Flush valves: Precision Plumbing Products FVP-1VB.
  - 2. Fixture Cold water supply: Precision Plumbing Products PR-500.

#### 2.06 VALVES AND COCKS

- A. Valves and cocks shall be installed where shown on the drawings, and/or where found to be necessary for proper operation of the system. All branches from risers, all branches from mains, and all fixtures or equipment not having stops shall be provided with valves whether shown or not.
- B. Angle or straightway chromium plated stops on the supplies to all fixtures accessible from the same room in which the fixtures are located.
- C. All valves shall be the product of one manufacturer as cataloged by Milwaukee, Stockham, Crane, or Nibco.
- D. For water piping, valves shall be equal to 125 psi SWP/200 psi WOG Nibco as follows:
  - 1. Gate valves 1/2" to 3" = S-111.
  - 2. Ball valves 1/2" to 2" = S-585.
  - 3. Check valves 1/2" to 3" = S-413W.

#### 2.07 WALL HYDRANTS

- A. Wall hydrants shall be box type, 1/2", freeze proof, keyless with nickel bronze face plate and vacuum breaker. Mount flush with wall. Wall hydrant shall be equal to Zurn Z-1321.

#### 2.08 THERMAL INSULATION WORK

- A. All insulation work shall be performed by experienced insulation application mechanics thoroughly familiar with and experienced in the application of insulation materials. All insulation materials shall be applied in accordance with manufacturer's published recommended methods. Installation and finish of insulation materials shall meet with complete data for approval of materials and application methods as proposed for use. All piping shall be pressure tested and all surfaces shall be thoroughly cleaned before covering is applied. Insulation materials, including sealer, adhesive, finish, etc., shall meet NFPA Standards with regard to flame spread and support of combustion.
- B. All hot and cold water piping shall be covered with 1" thick heavy density fiberglass sectional pipe insulation equal to Owens Corning Fiberglass 25 ASJ/SSL, excluding piping below grade or chromium plated fixture connections.

- C. Fittings for the above shall be insulated with premolded fitting insulation of the same material and thickness as the adjacent insulation and shall be covered with a premolded plastic (PVC) vapor barrier and sealed with vapor barrier lagging adhesive. Covering adjacent to unions and other points of termination shall be finished with the plastic material neatly beveled.
- D. It shall be the responsibility of the insulation subcontractor to coordinate hanger locations and prevent crushing or breaking finishes.
- E. Contractor shall insulate hot water supply assembly and P-Trap assembly with Armaflex 3/8" foam insulation kit on handicapped lavatories.
- F. Floor drain traps and horizontal piping above finished areas used for a/c condensate drainage shall be insulated with 1" thick blanketed insulation.

## 2.9 FLOOR, WALL, AND CEILING PLATES

- A. Nickel plated floor, wall, and ceiling plates shall be provided on all pipes passing through floor, ceiling, or partition. Nickel or chromium plated escutcheons shall be provided on all fixture supplies.

## 2.10 PLUMBING FIXTURES AND EQUIPMENT

- A. Provide roughing-in for and connect to supply lines, waste and vent lines, all equipment, fixtures, drains, etc., specified herein or in other sections of the specifications which require such connections.
- B. Provide stops in hot and cold water connections to each fixture, equipment items, etc. Where not otherwise specified, stops shall be same as specified hereinbefore for ball valves. Provide deep escutcheon on all sinks and lavatories where waste pipe goes into wall. Anchor all supplies from wall securely within wall construction.
- C. Provide stops for all fixtures. Traps for all fixtures shall be 17- gauge chromium plated brass.
- D. Plumbing fixtures shall be equal to American Standard, Crane, Kohler, Zurn, Acorn, Elkay or Eljer. No others will be accepted.
- E. Faucets shall be lead free, code compliant, and certified to NSF Standard 61, Section 9.
- F. Plumbing fixtures shall be as follows:

### P-1 WATER CLOSET, FLOOR-MOUNT (STANDARD, MANUAL VALVE):

Vitreous china, 1.6 gallons per flush, elongated, siphon jet, white, water saver bowl with 1-1/2" top spud. Exposed chrome plate flush valve, with screwdriver stop, vacuum breaker and quiet flush feature. Heavy molded plastic, white, elongated, open front seat less cover, with stainless steel, self-sustaining check hinges.

Water closet	Zurn Z5650
Valve	Zurn Z6000-WS1
Seat Z5955SS-EL-ST5	
Closet Bolt/Wax Ring Kit	Z5972-COMB

P-1A WATER CLOSET, FLOOR-MOUNT (HANDICAP, MANUAL VALVE):

Vitreous china, 1.6 gallons per flush, elongated, siphon jet, white, water saver bowl with 1-1/2" top spud, 17" high for handicapped. Exposed chrome plate flush valve, with screwdriver stop, vacuum breaker and quiet flush feature. Heavy molded plastic, white, elongated, open front seat less cover, with stainless steel, self-sustaining check hinges. Hold centerline flush valve assembly off finish wall for grab bar clearances, coordinate with Architectural drawings.

Water closet	Zurn Z5660
Valve	Zurn Z6000-WS1
Seat Z5955SS-EL-ST5	
Closet Bolt/Wax Ring Kit	Z5972-COMB

P-2 URINAL, WALL-MOUNT (STANDARD, MANUAL VALVE):

Vitreous china, 1.0 gallons per flush, siphon jet flush, 3/4" top spud, and 2" outlet urinal. Exposed chrome plated flush valve with screwdriver stop, vacuum breaker and quiet flush feature. See Architectural drawings (toilet room elevations) for mounting height. Furnish floor mounted single carrier with hanger plate, bearing plate, adjustable supporting rods, structural uprights and block bases, secure base to floor for rigid connection with 1/2" x 3-3/4" threaded zinc plated steel heavy duty wedge anchors, complete with stainless steel clip, washer and threaded nut, conforming to federal spec. FF-S-325.

Urinal	Zurn Z5730
Valve	Zurn Z6003-WS1
Urinal Flange Kit	Zurn Z5976-URINAL
Carrier	Zurn Z-1222
Base Anchorage	B-Line Anchors AWA-50-375

P-2A URINAL, WALL-MOUNT (HANDICAP, MANUAL VALVE):

Vitreous china, 1.0 gallons per flush, siphon jet flush, 3/4" top spud, and 2" outlet urinal. Exposed chrome plated flush valve with screwdriver stop, vacuum breaker and quiet flush feature. Mount to satisfy ADA requirements, coordinate with Architectural drawings (toilet room elevations) for final mounting height. Furnish floor mounted single carrier with hanger plate, bearing plate, adjustable supporting rods, structural uprights and block bases, secure base to floor for rigid connection with 1/2" x 3-3/4" threaded zinc plated steel heavy duty wedge anchors, complete with stainless steel clip, washer and threaded nut, conforming to federal spec. FF-S-325.

Urinal	Zurn Z5730
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Valve	Zurn Z6003-WS1
Urinal Flange Kit	Zurn Z5976-URINAL
Carrier	Zurn Z-1222
Base Anchorage	B-Line Anchors AWA-50-375

P-3 LAVATORY, WALL-MOUNT:

Vitreous china 20" x 18", color "white" faucet holes on 4" centers, front overflow, for concealed arm support. Furnish floor-mounted single carrier with concealed arms, leveling and securing screws, structural uprights and block bases, secure base to floor for rigid connection with 1/2" x 3-3/4" threaded zinc plated steel heavy duty wedge anchors, complete with stainless steel clip, washer and threaded nut, conforming to federal spec. FF-S-325. Provide chrome plated angle stop to wall with chrome plated 3/8" flexible supply and loose key operator, integral perforated strainer with 1-1/4" offset tailpiece, chrome plated 17 gauge cast brass P-trap with cleanout and tube waste to wall. Polished chrome plated cast brass single lever water faucet with aerator.

Lavatory Zurn Z5344	
Faucet	Zurn Z7440
Supply w/stop	Zurn Z8800LRLK-PC
Drain	Zurn Z8746
P-Trap	Zurn Z8700-PC
Carrier	Zurn Z-1231
Base Anchorage	B-Line Anchors AWA-50-375

P-3A LAVATORY, WALL-MOUNT (HANDICAP):

Vitreous china 20" x 18", color "white" faucet holes on 4" centers, front overflow, for concealed arm support. Furnish floor-mounted single carrier with concealed arms, leveling and securing screws, structural uprights and block bases, secure base to floor for rigid connection with 1/2" x 3-3/4" threaded zinc plated steel heavy duty wedge anchors, complete with stainless steel clip, washer and threaded nut, conforming to federal spec. FF-S-325. Provide chrome plated angle stop to wall with chrome plated 3/8" flexible supply and loose key operator, integral perforated strainer with 1-1/4" offset tailpiece, chrome plated 17 gauge cast brass P-trap with cleanout and tube waste to wall. Polished chrome plated cast brass water faucet with 4" wrist-blade handles, chrome plated brass swivel gooseneck nozzle with aerator. Lavatory P-trap and single valve assemblies shall be insulated with fully molded insulation kit, white color with 3-piece interlocking rap assembly and 2-piece interlocking angle valve assembly. Fasteners shall be nylon-type supplied with kit. Lavatory shall be mounted with a clearance of at least 28" from floor to bottom of the apron. Knee and toe clearances shall be as follows: 27" clear height shall be provided from finished floor to a point on underside of bowl 8" in from front apron. Toe clearance shall be a minimum height of 9" under P-trap and supplies or stops.

Lavatory Zurn Z5344	
Faucet	Zurn Z812A4
Supply w/stop	Zurn Z8800LRLK-PC
Drain	Zurn Z8746

P-Trap	Zurn Z8700-PC
Insulation Kit	Zurn Z-8946-3-NT
Carrier	Zurn Z-1231
Base Anchorage	B-Line Anchors AWA-50-375

P-4 SHOWER:

Single handle pressure-balancing mixing valve. Ceramic control cartridge with stainless steel balancing piston Must hold shower temperature steady with pressure fluctuations up to 85%. Double seal packing with adjustable brass packing nut. Brass adjustable limit stop screw to prohibit valve handle from being turned to excessive hot discharge temperatures. All trim to be copper nickel chrome plated. Service stops to be brass and cast integral with valve body. Large brass head with arm and flange.

Shower	Zurn Z-7301-SS-MT
Drain	Zurn ZN-415 2" NL 5" B

P-4A SHOWER (HANDICAP):

Single handle pressure-balancing mixing valve. Ceramic control cartridge with stainless steel balancing piston. Must hold shower temperature steady with pressure fluctuations up to 85%. packing with Brass adjustable limit stop screw to prohibit valve handle from being turned to excessive hot discharge temperatures. All trim to be copper nickel chrome plated. Service stops to be brass and cast integral with valve body. Two way chrome diverter valve. Brass shower head with arm and flange. Wall/hand shower with flexible metal hose, in-line vacuum breaker, wall connection and flange, 30" slide bar for hand shower mounting.

Shower	Zurn Z-7301-SS-MT-DV-2P-HW2
Drain	Zurn ZN-415 2" with 5" B

P-5 ELECTRIC DRINKING FOUNTAIN (DUAL PURPOSE/TWO LEVELS):

Wall mount, dual-purpose unit, self-contained electric water cooler. Furnish floor mounted two levels double carrier with bearing plate, hangar plate, adjustable supporting rods, structural uprights and block bases, secure to floor with 1/2" bolts and anchors. Unit to be complete with hermetic air cooled refrigeration system, cooler pre-cooler, thermostat, safety controls, condenser fan motor, vermin proof insulation, heavy gauge steel cabinet, moisture resistant finish, quiet operation. Top of cooler shall be No. 3 satin finish stainless steel. Cooler capacity shall be 8.8 gph, cooling 80-degree F water to 50 degree F. Provide one-year warranty on entire cooler. Provide chrome plated stop to wall with chrome plated 3/8" flexible supply. Provide 1-1/4" chrome plated 17 gauge cast brass P-trap with cleanout, 120V, single phase, 5.4 full load amps, 500 rated watts, 1/5 compressor hp. Verify final location and mounting height with Architectural drawings. Finish to be selected by Architect.

EDF	Elkay EZTLR8C
Trap	Zurn Z-8700-PC
Carrier	Z1225 BL



- D. In Concrete Floors: 58190, adjustable head, cast iron head and ferrule with cadmium plug, round loose set scoriated tractor cover.
- E. In Outside Line: 58190 cast iron head and ferrule with cadmium plug. Terminate at grade or pavement in 18" x 18" x 6" concrete pad with tooled edges.
- F. In Finished Walls: 58790 cast iron cleanout tee with cadmium plug and stainless steel wall plate cover. Where distance from plug to finish wall will exceed 4", provide 58710 extend cover from sanitary tee to bring plug within 4".
- G. In Quarry Tile Floors: 56040-13-1, adjustable cast iron head and ferrule, cadmium plug and round brass terrazzo cover and rim.

## 2.12 ACCESS DOORS

- A. Provide Phillip Carrey, J.R. Smith, Zurn or equal Smith Model #4761, 12" x 16" chromium plated steel access panels where valves, trap primers, or shock absorbers occur in inaccessible walls or ceilings. All doors and covers shall be completely removable from frames. All hinges must be concealed type. Steel frames shall be 16-gauge with 14-gauge steel doors. Access doors installed in fire rated assemblies shall be UL fire rated type with automatic closures.

## 2.13 GAS-FIRED WATER HEATER

- A. Shall have the A.G.A. seal of certification. Water heater shall be furnished with a tank lined with a double coating of high temperature glass and furnished with magnesium anode rods rigidly supported. Tank shall have a working pressure rating of 150 PSI, and shall be equipped with a boiler-type hand-hole cleanout. Water heater completely factory assembled, including a pressure regulator properly adjusted for operation on Natural gas; and energy cutoff. Controls will be arranged for safety shut-off in event of pilot failure. Complete unit shall be insulated with a factory installed heavy blanket of fiberglass. Water heater tank shall be covered by a three year limited warranty for commercial applications against leaks, and the heater must meet ASHRAE Standard 90 efficiency requirements. Water heaters shall be as manufactured by Rheem or A. O. Smith and shall be commercial type as indicated.

## PART 3 - EXECUTION

### 3.01 COMPLETION OF WORK

- A. This Contractor shall arrange for the installation of all equipment in order that it progresses along with the general construction of the building, and in no case shall hold up other phases of the work due to the fact his equipment is not properly installed.

### 3.02 TESTING

- A. General: Perform all tests in the presence of the Architect or his representative. Test shall conform to local code requirements. File copies of all test reports in duplicate to physical plant.

- B. Soil, Waste, and Vent Systems: Plug all openings, fill entire system with water to point of overflow and hold for at least one hour before inspection. System must remain full during the test without leakage. Each vertical stack with its branches may be tested separately, but any portion tested must have a 10' head. Provide test tees and plugs for all tests as required.
- C. Water Supply System: Test and secure acceptance of entire system before the piping or hot water heaters are otherwise concealed. Test as follows: Disconnect and cap all outlets to plumbing fixtures and all other equipment not designed for the full test pressure. Fill the system with water; apply 150 psi hydrostatic pressure and hold until inspection is completed. All piping throughout shall be tight under test. Water piping shall remain under normal water pressure during construction where freezing conditions do not exist.

### 3.03 DISINFECTION

- A. Disinfect all domestic water piping in accordance with local health department guidelines.

END OF SECTION.

## SECTION 15 8000 - HEATING, VENTILATION AND AIR CONDITIONING

## PART 1 GENERAL

## 1.01 GENERAL REQUIREMENTS

- A. The General Conditions, Supplementary Conditions and Division 1, General Requirements, apply.

## 1.02 CODES, FEES, PERMITS

- A. The Contractor shall comply with all county, district, municipal, or local building code, interpretations, building permits and assessments of fees for building permits, and ordinances.
- B. The Contractor shall obtain and pay for all required permits, inspections, and certificates of inspection. Certificates of inspection shall be delivered to the Architect upon completion of the job.
- C. The Contractor shall comply with the latest revisions of all county, district, municipal, or local building codes, interpretations, buildings permits to include but not be limited to:
  - ASHRAE, 2012 "HVAC Systems and Equipment" - Chapter 19, Duct Construction
  - SMACNA Standards for Duct Construction
  - International Building Code – 2015
  - International Mechanical Code – 2015
  - International Fire Protection Code – 2015
  - NFPA-90A (2009) - Installation of Air Conditioning and Ventilation Systems
  - Local Municipal Codes

## 1.03 RELATED WORK SPECIFIED ELSEWHERE IN THE SPECIFICATIONS

- A. General Requirements for Mechanical Work - Section 15100
- B. Test and Balance - Section 15200
- C. Electrical - Division 16000

## 1.04 RESPONSIBILITY OF BIDDER

- A. Prior to bid, each bidder shall visit the site of the proposed work and fully acquaint himself with conditions relating to the construction requirements so that he may fully understand the facilities, difficulties and restrictions contingent upon the execution of the work under this contract. The failure or omission of any bidder to receive or examine any form, instrument, addendum or other document shall in no way relieve any bidder from his obligations with respect to his bid or the contract. The submission of a bid shall be taken as prima facia evidence of compliance with this paragraph and that he has included in his proposal every item of cost necessary for a complete installation of air conditioning, heating and ventilation operations strictly as planned, specified, and intended.

## 1.05 SUB-DIVISIONS OF WORK

- A. Each sub-division of work includes furnishing and installing all materials to make that part of work complete, and shall comprise all auxiliaries, setting of equipment, sleeves through building construction where required and etc., all in complete coordination with General Contractor and in cooperation with other trades. It is contemplated that all sub-divisions of work when completed will form heating, air conditioning, and ventilation system for this

project.

#### 1.06 DRAWINGS

- A. The drawings for the Heating, Ventilating and Air Conditioning for this job are diagrammatic. The Contractor shall make his own measurements at the site and in the buildings during construction and install the systems as the work progresses in such a manner that the equipment, piping, conduit, panels, and ductwork will fit into the finished space provided maintaining headroom and maintenance accessibility; and be neatly installed.
- B. Contractor shall provide all fittings and accessories as necessary for a complete installation, whether or not specifically mentioned or shown.

#### 1.07 FOUNDATIONS

A. The Contractor shall furnish all special foundations and supports for air devices and ductwork which he installs.

#### 1.08 SAFETY PROVISIONS

- A. Contractor shall be required at all times to perform his work in strict accordance with the Williams-Steiger Occupational Health and Safety Act of 1970.

#### 1.09 NOISE AND VIBRATION

- A. This Contractor shall be held responsible for elimination of all noises or vibrations transmitted to occupied areas from air devices and ductwork which he may install. This applies particularly to airborne noises in ductwork.

#### 1.10 PAINTING

- A. Any air device finish that is damaged or chipped, shall be spot painted to match existing surface. Any rusty or corroded finishes shall be thoroughly cleaned and painted two coats of paint - one prime and one finish coat.

#### 1.11 TESTS AND GUARANTEES

- A. After completion of his work, and when the building is ready for occupancy, this Contractor shall operate the air conditioning or heating system for a period of two days. During the tests, the Contractor shall adjust outlets, etc.
- B. The Contractor shall repeat operational sequence during heating and/or cooling season, whichever had not been subject to prior test period.

#### 1.12 SHOP DRAWINGS

- A. Materials and equipment schedules shall be submitted (at least one hard copy) as soon as practicable but not later than thirty (30) days after the date of award of contract, and before commencement of installation of any material or equipment. A complete schedule of the material and equipment proposed for installation shall be submitted for approval. The schedule shall include catalogs, cuts, diagrams, drawings, specifications and such other descriptive data as may be required by the Engineer. All materials required to be submitted for approval under this section shall be submitted at one time. Partial submittals will not be considered. They will be returned as "not approved".
- B. Shop drawings shall be submitted for approval on the following items of equipment: Subject drawings shall include all data pertinent to the performance and installation of all equipment.
  - Packaged Air-Conditioning Units
  - Ductwork

Grilles, Registers, & Diffusers

Exhaust Fans

Insulation

1.13 QUALITY OF MATERIALS AND EQUIPMENT

- A. It is not the intent of these specifications to limit material and/or equipment selections to one manufacturer; however, the Engineer reserves the right to be the final and sole judge with regard to equals.
- B. Approvals of equipment is based on capacities, equality of workmanship and components, or general and special construction features. Approval of equipment does not relieve the Contractor of coordination responsibility with other trades.

1.14 SUBMITTALS

- A. Product Data: Submit manufacturer's latest published product data for all materials for approval. See Section 15100.

1.15 PRODUCT DELIVERY, STORAGE AND HANDLING

- A. Deliver distribution devices in individual wrappings to prevent damage to finish surface of device. Store in a dry, protected area until installed. After installation of devices, clean soiled finishes.

PART 2 PRODUCTS

2.01 SHEETMETAL DUCTWORK

A. Ductwork – Low Pressure:

- 1. This part of the specification shall apply to all low pressure rectangular shop fabricated ductwork for constant air volume air distribution systems and return air systems. Ductwork shall be constructed of galvanized steel sheets, furnished and installed in sizes as indicated and located where shown on the drawings. This part of the work shall include all ductwork, manual dampers, access panels, louvers, etc., with all accessories to make a complete air distribution system. Noise, vibration or drumming of air in ductwork, noises at air outlets or returns, excessive air leaks, malfunctioning of dampers, etc., will be cause for rejecting affected parts of the ductwork. Duct sizes shown on plans are net and must be increased for total insulation thicknesses as herein specified.
- 2. The Mechanical Contractor shall coordinate with the General Contractor all ductwork penetrations of walls which require lintels.
- 3. The following weights of materials, types of joints and bracing shall be followed for sheetmetal ductwork.

Steel U.S.

<u>Std. Gauge</u>	<u>Maximum Size Inches</u>	<u>Type of Transverse Joint Conn.</u>	<u>Bracing</u>
24	up to 12	S-Drive, pocket or bar clips on	

			7"-10" centers	None
24	13 to 24	S-Drive, pocket or bar clips on 7"-10" centers		None
24	25 to 30	A-Drive, pocket or bar clips on 7"- 10" centers		1 x 1 x 1/8" angle
20	30 and greater	S-Drive, pocket or bar clips on 7"- 10" centers		1 x 1 x 1/8" angle

4. The following details of duct construction shall be adhered to without deviation:
  - a. Longitudinal seams for metal shall be Pittsburgh lock.
  - b. Sweep elbows shall be made with inside radius equal to width of ducts, except as shown on the drawings. Square elbows must be provided with approved turning vanes to assure good air flow to outlets.
  - c. Provide vanes at all elbows. Provide splitter dampers and turning vanes at duct tees.
  - d. Horizontal ducts shall be hung at intervals not exceeding 8'-0" with 18-gauge galvanized iron hangers extending the full height of the duct. The only exception shall be for double wall ductwork in the Gymnasium. Truss spans are 9'6" and duct shall be reinforced to suspend this distance without sagging.
  - e. Shop drawings of all ductwork when for any reason different from drawings shall be submitted to the Architect for approval.
  - f. All ductwork shall be fabricated in strict accordance with SMACNA Construction Standards for Low Velocity Ductwork. All seams shall be caulked or taped to prevent air leakage.
5. Flexible Ductwork Connections: All duct connections to air handling units, fans, etc., shall be made through a 4" flexible connection of fire resistant neoprene coated glass fiber cloth as manufactured by Ductmate, DuroDyne, or FanAir. Connection shall meet pressure classification of system used.
6. Flexible ductwork shall be the acoustical insulated type with mechanical lock helix. Flex duct shall have factory wrapped, fiberglass insulation and fire retardant, reinforced metalized aluminum vapor barrier. Helix shall be corrosion resistant galvanized steel, formed and mechanically locked to fabric. Flexible duct shall have a CPE inner film liner. Ductwork shall be in accordance with UL 181. Flexible duct shall have a working pressure of up to 6" w.g. positive pressure (thru 16" diameter). Operating temperature shall be from -20°F to 200°F. Flame spread shall be less than 25 and smoke developed rating shall be less than 50. Ductwork shall have a minimum insulating value of R=6.0. Maximum length shall be limited to 8'-0". Extend round snap-lock duct as required. Flexible duct shall be Flexmaster Type 9M or equal.

7. Spin-in fittings for connection run-outs to trunk duct shall be Air-Trac, Flexmaster, Ductmate, or approved equal. Fitting shall have a balancing butterfly damper and air extractor. Provide minimum 22-gage spin-in and scoop and a 20-gage damper. Perimeter clearance of damper in spin-in shall not exceed 1/8".

## 2.02 NON-FIBROUS, CLOSED CELL, OUTDOOR DUCTWORK

- A. This section shall apply to all supply, return, ventilation, and exhaust air ductwork exterior of the building envelope for HVAC applications. Refer to plans for duct routing and sizes. This section shall include all Thermaduct ductwork and fittings. Coordinate duct outer shell color with Owner.
- B. Shop Drawings: Contractor shall submit the following:
  1. Product Data - for each type of product indicated.
  2. Shop Drawings - Fabrication, assembly, and installation, including plans, elevations, sections, components, and attachments to other work, including: duct layout indicating sizes and pressure classes, elevations of top of ducts, dimensions of main duct runs from building grid lines, fittings, penetrations thru fire-rated and other partitions.
  3. Coordination Drawings - Plans (drawn to scale), showing coordination with general construction, building components, and other building services.
- C. Quality Assurance: Thermaduct shall be installed by competent trained field mechanics who demonstrate competence in the HVAC industry.
- D. Compliance: Duct system shall meet or exceed the requirements of a SMACNA Class 1 system for duct leakage.

Thermaduct shall incorporate a Kingspan KoolDuct fortified inner liner compliant to UL 181, Class 1 system, with included testing and passing the following:

1. Test for Surface Burning Characteristics
2. Flame Penetration Test
3. Burning Test
4. Mold Growth and Humidity Test
5. Low Temperature Test and High Temperature Test
6. Puncture Test
7. Static Load Test
8. Impact Test
9. Pressure Test and Collapse (negative pressure) Test
10. High Temperature and Humidity for 90 days
11. Cone Calorimeter
12. ASTM E2257 Standard Test Method for Room Fire Test of Wall and Ceiling Materials and Assemblies
13. ASTM E84 tested, Tunnel Test, does not exceed 25 flame spread, 50 smoke developed
14. DW144, Class B
15. NRLS product approval
16. ASTM C423 noise reduction

17. ASTM E96/E96M Procedure A for permeability
18. ASTM C1071 for erosion
19. ASTM C518 (2004) Standard Test Method for Steady-State Thermal Transmission Properties by Means of the Heat Flow Meter Application
20. UL 723, Test for Surface Burning Characteristics of Building Materials
21. NFPA Compliance (90A, 90B, 255)

Thermaduct outer shell shall be a UV stable, 39 mil, high impact resistant titanium infused vinyl with included testing as follows:

1. UL 94 Flammability V-0
  2. ASTM D638 Tensile Strength of 6250 psi
  3. ASTM D790 Flexible Strength of 11,000 psi
  4. ASTM D4226 Drop Impact Resistance
  5. ASTM D4216 Cell Classification
- E. Delivery & Storage: Prevent objectionable aesthetic damage to the outer surface of duct segments during transport and storage. Store duct segments under cover and protect from excessive moisture prior to installation.
- F. Product Data:
1. Ductwork shall be Thermaduct (no exceptions).
  2. The panel shall be manufactured of CFC-free Kooltherm closed cell rigid thermoset resin thermally bonded on both sides to a factory applied 0.001" (25 micron) aluminum foil facing reinforced with a fiberglass scrim. An added UV stable, 39 mil high impact resistant titanium infused vinyl shall be factory bonded to the outer surfaces to provide a zero permeability water-tight barrier.
  3. The thermal conductivity shall not be greater than 0.13 Btu\*in/hr\*ft<sup>2</sup>\*°F at 75 °F mean temperature.
  4. The density of the Kooltherm foam shall not be less than 3.5 pcf with a minimum compressive strength of 28 psi.
  5. The standard panel is 1.25" thick an insulation value of R-8.
  6. Maximum temperature: continuous rating of 185 °F inside ducts or ambient temperature surrounding ducts.
  7. Permeability: 0 perms (max) when tested per ASTM E96, Procedure A.
  8. Maximum Air Velocity: 5000 fpm.
  9. Maximum Design Pressure: +/- 6" w.g.
  10. Anti-microbial agent: compound shall be tested for efficacy by an NRTL, and registered by the EPA for use in HVAC systems.
  11. Noise-reduction Coefficient: 0.05 minimum when tested per ASTM C423, Mounting A.
  12. Required markings: All interior duct liner shall bear UL label and other markings required by UL181 on each full sheet of duct panel; UL ratings for internal closure materials.

13. All insulation materials shall be closed cell with a closed cell content of >90%.
  14. Closure Materials:
    - a. V-groove Adhesive: Silicone (interior)
    - b. UV stable 38 mil high impact resistant titanium infused vinyl (exterior)
      - i. factory manufactured seamless corners
      - ii. cohesive bonded over-lap at corner seam covers
      - iii. water resistant infused welded vinyl seams
      - iv. mold and mildew resistant
    - c. Polymeric Sealing System
      - i. structural membrane: aluminum scrim with woven glass fiber with UV stable vinyl clad applied
      - ii. minimum seam cover width: 2-7/8"
      - iii. sealant: low VOC
      - iv. color: white (colors, matched by Architect optional)
      - v. water resistant
      - vi. mold and mildew resistant
    - d. Duct Connectors
      - i. factory manufactured cohesive bonded strips (low pressure only)
      - ii. factory manufactured all aluminum grip flange (grip flange, F-flange, H-flange, U-flange)
      - iii. factory manufactured galvanized 4-bolt flange
  15. Outdoor Cladding: Therma duct outdoor installation shall have duct segments which incorporate UV stable 39 mil high impact resistant titanium infused vinyl which is introduced during the manufacturing process.
  16. Flange coverings: Flanges shall be sealed airtight in the field prior to installing flange covers. Flange covering consists of the following: foam tape insulation with molded 39 mil covers, air gap (heating only application) with molded 39 mil covers.
  17. Weight: Therma duct shall provide low weight stresses on the building framing and support members. The R-8 Therma duct shall have a maximum weight of 3 lbs per sq.ft. Hangers and tie-downs shall be detailed on the manufacturer's installing contractor's detail drawings prior to installation but not exceeding 13' for duct girth < 84" and 8' for duct girth > 85" between hangers and designed to carry the weight and wind load of the ductwork.
- G. Execution:
1. Shop Fabrication - Ducts shall be detailed and fully factory manufactured by Therma duct, LLC facility system guidelines. All fabrication labor shall be certified "yellow label" building trade professionals, compliant to SMWIA and SMACNA labor guidelines.  
  
Fabricated joints, seams, transitions, reinforcement, elbows, branch connections, access doors and panels, and damage repairs according to manufacturer's written and detailed instructions.

Fabricated 90-degree mitered elbows to include turning vanes.

Fabricated duct segments in accordance with manufacturer's written details.

Duct fittings shall include 6" of connecting material, as measured, from last bend line to the end of the duct. Connections on machine manufactured duct may be 4".

Fabricated duct segments utilizing V-groove method of fabrication. Factory welded or cohesively bonded seams will apply to fully manufactured ductwork and fittings.

Internal seams shall be supplied with an unbroken layer of low VOC silicone or bonding (for paint shop applications). Each duct segment shall be factory supplied with either aluminum grip profile or pre-insulated duct connectors in accordance with manufacturer's detailed submittal guide. Applied duct reinforcement to protect against side deformation from both positive and negative pressure per manufacturer's design guide based on specified ductwork size and system pressure.

Designed and fabricated duct segments and fittings shall be in accordance with SMACNA HVAC DCS (latest revision).

Both positive and negative pressure ductwork and fittings shall be constructed to incorporate a UL listed, Class 1 liner with an exterior clad for permanent protection against water intrusion.

2. Duct Installation - Duct segments shall be installed by competent HVAC installers.

Install ducts and fittings to comply with manufacturer's installation instructions as follows:

- a. Install ducts with fewest possible joints.
- b. Unless otherwise indicated, install ducts vertically or horizontally, and parallel and perpendicular to building plans.
- c. Install ducts close to walls, overhead construction, columns, and other structural and permanent enclosure elements of the building.
- d. Protect duct interiors from moisture, construction debris, dust, and other foreign materials. Comply with SMACNA Duct Cleanliness for New Construction Guidelines.
- e. Use prescribed duct support spacing as described in this specification and manufacturer's recommendations.

Duct air leakage rates shall be in compliance with SMACNA HVAC DCS (latest version) per applicable leakage class based on pressure.

3. Hanger & Support Installation - Contractor shall ensure that the ductwork system is properly and adequately supported. Ensure that chosen method is compatible with the specific ductwork system requirements per Thermaduct installation detail drawings. Pre-installation should be provided prior to work commencement by installing contractor for approval. Install upper attachments to structures. Select and size upper attachments with pull-out, tension, and shear capacities appropriate for supported loads and building materials where used.

Supports on straight runs of ductwork shall be positioned at centers not exceeding 13ft for duct sections less than 84" wide (with 13ft duct segments). Larger duct sizes and shorter segments shall be supported at 8ft on center.

Ductwork shall be supported at changes of direction, at branch duct connections, tee fittings, parallel under turning vanes, and all duct accessories.

The load of such accessories to the ductwork shall be neutralized by the accessory support.

4. Field Quality Control - Arrange for the manufacturer's representative to inspect completed installation and provide a written report to the Owner that installation complies with manufacturer's written instructions. Remove and replace duct system where inspection indicates that it does not comply with specified requirements. Perform additional testing and inspecting (at the Contractor's expense) to determine compliance of replaced or additional work with specified requirements.
5. Duct Schedule -
  - Outdoor Ducts and Fittings
  - Minimum panel thickness: 1.25"
  - Aluminum cladding: minimum 0.025" thick
  - Vinyl cladding: minimum 38 mil

2.03 ACCESS DOORS

- A. Air duct access doors shall be steel of the double wall insulated type complete with hinges and camlock latches. Insulation shall be 1" thick fiberglass with "K" factor of .26 at 75°F mean temperature. Provide access doors at all fire dampers and where indicated.

<u>Duct Diameter</u>	<u>Access Opening</u>
8" thru 10"	7" dia.
11" thru 13"	10" dia.
14" thru 19"	13" dia.
20" and over	10" dia.

- B. For flat oval and rectangular ducts, the nominal size of the access opening shall be:  
When mounted on minor axis:

<u>Minor Axis</u>	<u>Access Opening</u>
8" thru 11"	8" x 12"
12" thru 13"	12" x 12"
14" and over	14" x 20"

When mounted on major axis:

<u>Major Axis</u>	<u>Access Opening</u>
8" thru 16"	8" x 12"
17" thru 24"	12" x 12"
25" and over	14" x 20"

- C. When used with insulated ducts, the access sections shall have glazed covers to prevent condensation.

2.04 DAMPERS

- A. Dampers of same materials as duct, as least one gauge heavier than duct, reinforced where directed, shall have an accessible location indicating quadrant, locking device for adjusting and

locking dampers in position. Stiffen duct at damper location, install damper in manner to prevent rattling.

- B. Manual volume dampers for rectangular ductwork shall be of the opposed blade type. They shall be furnished in sizes shown on plans. Frame and blades shall be 16-gauge galvanized steel with mill galvanized finish. Frames shall be structurally equivalent to 13 gauge U-channel. Blades shall have horizontal orientation. Provide with 2" hand quadrant standoff bracket for insulated ductwork. Manual volume dampers shall be suitable for application in HVAC systems with velocities up to 1,500 feet per minute. Dampers shall be tested in accordance with AMCA 500. Equal to Ruskin MD35.
- C. Automatic (motorized) dampers shall be of the opposed blade type. They shall be furnished in sizes suitable for installation in existing ductwork (field verify duct sizes). Frame and blades shall be 14-gauge galvanized steel with mill galvanized finish. Frames shall be structurally equivalent to 13-gauge U-channel. Blades shall have horizontal orientation and be airfoil type for low pressure drop and low noise generation. Dampers shall have blades not more than 8" in width. Linkage and hardware shall be zinc plated steel. Dampers shall be provided with solid stops for tight closing with seals on the blade edges and the sides of the damper frame which will stand a temperature of up to 200°F. Damper gasket shall be continuous 3/16" x 1/2" closed cell neoprene type. These stops shall be so assembled that they may be easily replaced if they become damaged. Bearing shall be corrosion resistant oil tight stainless steel sleeve type. Dampers shall be tight closing and shall be capable of less than 3.5% leakage based on an approach velocity of 1500 feet per minute when closed against a pressure of 4" w.g. Submit leakage and flow characteristic data. Motorized dampers shall be suitable for application in HVAC systems with velocities up to 2,000 feet per minute. Equal to Ruskin Model CD60.
- D. Duct Access Doors: Low Pressure - Duct access door shall be suitable for installation in ducts indicated on plan. Access doors shall be rated for systems with pressures up to 2" W.C. Install per manufacturers recommendations. Access doors shall be sized and located to provide convenient access for inspection and resetting of fire dampers. Frame shall be minimum 22 gage galvanized steel construction with mill galvanized finish. Door shall be double skin type with continuous piano-type hinge. Door shall have manually operate cam lock and have 1" thick fiberglass insulation. Seals between door and frame and between frame and duct shall be foam gasket type. Maximum allowable leakage shall be 0.15 cfm at 1" w.g. through a 24"x24" door. The access doors shall be tested in accordance with AMCA 500. Reference Section 2.02 Access Doors above for required sizes. Access doors shall be Ruskin ADH22 in all respects or equals by Greenheck, NCA, or Nailor.
- E. Manufacturers: Dampers may also be manufactured by Air Balance, Arrow United Industries, Greenheck, Industrial Louvers, Louvers and Dampers, Pottorff, or Nailor-Hart.

## 2.05 INSULATIONS

- A. General: All insulation work shall be done by workmen thoroughly competent in this trade and employed by a full-time insulation contractor. Failure to finish work neatly, failure to vapor proof joints, ragged edges, failure to cover all fittings, valves, dents on surface, etc., shall be proper cause to reject this work. This Contractor shall call same to the attention of the Architect before such work has progressed beyond the point of economical correction.
- B. All material used shall be new and of first line quality and shall be as recommended by the manufacturer for the service intended. All insulation materials, including sealer material,

adhesive, finishes, etc., shall be non-combustible. Complete installation shall be in accordance with manufacturer's requirements.

- C. This Contractor shall be responsible for the removal from the site of all excess materials, cartons, scrap, etc. He shall protect equipment installed by others, cleaning such equipment should mortar, plaster, adhesive, etc., fall on same.
- D. The following service shall be insulated with the listed thickness of materials:

<u>SERVICE</u>	<u>INSULATION MATERIAL</u>	<u>THICKNESS</u>	<u>FINISH</u>
Single Wall Spiral Round, Flat Oval, and *Rectangular Ductwork	1 lb. density blanket type fiberglass duct Minimum R=6.0	2"	Reinforced aluminum foil

\* Rectangular Duct includes all supply, return, exhaust, transfer and outside air duct.

- E. All Armaflex insulation shall be slipped over piping with all joints sealed with an approved mastic.
- F. All insulation shall be installed as per material manufacturer's printed instructions. All valves, fittings, strainers, Pete's plugs, etc., shall be insulated with molded fittings of same material as piping and plastic fitting covers installed over all fittings. Insulation shall be Owens-Corning Fiberglass, or approved equal, as scheduled above. All materials, jackets, adhesives, etc., shall meet smoke developed ratings and fire classifications of UL.
- G. Insulation subcontractor shall submit complete product data brochures on insulation materials, jackets, finishes, mastics, cements, etc., for approval along with complete installation brochures for all materials used on this project. Installation methods shall be in accordance with printed instructions from material manufacturers.
- H. It shall be the responsibility of the insulating subcontractor to coordinate hanger locations and prevent crushing or breaking finishes.
- I. All insulation materials, jackets, adhesives, coatings, etc., shall meet the Underwriters' Laboratories fire hazard classification (UL 723), for flame spread rating of 25, smoke developed rating of 50, and fuel contributed rating of 50.
- J. Interior lined rectangular supply ductwork from air handling units shall be wrapped with 1 LB density insulation from point of unit connection to point of exterior duct wrap. Insulation shall be attached with mechanical stick pin fasteners in addition to cement.
- K. Pipe insulation shall have tightly butted joints, taped seams to cover the entire system, including air vents.
- L. Contractor has the option to use FSK tape at joints on wrap insulation in lieu of mastic.

2.06 DRAIN CONNECTIONS

- A. Provide drain connection with P-trap of appropriate depth for system operating pressure for the packaged air conditioning units. Drain piping shall be Type 'L' copper or Schedule 40 PVC

pipe with drainage pattern fittings and cement mastic joints. Slope piping at ¼" per foot to point of disposal on grade.

#### 2.07 AUTOMATIC SHUT-DOWN

- A. Air conditioning equipment shall have smoke detectors installed in supply and return air ductwork. Mechanical contractors shall install smoke detectors provided by electrical contractor under Division 16000. Mechanical contractor shall install smoke detectors in return air duct prior to mixing with any outdoor air. Smoke detectors shall be connected to the Fire Alarm System by the Electrical Contractor.
- B. All duct mounted smoke detectors, low voltage wiring, relays, contactors, etc., necessary for interlocking air handling units for complete unit shutdown upon smoke detection shall be furnished by the Electrical Contractor. Rigid conduit for low voltage wiring shall be furnished and installed by the Electrical Contractor. Smoke detectors shall be photo-electric 24V duct mountable or plenum mountable type as indicated on the drawings and shall be equal to Firex.
- C. At Contractor's option, a line voltage smoke detector may be installed. However, installation must be accomplished by a certified fire alarm systems installer and the Contractor shall be responsible for obtaining all components and services necessary for the installation of a complete tested and operational system.
- D. A remote wall mounted alarm panel with audible and visual alarm, test/reset switch, trouble indicator and pilot light shall be provided for each smoke detector and located in a continuously monitored area as indicated on the drawings. The remote alarm panel shall also be equal to AFirex@. The alarm panel shall be labeled with plastic, etched labels clearly indicating the air handling unit being monitored.

#### 2.08 FANS & GRAVITY VENTILATORS

- A. All fans shall bear the AMCA Seal of Approval and shall be currently listed in the AMCA Directory.
- B. Ceiling/cabinet type exhaust fans shall have 1/2" thick acoustical lined steel housing, direct drive centrifugal fan, back-draft damper, and integral aluminum ceiling grille. Plastic grilles will not be acceptable. Fans shall be designed for ceiling mounting with factory fabricated collar for termination where indicated. Fans shall have capacities as scheduled on drawings and shall be controlled as indicated. Provide speed control switches for all direct drive fans. Fans shall be provided with plug-in type disconnect switch. Include step-down transformer where required for proper power connections. Ceiling mounted fans shall be equal to Greenheck SP model.
- C. Acceptable manufacturers shall be ACME, Greenheck, Loren Cook, Twin City, and Penn.

#### 2.09 GRILLES, REGISTERS, & DIFFUSERS

- A. Location of ceiling mounted and sidewall air distribution devices shall be as shown on plans. Install and fasten air distribution devices per manufacturer's detailed drawings. Use gaskets to make air-tight joints with adjoining construction. Join neatly with adjacent finished surfaces.
- B. Louvered face type ceiling diffusers shall be equal to Titus Model TDC-AA. Diffusers shall be of aluminum construction with miscellaneous steel components. The diffuser shall provide a

fixed, horizontal discharge pattern. Diffusers shall be 24"x24" module size with lay-in frame with an opposed blade damper. The damper shall be operable from the face of the diffuser. Directional throws shall be as indicated on plans. Provide with square-to-round duct connection. Round duct connection size shall be as shown on plans. Face size shall be 18"x18" for a uniform appearance. Finish shall be off-white color.

- C. Return and transfer/pressure relief grilles shall be equal to Titus Model 50F. Grilles shall be of aluminum construction with a 1/2"x1/2"x1/2" aluminum grid. Grille shall have a 90% free area (minimum). Provide with opposed blade damper (except for transfer/pressure relief). Border shall have countersunk screw holes for a neat appearance. Sizes shall be as indicated on plans. Finish shall be off-white color.
- D. Acceptable manufacturers shall be Titus, Carnes, Metal-Aire, Price, Nailor, or approved equal.

## 2.10 PACKAGED AIR CONDITIONING UNITS

A. This paragraph includes packaged air conditioning units. Airflow arrangement shall be Outdoor Air with Recirculation. Each unit shall incorporate additional product requirements as listed in Section 2 of this specification.

### B. Submittals

1. Product Data: For each type or model include the following:

- Complete fan performance curves for both Supply Air and Exhaust Air, with system operating conditions indicated, as tested in an AMCA Certified Chamber.
- Sound performance data for both Supply Air and Exhaust Air, as tested in an AMCA Certified chamber.
- Motor ratings, electrical characteristics and motor and fan accessories.
- Dimensioned drawings for each type of installation, showing isometric and plan views, to include location of attached ductwork and service clearance requirements.
- Estimated gross weight of each installed unit.
- Installation, Operating and Maintenance manual (IOM) for each model.
- Microprocessor Controller (DDC) specifications to include available options and operating protocols. Include complete data on all factory-supplied input devices.

2. A bac-net card shall be provided as an integral component of the unit.

### C. Quality Assurance

1. Source Limitations: Obtain unit with all appurtenant components or accessories from a single manufacturer.
2. For the actual fabrication, installation, and testing of work under this section, use only thoroughly trained and experienced workers completely familiar with the items required and with the manufacturer's current recommended methods of installation.
3. Product Options: Drawings must indicate size, profiles and dimensional requirements of unit and are to be based on the specific system indicated. Refer to Division 1 Section "Product Requirements".
4. Certifications  
Blowers shall be AMCA Certified for air flow.

Entire unit shall be ETL Certified per U.L. 1995 and bear an ETL sticker.

D. Coordination

1. Coordinate size and location of all building penetrations required for installation of each duct system with associated plumbing and electrical systems.
2. Coordinate sequencing of construction of associated plumbing, HVAC and electrical supply contractors.

E. Manufacturers

1. Available Manufacturers: Subject to compliance with specifications contained within this document, manufacturers offering products that may be incorporated into the work include, but are not limited to:

Greenheck Fan Corporation or approved equal.

- F. Manufactured Units - Unit shall be fully assembled at the factory and consist of an insulated metal cabinet, hot gas reheat coil, phase and brownout protection, motorized dampers (outdoor and return air), motorized recirculating damper, filter assembly intake air, supply air blower assembly, and an electrical control center. All specified components and internal accessories factory installed are tested and prepared for single-point high voltage connection except with electric post heat and exhaust fan only power which have dual point power.

G. Cabinet

1. Materials: Formed, double wall insulated metal cabinet, fabricated to permit access to internal components for maintenance.
  - a. Internal assemblies: 24 gauge, galvanized (G90) steel except for motor supports which shall be minimum 14 gauge galvanized (G90) steel.
2. Cabinet Insulation: Comply with NFPA 90A and NFPA 90B and erosion requirements of UL 181.
  - a. Materials: Rigid urethane foam  
Thickness: 2 inch (50 mm)  
Meets UL94HF-1 flame requirements.  
Location and application: Full coverage of entire cabinet exterior to include walls, roof of unit, unit base, and doors.
3. Access panels / doors: Unit shall be equipped with insulated, hinged doors or removable access panels to provide easy access to all major components. Doors and access panels shall be fabricated of 18 gauge galvanized G90 steel or painted galvanized steel.
4. Supply Air blower assemblies: Blower assembly shall consist of an electric motor and direct-drive fans. Assembly shall be mounted on heavy gauge galvanized steel rails and further mounted on 1.125 inch thick neoprene vibration isolators. Blower motors shall be capable of continuous speed modulation and controlled by a VFD.
5. Control panel / connections: Units shall have an electrical control center where all high and low voltage connections are made. Control center shall be constructed to permit single-point high voltage power supply connections. RTU shall be equipped with a Unit Disconnect Switch. Electric heater shall have single point power.

6. Reheat coil with factory installed modulating hot gas reheat valve.
7. Phase and brownout protection: Unit shall have a factory-installed phase monitor to detect electric supply phase loss and voltage brown-out conditions. Upon detection of a fault, the monitor shall disconnect supply voltage to all motors.
8. Motorized dampers / Intake Air, Motorized dampers of low leakage type shall be factory installed.
9. Motorized Recirculating Air Damper designed to permit 100% recirculation of exhaust air shall be factory installed.

#### H. Blower

1. Blower section construction, Supply Air: direct drive motor and blower shall be assembled on a 14 gauge galvanized steel platform and shall be equipped with 1.125 inch thick neoprene vibration isolation devices.
2. Blower assemblies: Shall be statically and dynamically balanced and designed for continuous operation at maximum rated fan speed and horsepower.
3. Fan: Direct drive, airfoil plenum fan with steel wheels statically and dynamically balanced and AMCA certified for air and sound performance.
4. Blower section motor source quality control: Blower performance shall be factory tested for flow rate, pressure, power, air density, rotation speed and efficiency. Ratings are to be established in accordance with AMCA 210, "Laboratory Methods of Testing Fans for Rating".

- I. Motors - General: Blower motors greater than 3/4 horsepower shall be "NEMA Premium" unless otherwise indicated. Compliance with EPA minimum energy-efficiency standards for single speed ODP and TE enclosures is not acceptable. Motors shall be heavy-duty, permanently lubricated type to match the fan load and furnished at the specified voltage, phase and enclosure.

#### J. Unit Controls

1. The unit shall be constructed so that it can function as a stand-alone heating and cooling system controlled by factory-supplied controllers, thermostats and sensors or it can be operated as a heating and cooling system controlled by a Building Management System (BMS). This unit shall be controlled by a factory-installed microprocessor programmable controller (DDC) that is connected to various optional sensors.
2. Unit shall incorporate a DDC controller with integral LCD screen that provides text readouts of status. DDC controller shall have a built-in keypad to permit operator to access read-out screens without the use of ancillary equipment, devices or software. DDC controllers that require the use of equipment or software that is not factory-installed in the unit are not acceptable. Alarm readouts consisting of flashing light codes are not acceptable. Owner-specified ventilating conditions can be input by means of pushbuttons.
3. Unit supply fan shall be configured for Constant Volume (ON/OFF).
4. Unit exhaust fan shall be configured for constant volume operations.
5. Outside Air / Return Air damper control shall be field adjustable three-position.
6. Operating protocol: The DDC shall be factory-programmed for BACNetMSTP.
7. Variable Frequency Drive (VFD): unit shall have factory installed variable frequency drive for modulation of the exhaust air blower assembly. The VFD shall be factory-programmed for unit-

specific requirements and shall not require additional field programming to operate.

- K. Filters - Unit shall have permanent metal filters located in the outdoor air intake and shall be accessible from the exterior of the unit. MERV 8 disposable pleated filters shall be provided in the supply air stream. MERV 8 disposable pleated filters shall be provided in the supply final air stream.
- L. Examination
  - 1. Prior to start of installation, examine area and conditions to verify correct location for compliance with installation tolerances and other conditions affecting unit performance. See unit IOM.
  - 2. Examine roughing-in of plumbing, electrical and HVAC services to verify actual location and compliance with unit requirements. See unit IOM.
  - 3. Proceed with installation only after all unsatisfactory conditions have been corrected.
- M. Installation - Installation shall be accomplished in accordance with these written specifications, project drawings, manufacturer's installation instructions as documented in manufacturer's IOM, Best Practices and all applicable building codes.
- N. Connections - In all cases, industry Best Practices shall be incorporated. Connections are to be made subject to the installation requirements shown above. Connections also include drain piping, ductwork and electrical.
- O. Field Quality Control - Manufacturer's Field Service: Engage a factory authorized service representative to inspect field assembled components and equipment installation, to include electrical and piping connections. Report results to A / E in writing. Inspection must include a complete startup checklist to include (as a minimum) the following: Completed Start-Up Checklists as found in manufacturer's IOM.
- P. Start-Up Service - Engage a factory authorized service representative to perform startup service. Clean entire unit, comb coil fins as necessary, install clean filters. Measure and record electrical values for voltage and amperage. Refer to "Testing, Adjusting and Balancing" and comply with provisions therein.
- Q. Demonstration And Training - Engage a factory authorized service representative to train owner's maintenance personnel to adjust, operate and maintain the entire unit. Refer to Division 01 Section Closeout Procedures and Demonstration and Training.

### PART 3 EXECUTION

#### 3.01 WATER TREATMENT

- A. None required.

#### 3.02 TESTING OF PIPING SYSTEMS

- A. General: Contractor shall notify Architect/Engineer of tests twenty-four hours in advance. All tests shall be witnessed by the Architect/Engineer or his representative. Contractor shall provide a minimum 6" dial pressure gauge to indicate all test pressures and the scale shall be not more than 0 to 160 psi and 1 psi graduations. Test shall be held for a minimum of five (5) hours with no apparent loss of pressure.
- B. The following systems shall be tested at pressures indicated:

Drain piping 10 psi

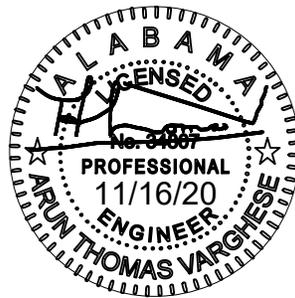
- C. All tests shall be verified by a test record maintained on the site and witnessed by the signature of inspector.
- D. Any portion of system failing to pass test shall be retested until proven acceptable.

### 3.03 GUARANTEE

- A. The Contractor shall guarantee, in writing, the entire system when completed to be free from any and all defects and shall guarantee the entire system, controls and other equipment against defective materials and workmanship for a period of one (1) year from date of completion and acceptance.
- B. Upon receipt of notice from the Owner of the failure or any part of the guaranteed equipment during the guarantee period, the affected part or parts shall be promptly repaired or replaced with new parts by and at the expense of the Contractor.
- C. Under the guarantee clause, the Contractor shall include free routine maintenance for a period of one (1) year from the date of final acceptance. At the end of one year of operation, the Contractor and mechanical subcontractor shall inspect and repair any problems which may exist. Contractor shall lubricate bearings, adjust or replace belts, replace filters, and provide all necessary preventative and corrective maintenance required. Contractor shall provide Engineer with a table identifying each air handling unit model and serial number, quantity and size of filters, filter manufacturer and efficiency, belt manufacturer and size, motor HP, frame, and power supply.

END OF SECTION 15 8000

# ELECTRICAL SPECIFICATIONS 16000



SECTION 16 1000 - ELECTRICALPART 1 - GENERALRELATED DOCUMENTS

The General and/or Special Conditions Sections are a part of this specification and the Contractor shall consult them in detail for instructions pertaining to this work. Section 16 is sub-divided for convenience only.

SCOPE

Furnishing of all labor, material, equipment, supplies, and services necessary to construct and install the complete electrical systems as shown on the drawings and specified herein. Work shall include but is not necessarily limited to the following items:

Service Entrance

Grounding

Lighting and controls

Demolition

Telecommunications

Exterior Distribution/Branch Circuits

Interior Distribution/Branch Circuits

Equipment Connections

Fire alarm

Intercom/Sound

Outdoor Lighting

JOB CONDITIONS

Site Inspections: Before submitting proposals, each bidder should visit the site and fully familiarize himself with all job conditions and shall be fully informed as to the extent of his work. No consideration will be given after bid opening date for alleged misunderstanding as to the requirements of work involved in connecting to the utilities, as to requirements of materials to be furnished, or as to the extent of demolition required.

Existing Conditions: All utilities, existing systems, and conditions shown on the plans as existing are approximate, and the Contractor shall verify all details of the project before any work is started.

Scheduled Interruptions: Planned interruptions of utilities service, to any facility affected by this contract, shall be carefully coordinated and approved by the Architect at least ten (10) days in advance of the requested interruption. The Contractor shall not interrupt services until specific approval has been granted by the Architect. The request shall indicate services to be affected, date and time of interruption and duration of outage. Request for interruption of service will not be approved until all equipment and material required for the completion of that particular phase of work are on the job site. The work may have to be scheduled after normal working hours.

Maintaining Service: Any existing service (or operating system) which must be interrupted for any length of time shall be supplied with a temporary service as necessary for continuation of the normal operation of this facility.

Removal of Existing Work: Where noted or indicated on the drawings, or specified herein, existing electrical materials and equipment shall be removed from the building. All materials designated to be removed by the Contractor, not to be salvaged and given to the Owner or required to be reinstalled, including scrap, shall become the property of the Contractor, and shall be promptly removed from the site. Existing items required to be removed temporarily in order to properly install new work shall be replaced in a satisfactory manner upon completion.

#### TEMPORARY POWER

Furnish and maintain temporary wiring system for light and power for use during construction by all trades. Use solidly grounded system. Limit over-current protection to 20 amperes on No. 12 conductors. Coordinate all requirements for temporary power with the serving utility and pay for all charges incurred while furnishing power for construction. Verify whether charges for electrical power consumption are specified in Division One; if so, payment of bills for power consumption are not included under this section.

Accidental Interruptions: All excavation and/or remodeling work required shall be performed with care so as not to interrupt other existing services (water, gas, electrical, sewer, sprinklers, etc.). If accidental utility interruption resulting from work performed by the Contractor occurs, service shall be immediately restored to its original condition without delay, by and at the expense of the Contractor, using skilled workmen of the trade required.

#### CODES, PERMITS AND INSPECTIONS

The installation shall comply with all local, state, and federal laws and ordinances applicable to electrical installation and with the regulations of the latest published edition of the National Electrical Code (N.E.C.) where such regulations do not conflict with those laws and ordinances. The Contractor shall obtain and pay for all permits and inspection fees, and after completion of the work, shall furnish the Architect a certificate of final inspection and approval from the applicable local inspection authorities. Any charges by a utility (Power, Telephone, Cable TV, etc.) for providing service as shown shall be included in the bid and paid by the Contractor. The installation shall comply with:

International building Code 2015  
International Fire Code 2015

NFPA 70-2014, National Electrical Code  
NFPA 72-2013, National Fire Alarm and Signaling Code  
ASHRAE Standard 90.1-2013 Energy Standard for Buildings Except Low-Rise Residential Buildings

### DRAWINGS AND SPECIFICATIONS

The drawings and these specifications are complimentary each to the other. What is called for by one shall be as binding as if called for by both. Where the drawings and/or specifications differ as to quantity or quality, the greater quantity or higher quality shall be provided. Omissions from the drawings and specifications of details of work which are evidently necessary to carry out the intent of the drawings and specifications, or which are customarily performed, shall not relieve the Contractor from performing such work. In any case of discrepancy in the figures or catalog numbers, the matter shall be submitted to the Architect, who shall promptly make a determination in writing. Any adjustment by the Contractor shall be at the Contractor's own risk and expense. Electrical drawings are diagrammatic only. Do not scale these drawings. All equipment shall be installed in accordance with manufacturer's recommendations and any conflicting data shall be verified before bidding.

### STANDARDS OF MATERIALS AND WORKMANSHIP

Materials: All materials shall be new and shall be listed and approved by the Underwriters' Laboratories, Inc., in every case where a standard has been established for a particular type of material in question. All work shall be executed in a workmanlike manner and shall present a neat appearance.

Prior Approvals: Equipment and materials of the same type or classification and used for the same purpose, shall be products of the same manufacturer. It is the intention of these specifications to indicate a standard of performance and quality for all materials incorporated in this work. Manufacturer's names and catalog numbers are used to designate the item of equipment or material as a means of establishing grade and quality. Where several manufacturers are named, only those named manufacturers' products will be considered and the Contractor's bid shall be on their products. The first named of several manufacturers is the manufacturer whose product was used in engineering the project. Other named manufacturers, although acceptable as manufacturers, shall guarantee that their product will perform as specified and will meet space requirements. Where performance characteristics of such equipment differs from the equipment scheduled on the drawings, the engineer shall reserve the right to reject it. Where use of such equipment requires different quantity or arrangement of foundations, supports, ductwork, piping, wiring, conduit and any other equipment. The Contractor shall furnish said changes and additions and pay all costs for all changes to the work and the work of others affected by using such equipment.

For approval of products other than those specified, bidders shall submit to the Architect, a request in writing, at least ten (10) days prior to bid date. Requests received after this time will not be reviewed or considered regardless of cause. Requests shall clearly define and describe the product for which approval is requested. Requests shall be accompanied by manufacturer's literature, specifications, drawings, cuts, performance data, model numbers, list of references or other information necessary to completely describe the item. Approval will be in the form of an Addendum to the specifications issued to all prospective Prime Contract Bidders on record. The Addendum will indicate the additional products which are approved for this project.

If a bidder proposes to use substitute materials or equipment for the following items, he shall obtain a

minimum of ten (10) days before Bid "Prior Approval" or longer as described in "Instructions to Bidders" for the items indicated below:

Lighting controls.

Panelboards.

Safety switches.

Lighting fixtures.

Emergency battery units.

Fire alarm system.

Approval on other items shall be handled in the normal manner, as described in "Instructions to Bidders", under the heading "Approval of Materials", preferably before receipt of bids.

Substitutions: Reference to a particular product by manufacturer, trade name, or catalog number establishes the quality standards of material and equipment required for this installation and is not intended to exclude products equal in quality and similar design. The Architect reserves the sole right to decide the equality of materials proposed for use in lieu of these specified. It shall be the Contractor's responsibility to furnish the information and data sufficient to establish the quality and utility of the items in question, including furnishing samples if required.

Shop Drawings: The Contractor shall submit a list of items proposed for use. He shall also submit catalog data and shop drawings on proposed systems and their components, panelboards, safety switches, starters and contactors, transformers, lighting fixtures, and wiring devices. Where substitutions alter the design or space requirements, the Contractor shall defray all items of cost for the revised design and construction including costs to all allied trades involved. Data shall be submitted within ten (10) calendar days after the contract is awarded. Provide six (6) copies of shop drawings unless a greater number of copies is required by the General Conditions. Each submittal data section shall be covered with an index sheet listing Contractor, Sub-Contractor, Project Name, and an index to the enclosed submittals.

Each major section of submittals such as power, equipment, lighting equipment, fire alarm, etc., shall be secured in a booklet or stapled with a covering index which lists the following information:

General contractor with phone number and project manager.

Subcontractor with phone number and project manager.

Supplier of equipment with phone number and person responsible for this project.

Index of each item covered in submittal and model number as proposed in the attached.

Any deviation from contract documents shall be specifically noted on submittal cover index and boldly

on specific submittal sheet.

#### TYPE OF PERMANENT ELECTRICAL SERVICE

Existing electrical service is 240 volts, 3-phase, 4-wire. Contractor shall verify all details of electrical service with the serving utility company prior to bid. Contractor shall include any and all costs associated with the service in his bid price and shall pay these costs to the serving utility company.

Operating and Maintenance Manuals: At completion of the work, furnish three (3) copies of written operation instructions which shall include manufacturer's descriptive bulletins, operating and maintenance manuals and parts lists of all equipment installed. Also include in such instructions, the specified size and capacity ratings of all equipment installed. Each set of instructions shall be assembled into a suitable loose-leaf type binder and presented to the Architect for delivery to the Owner.

Record Drawings: Maintain one extra set of black-line, white print drawings for use as Record drawings. Records shall be kept daily, using colored pencil. As the work is completed, relevant information shall be transferred to a reproducible set, and copies made to be given to the Architect.

Comply with the following for all work specified in Division Sixteen. As-built information shall be shown to scale, using standard symbols listed in the legend. As a minimum, show the following:

Location of stub-outs, dimensioned from permanent building lines.

Location and depth of under-slab and in-slab raceways.

All routing of raceways.

Corrected panelboard and equipment schedules.

Corrected circuit numbers as they appear on panelboard directories.

Corrected motor horsepower and full load amperages.

Number, size, type of insulation, and number of wires in each conduit or multi-conductor cable whether in conduit or exposed.

Location of junction boxes and splices.

Location of access panels.

#### INTERFACE WITH OTHER CONTRACTS

It shall be the responsibility of the Contractor to cooperate with all other crafts working on this project. All cutting, trenching, backfill, and structural removals to permit entry of the electrical system components shall be done by this Contractor. All patching and finishing shall be done by the General Contractor.

It shall be the responsibility of the Electrical Contractor to coordinate, provide, and install the

overcurrent protection devices, wire, and conduit as required for the specific mechanical equipment installed.

It shall be the responsibility of the Contractor to cooperate with all other crafts working on this project to ensure there are not pipes, ductwork or other foreign systems as described in the latest version of the NEC within the working space or the dedicated space for the electrical equipment. All piping, ductwork or other foreign systems as described in the latest version of the NEC located above the dedicated space shall have shields or other protection as approved by the NEC.

#### EQUIPMENT FURNISHED UNDER OTHER SECTIONS

This Contractor shall furnish and install complete electrical roughing-in and connection to all equipment furnished under other sections as indicated on drawings. All such equipment shall be set in place as work of other sections.

The Electrical Contractor is to provide and install all components, wire, conduit, boxes, etc. to interlock the exhaust fans with the HVAC equipment as required.

The Electrical Contractor is to provide and install the required device boxes for the HVAC controls. A raceway, 3/4" conduit minimum, is to be provided and installed from the device location to the accessible space above the ceiling or as appropriate for the application. Line voltage thermostats are to be installed by the Electrical Contractor. Exact requirements for control wiring, conduit, boxes, etc. shall be coordinated with the mechanical contractor and mechanical documents prior to bid.

#### EQUIPMENT CONNECTIONS

In general, provide electrical power and control systems connections to all equipment shown on drawings. Included are wiring raceways, disconnects, starters, and other devices shown. Excluded are devices furnished integrally with the manufacturer's package and work specified in other sections of these specifications.

#### GROUNDING

Provide grounding and bonding systems in strict accordance with the latest published edition of N.E.C., except where more stringent requirements are specified herein. Inter-connection of neutral and ground is not permitted except at service entrance equipment or as required for a separately derived system. Install grounding conductors to permit shortest and most direct path to ground. Inaccessible joints are not to be made in grounding conductors. Where grounding conductors are in raceway, bond conductor and raceway at both ends. Grounding and bonding fittings used shall be UL listed and be compatible with metals used in system. Sheet metal type straps are not acceptable.

Service entrance ground shall consist of driven electrodes, ground ring, building steel, water pipe electrodes, concrete encased electrode, rod and pipe electrodes, or plate electrodes as available. The driven electrodes, building steel, water pipe electrodes, and concrete encased electrodes are the minimum requirements. Unless otherwise shown on drawings, each driven electrode shall consist of

one 3/4 inch diameter 10 ft. long copperweld steel rod. Rod made of wrought iron may be used in lieu of copperweld at option of contractor. Water pipe connection shall be made to a minimum one inch diameter metallic cold water pipe. Extend grounding conductor to main telephone equipment space. Interconnect conduits entering and leaving service entrance equipment using grounding bushing and copper conductor.

A green insulated ground conductor shall be run in all branch circuit and feeder conduit with phase and/or neutral conductors. Ground conductor shall be sized per NEC or as noted on drawings. Minimum size #12 AWG. Conduit box to device strap or yoke screw connection is not sufficient. Provide an insulated grounding jumper for receptacle circuits.

The Electrical Contractor shall test and provide written certification of final ground system; including test method, equipment model and serial numbers, and final measurements at each point. The ground electrode system must be less than 25 ohms.

#### GUARANTEE AND SERVICE

Upon completion of all tests and acceptance, the Contractor shall furnish the Owner of a written guarantee covering the electrical work done for a period of one (1) year from date of acceptance. Guarantee includes equipment capacity and performance ratings specified without excessive noise levels. Upon notice from the Architect or the Owner, the Contractor shall, during the guarantee period, rectify and replace any defective material or workmanship and repair any damage caused thereby without additional cost.

#### PART 2 - PRODUCTS

##### GENERAL

All equipment and materials shall have ratings established by the recognized independent agency or laboratory. The Contractor shall apply the items used on the project within the ratings and subject to any stipulations or exceptions established by the independent agency or laboratory. Use of equipment or materials in applications beyond that certified by the agency or beyond that recommended by the manufacturer shall be cause for removal and replacement of such misapplied items.

##### LOW VOLTAGE SWITCHBOARD

- A. General - The Contractor shall furnish and install, where indicated, a free-standing, dead-front type low-voltage distribution switchboard, utilizing group mounted circuit protective devices as specified herein, and as shown on the contract drawings. The low-voltage distribution switchboards and all components shall be designed, manufactured and tested in accordance with the latest applicable following standards:
1. NEMA PB-2
  2. UL Standard 891.

The manufacturer of the assembly shall be the manufacturer of the circuit protective devices within the assembly. The low-voltage switchboard shall be UL labeled.

- B. Ratings - The assembly shall be rated to withstand mechanical forces exerted during short-circuit conditions when connected directly to a power source having available fault current as shown on the drawings. Voltage rating to be as indicated on the drawings.
- C. Construction
1. Switchboard shall consist of the required number of vertical sections bolted together to form a rigid assembly. The sides and rear shall be covered with removable bolt-on covers. All edges of front covers or hinged front panels shall be formed. Provide adequate ventilation within the enclosure.
  2. All sections of the switchboard shall be rear aligned with depth as shown on the drawings. All protective devices shall be group mounted. Devices shall be front removable and load connections front accessible enabling switchboard to be mounted against a wall.
  3. The assembly shall be provided with adequate lifting means.
  4. The switchboard shall be equal to Cutler-Hammer type Westinghouse Pow-R-Line C utilizing the components herein specified and as shown on the drawings.
  5. The switchboard shall be suitable for use as service entrance equipment and be labeled in accordance with UL requirements.
  6. The switchboard shall be capable of metering requirements as indicated on the drawings.
- D. Bus
1. All bus bars shall be silver-plated copper. Bus sizing shall be based on NEMA standard temperature rise criteria of 65 degrees C over a 40 degrees C ambient (outside the enclosure).
  2. Provide a full capacity neutral bus.
  3. A copper ground bus (minimum 1/4 x 2 inch), shall be furnished firmly secured to each vertical section structure and shall extend the entire length of the switchboard.
  4. All hardware used on conductors shall be high-tensile strength and zinc-plated. All bus joints shall be provided with conical spring-type washers.
- E. Wiring/Terminations
1. Small wiring, necessary fuse blocks and terminal blocks within the switchboard shall be furnished as required. Control components mounted within the assembly, such as fuse blocks, relays, pushbuttons, switches, etc., shall be suitably marked for identification corresponding to appropriate designations on manufacturer's wiring diagrams.
  2. Mechanical-type terminals shall be provided for all line and load terminations suitable for copper cable rated for 75 degrees C of the size as indicated on the drawings.
  3. Lugs shall be provided in the incoming line section for connection of the main grounding conductor. Additional lugs for connection of other grounding

conductors shall be provided as indicated on the drawings.

- F. Circuit Breakers - Where indicated, provide circuit breakers UL listed for application at 100% of their continuous ampere rating in their intended enclosure.
- G. Nameplates
  - 1. Engraved nameplates, mounted on the face of the assembly, shall be furnished for all main and feeder circuits as indicated on the drawings. Nameplates shall be laminated plastic, black characters on white background. Characters shall be 3/16-inch high, minimum. Nameplates shall give item designation and circuit number as well as frame ampere size and appropriate trip rating. Furnish master nameplate giving switchboard designation, voltage ampere rating, short-circuit rating, manufacturer's name, general order number, and item number.
  - 2. Control components mounted within the assembly, such as fuse blocks, relays, pushbuttons, switches, etc., shall be suitably marked for identification corresponding to appropriate designations on manufacturer's wiring diagrams.
- H. Finish - All exterior and interior steel surfaces of the switchboard shall be properly cleaned and provided with a rust-inhibiting phosphatized coating. Color and finish of the switchboard shall be ANSI 61 light gray.

#### PANELBOARDS

General: Furnish and install circuit breaker lighting and appliance panelboards where shown on the drawings and as indicated in the panelboards schedule. Panelboards shall comply with the following industry standard:

NEMA Standard PB-1

UL Standards: Cabinets and Boxes -UL50; Panelboards - UL 67

National Electric Code

Panelboards shall be labeled as suitable for use as service equipment in accordance with Article 408 of the National Electrical Code.

Box: The panel box shall not be less than 20 inches wide and fabricated from galvanized or galvanized annealed steel. Box shall have adjustment screws to provide easy alignment for flush mounted applications. Removable end walls to be blank with no KO's. Panelboard box is to have separate UL label and minimum wire bending and gutter requirements to meet the NEC and UL standards. Wiring gutters shall be completely free of any part of trim clamp to prevent damaging wire insulation.

Interior Type S3: All interiors shall be completely factory assembled. The design of the interior should permit replacement of circuit breakers without disturbing adjacent units and without machine drilling or tapping. Bus bars and breaker branch bus shall be of 98% conductivity copper. Bus sequence shall start

at the top left phase bus of the interior for both top and bottom fed panels. Panelboard bus structure and main breaker or main lugs shall have current ratings as shown on the plans or as indicated in panel schedule. Such ratings shall be established by heat rise test in accordance with Standard UL 67. Bus bars shall be supported by glass filled polyester type insulators. All bolts used to connect current carrying parts together shall be case hardened, thread-forming type and be accessible for tightening from the front of the panel. Provide an individual circuit number button with an embossed number next to each breaker or provision. Stick on numbers are unacceptable.

Dead front to be provided with flange for easy attachment of trim. Incoming cable lugs shall be grouped at one end to separate them from the load side cables. Neutral bussing shall have a lug for each outgoing branch requiring a neutral connection. For easy wiring and shortest cable run possible, load side neutral connection lugs to be split with each side taking 50% of load neutral connections. The interior shall be provided with wing nuts for securing to box without tools.

All computer isolation panels shall have 200% neutral bus.

Fas-Latch Trim: The panel trim shall be surface or flush as indicated on the drawings. It shall be fabricated from cold rolled steel, painted with an ANSI-61 light gray finish and equipped with concealed hinges, flush lock and a holder for circuit directory card. Trim shall have two separate supports designed to engage the box flange to stabilize and secure the trim during installation. Trim screws to be located behind the lockable door for tamper resistance. No external screws on trims will be allowed. Trims shall be hinged to box.

Description: The panelboards shall be Sentron type for use on systems as indicated on each panelboard schedule. The panelboard enclosures shall be NEMA Type 1 construction for top or bottom cable entrance and suitable for surface or flush mounting unless otherwise noted on panelboard schedules. Panels shall be interchanged from top or bottom feeds.

Short circuit rating shall be as indicated on panel schedule.

Provide main lug only or main circuit breaker panel boards as shown on panelboard schedules. Also provide branch and subfeed circuit breakers of the quantity, trip rating and number of poles as shown on schedules. All panels shall accept additional feed thru lugs or subfeed breaker without modification to bus.

Molded case circuit breakers shall be thermal magnetic, quick make, quick break, trip free. Multi-pole breakers shall be common trip. All breakers shall be equipped with antiturn solderless, pressure type connectors. All provisions shall be located at the bottom of the panelboard and be fully bussed complete with all necessary mounting hardware less the breaker. No plug in breakers will be allowed.

All panels shall be fully rated. No series rating of breakers is acceptable.

Provide subfeed lugs, feed through lugs, handle blocking devices, pad locking devices, shunt trips and ground bus bars as shown on schedules.

Panelboards shall be manufactured by Siemens, General Electric or Square D or prior approved.

### NAMEPLATES

Each new panel shall have an external micarta engraved nameplate. Disconnect switches, starters or similar devices shall have a micarta engraved nameplate mechanically affixed (no glue) indicating the load served and the location, such as "A/C 2" or "A/C 3 above ceiling". Letters shall be 1/4" black on a white background. Panels shall be designated in this manner.

"Panel A  
120/240 Volts  
3 Phase, 4 Wire"

### DIRECTORIES

For panelboards, install typewritten directories, listing each branch circuit, identifying space and equipment it controls. Label panels, disconnect switches, pushbuttons, motor starters, and time clocks with identification shown on plans using engraved nameplates, identify main and switches ahead of mains, noting equipment they serve.

### DISCONNECT SWITCHES

Furnish heavy duty disconnect switches. Switches shall be a product of the same manufacturer as panelboards, using a quick-make, quick-break mechanism. Enclosure shall be Nema Type conforming to area in which it is installed. Shop drawings include manufacturer's catalog data and physical dimensions for each size switch.

### FUSES

Furnish fuses for fusible equipment. Supply one (1) set of 3-spares fuses for each size used. Provide spare fuse cabinet. Fuses specified are coordinated and shall be manufactured by Bussman. Chase-Shawmut and Little Fuse will be approved provided shop drawing submittal demonstrates selective coordination.

### RACEWAY AND FITTINGS

Rigid Metal Conduit - Shall have threaded fittings, galvanized steel or threadless compression galvanized steel or threadless compression cadmium plated malleable iron. Fittings shall be rain tight/concrete tight.

Electrical Metallic Tubing (EMT) - Material of steel or malleable iron is acceptable. Couplings and connectors shall be concrete and rain tight, with connectors having insulated throats. Use gland and ring compression type couplings and connectors for conduit sizes 2" and smaller. Use set screw type couplings with four set screws each for conduit sizes over 2". Use set screws of casehardened steel with hex head and cup point to firmly seat in wall of conduit for positive grounding. Indent type connectors or couplings are prohibited. Die-cast or pressure-cast zinc-alloy fittings or fittings made of "pot metal" are prohibited.

Rigid Non-Metallic Conduit - shall have polyvinyl chloride (PVC) fittings suited for the purpose and joined together by a method approved for the purpose. Schedule 80 conduit sections may be joined together with threaded fitting connectors.

Flexible Metal Conduit - fittings shall be zinc plated steel or cadmium plated malleable iron screw type with insulated throat and angular wedge fitting between convolutions of conduit.

Liquidtight Flexible Metal Conduit - fittings shall be cadmium plated, malleable iron or steel with compression type steel ferrule and neoprene gasket sealing rings, with insulated throat.

Conduits installed concealed in earth fill, concrete or, solid masonry structures shall be PVC 40. PVC shall not be installed in any exposed locations. All exposed exterior conduits shall be GRS. Any GRS installed below grade or in concrete shall have bitumastic applied prior to installation.

Conduits used for connection to recessed lighting fixtures shall be FLEX. Conduits for connection to motors or vibrating equipment shall be LQFLEX not less than 18" long and not over 60" long. All flexible conduits are to be secured at a minimum of every three feet using approved methods.

Conduits run concealed in the hollow space of non-masonry walls or, above suspended/hard ceilings shall be EMT. Exposed conduits shall be run at right angles to or parallel with building lines and exposed structure. In all cases, conduit runs shall be grouped together where possible and shall be supported from the building structure, not from any suspended ceiling support system.

PVC 80 shall be used only where specifically indicated on the drawings and shall be UL listed as sunlight resistant. Install conduits passing through building sidewalls or through beams below grade with expansion/deflection fittings. Install expansion fittings where conduit crosses an expansion joint. Where conduit penetrates damp-proofing membranes, cut the membrane carefully around the conduit and seal the joint with pressure sensitive tape.

All conduit bends are to be made with a device made for the application. All conduit runs are to be parallel or perpendicular to the building structure. Conduit offsets are to be utilized at junction boxes and device boxes and a strap placed on conduit at the point nearest the box for support.

Support raceways securely with pipe straps, wall brackets, conduit hangers or ceiling trapeze. Fastenings shall be by wood screws or screw type nails to wood, by toggle bolts to concrete block, expansion bolts on concrete or brick, and beam clamp types on steel or bar joists. Raceways shall not be fastened to suspended ceiling supports but must have independent support from the structure. Supporting devices shall be of materials having corrosion protection at least equal to the raceway. A support shall be provided as close as practical to, and not exceeding 18" from an unsupported box or from change of direction. In horizontal runs, this support may be omitted if the box is independently supported and the box connection is not made with chase nipple or threadless box connector. In vertical runs, load produced by weight of the raceway and conductors shall not be carried by the raceway terminal, but must be carried entirely by conduit supports. Install conduit supports in strict accordance with the following table, except as required by support for boxes and changes in direction:

MAXIMUM SUPPORT

TRADE SIZE

LOCATION OF RUNS

SPACING

1/2, 3/4	Exposed, Horizontal	7 feet
1 and larger	Exposed, Horizontal	10 feet
All sizes	Concealed, Horizontal	10 feet
1/2, 3/4	Exposed, Vertical	7 feet
1, 1-1/4	Exposed, Vertical	8 feet
1-1/2 and larger	Exposed, Vertical	10 feet
All sizes	Concealed, Vertical	10 feet

For conduit runs that are not sized on drawings, the maximum conduit fill shall be computed using the requirements for Type THW conductors although the actual wiring is with Type THWN or other type of conductors having smaller cross-sections. This requirement is made to provide spare conduit capacity.

Install all required sleeves for conduits passing through concrete slabs. Fire proof space between conduit and sleeve after installation using of mineral wool as required. All fire wall penetrations are to be sealed with a U. L. approved method. Any penetrations of the roof membrane must be sealed by a certified roofing contractor using an approved method.

#### Expansion Joints:

Conduits 3" and larger, that are secured to the building structure on opposite sides of a building expansion joint, required expansion and deflection couplings. Install couplings in accordance with the manufacturer's recommendations.

Provide conduits smaller than 3" with junction boxes on both sides of the expansions joint. Connect conduits to junction boxes with sufficient slack of flexible conduit to produce 5" vertical drop midway between ends. Flexible conduit shall have a green copper ground-bonding jumper installed. In lieu of this flexible conduit, expansion and deflection couplings as specified above for three inches and larger conduits are acceptable.

Expansion fittings shall be provided for raceways to compensate for thermal expansion and contraction in conduit runs 200ft or greater and at building expansion joints. Bonding jumpers shall be provided for electrical continuity of the raceway system at the expansion fittings.

#### Conductors:

All conductors shall be installed in conduit. Conductors for building wiring shall have THHN/THWN, 600-volt insulation and shall be soft-drawn copper of standard American Wire Gauge (AWG) size. Minimum size shall be No. 12. 20-amp branch circuits more than 100 feet in length shall be upsized to No. 10. Provide individual neutral conductors for all single-pole branch circuits. Tied breaker handles are not acceptable. All wire No. 8 and larger shall be stranded. All branch circuits No. 10 and smaller shall be wired with color-coded wire with the same color used for a system throughout the building. Power feeders and branch circuits larger than No. 10 shall either be fully color coded or shall have black insulation and be similarly color coded with tape or paint in all junction boxes and panels. Where tape or paint is used to identify conductors, apply at all terminations, junction boxes, pull boxes and wireways. Apply tape, butt lapped, or paint for a minimum distance of 2" and, where applied to ends of conductors, start at cut end of the conductor insulation. Tape shall not cover manufacturers conductors

shall be color coded or labeled as necessary for clear identification. Color coding of all conductors shall be as follows:

<u>Grounding</u>	<u>Bare or Green</u>
120/208 volt Three Phase (wye)	
Phase Conductors:	A-Black, B-Red, C-Blue
Neutral:	White

All circuits are to be run with a neutral conductor: No shared neutral conductors are allowed.

Suitable bushings, shields or fittings having smooth rounded edges shall be provided where conductors pass between wire ways, through partitions, around bends, between wire ways and cabinets or junction boxes, and at other locations where necessary to prevent abrasion of the insulation of the conductors. As a clarification, this also applies to conduits stubbed into the ceiling.

### JUNCTION AND PULL BOXES

Junction and pull boxes shall meet requirements of National Electrical Code. Standard manufactured boxes shall be listed by Underwriters' Laboratories, Inc. Where custom designed and fabricated boxes are needed, they shall meet the construction standards of Underwriters' Laboratories, Inc. and the N.E.C.

Junction and pull boxes shall be installed where required by National Electrical Code and where necessary to facilitate pulling of wire or cable. Considerations are sizes of wire and cable, number of bends in raceway, and conductor support requirements in vertical raceways. Maximum distance between terminations at junction or pull boxes, cabinets, or other points of termination shall not exceed 250 feet for straight horizontal runs. This length shall be decreased 50 feet for each 90 degree bend. All junction boxes shall be independently and rigidly supported from the building structure. Junction box type shall conform to the area in which it is installed (i.e. wet location areas shall be moisture resistant type junction boxes).

Junction boxes and associated conduit for Fire Alarm shall be painted red. Junction boxes for low voltage controls, communication, technology, etc. shall be permanently marked indicating use.

### OUTLETS

Outlet boxes shall be one piece or projection welded, galvanized stamped steel for gang sizes required. Where several devices are located on drawings in the same general location, use multi-gang boxes. Sectional boxes are not acceptable. Boxes shall be sized in accordance with National Electrical Code. Boxes required for communications systems, mechanical control devices, etc., shall be installed under this section of the specifications. Verify outlet box locations and sizes required for systems other than electrical power from shop and manufacturer's drawings, and install outlets as per those requirements.

Boxes for wall and ceiling outlets shall finish flush and straight. Wall outlets in exposed concrete block, masonry, and tile walls shall be installed with extra deep square corner boxes or with standard boxes and square cornered tile wall covers so that conduit offsets are not required. Openings in concrete

blocks or masonry walls shall be saw cut with an opening tolerance of 1/8" on all sides, the opening shall have bottom of box at nearest masonry joint to dimension indicated. For other wall finishes, boxes shall be installed with plaster or device type covers as required. No outlets shall be installed back-to-back. Where outlets occur in stud walls back to back on opposite sides, they shall be isolated by a solid stud between them or shall have a 24" separation. For boxes installed in a fire rated barrier, a U.L. approved putty pad shall be installed as required.

#### WIRING DEVICES

Colors: Wiring device and plate colors shall be selected by Architect.

Receptacles: Duplex receptacles shall be specification grade, 20 amps, 125 volts with grounding terminal. The receptacles are to be rigidly secured independent of device plate and such that the device plate secures to the device as the design specifies.

Switches: Standard flush tumbler switches shall be specification grade, 20 amps, 120/277 volts A-C only, single pole, three-way or four-way as shown, single throw with screw terminals arranged for side wiring. The switches are to be rigidly secured independent of device plate and such that the device plate secures to the device as the design specifies.

Device Plates: Shall be of the specification grade high impact resistant, stainless steel plates. The nominal thickness is to be .070". Color to match device.

Ground Fault Receptacles: Furnish and install receptacles with ground fault circuit interrupters as indicated on plans. Receptacles shall be NEMA 5-20R configuration with 120V ac 20 amperes circuit rating. All receptacles shall be such depth as to permit mounting in outlet boxes 1-1/2" or greater in depth without the use of spacers. Units shall have line and load terminals such that connection to load terminals will provide ground fault protection for other receptacles. All receptacles shall accept standard duplex wall plates. All receptacles shall be noise suppressed and shall be UL listed. Any device located within 76" of a source of water is to be GFCI protected.

All devices are to be installed such that devices do not move when in normal use. The device plate shall not be used to secure device in place.

#### LIGHTING FIXTURES

Provide wired, cleaned, and with lamps specified, all fixtures designated on drawings. Contractor shall verify the ceiling construction for correct trim and support arrangement of lighting fixtures; corrosion resistant plaster frames are required in plaster ceilings. Shop drawing submittals shall consist of properly identified copies of manufacturer's catalog pages showing all features and accessories specified.

Secure mounting and support of all lighting fixtures shall be accomplished under this section of these specifications. Lighting fixtures shall be installed plumb, square, and level with the ceiling, wall, and in alignment with adjacent lighting fixtures. Mounting heights indicated shall be to the bottom of the fixture for ceiling-mounted fixtures and to center of fixture for wall-mounted fixtures. Lay-in troffer fixtures shall be supported with a minimum of 4 ceiling support wires per fixture and not more than 6 inches from each corner of the fixture. For fixtures smaller in size than the ceiling grid, provide a

minimum of four wires per fixture. Do not support fixtures by ceiling acoustical panels. All concealed fixture mounting accessories shall be securely tied to structure. Flexible connections to fixtures shall not exceed 6 feet in length. Fixtures shall be solidly grounded to raceway system.

In areas where the reflected ceiling plan is shown, all work shall be in conformance with this plan. If the ceiling grid is installed other than shown on the electrical plan, it shall be the responsibility of the installer of the lighting fixtures to call this fact immediately to the attention of the Architect and Contractor, and work shall not proceed until Architect's decision in the matter is obtained.

LED drivers shall be highly efficient, class A noise rating, 0.9 or greater power factor, power supplies rated for the wattage requirements of the fixture. THD at full load shall be <10% at 120v and <20% at 277v. <3% line regulation, <1W stand-by power. LED power up time to be <1 sec. Load regulation <5%. Provide over voltage protection, non-latching output short circuit protection, current reduction LED load temperature protection. Ambient operating temperature range -30 degrees Celsius to 50 degrees Celsius at 85% non-condensing relative humidity. Driver shall meet ANSI C62.41 Cat.A 2.5kv transient protection. Power supply shall be field programmable with 1mA resolution. Programmer shall not require the power supply to be powered up or connected to AC line voltage while programming. Provide integrated configurable LED thermal protection. Drivers shall be universal voltage input. Power supply shall be UL Class 2. LED dimming drivers shall provide continuous flicker-free dimming from 100%-1%.

#### TELEPHONE SYSTEM

The Contractor shall furnish and install PVC 40, EMT, boxes, etc. as appropriate, for telephone cables. All turns shall be made with no more than two (2) bends to a run. All telephone conduit is to have bushings provided at both terminated ends. The electrical contractor shall consult the local telephone company for complete rules and regulations and the telephone conduit shall be installed according to these rules.

#### PRODUCT DELIVERY, STORAGE AND HANDLING

Protections: Take necessary precautions to protect all material, equipment, apparatus, and work from damage. Failure to do so to the satisfaction of the Architect will be sufficient cause for the rejection of the material, equipment, or work in question. Contractor is responsible for the safety and good condition of the materials installed until final acceptance by the Owner.

Cleaning: Conduit openings shall be capped or plugged during installation. Fixtures and equipment shall be tightly covered and protected against dirt, moisture, chemical, and mechanical injury. At the completion of the work, the fixtures, material and equipment shall be thoroughly cleaned and delivered in condition satisfactory to the Architect.

#### PART 3 - EXECUTION

##### EXCAVATION, TRENCHING AND BACKFILLING

Trenches for all underground conduits shall be excavated to the required depth. The bottom of trenches shall be tamped hard. Before backfilling the excavation shall be cleaned of trash and debris. Backfill shall consist of excavation or borrow of sand, gravel, or other approved material free of trash,

lumber, sawdust or other debris. Backfill shall be placed in 9" thick moistured and hand or machine tamped layers. Backfill shall be brought to suitable elevation above ground to provide for anticipated settlement and shrinkage. All paving broken up shall be repaired and returned to the original condition.

#### PAINTING

Contractor shall touch-up or refinish all items of electrical equipment furnished with a factory finish coat of paint and which may have been damaged regardless of cause.

#### TESTING AND BALANCING

Balance all single-phase loads connected to all panelboards to ensure an approximate equal division on these loads on main power supply serving building. All tests shall be made in accordance with the latest standards of the IEEE and the NEC. The installation shall be tested for performance, grounds and insulation resistance. "Megger" type instruments shall be used. Contractor shall perform circuit continuity and operational tests on all equipment furnished or connected by Contractor. The tests shall be made prior to final inspection. The Contractor shall provide all testing equipment and all costs shall be borne by him. Written reports shall be made of all tests. These reports shall be turned over to the Architect at time of final inspection. All faults shall be corrected immediately.

#### CLEANING UP

The Contractor shall remove all oil, grease, or other stains resulting from his work performed in the building or the exterior thereof.

#### WARRANTY AND MAINTENANCE

The Electrical Systems and associated materials shall be covered by the warranty for a period of one year. All materials, installation, and workmanship shall be warranted during the warranty period. That is, any item will be repaired at no charge for any defects for one year after the date of acceptance.

END OF SECTION 16 1000

SECTION 16 1000 - ELECTRICALPART 1 - GENERALRELATED DOCUMENTS

The General and/or Special Conditions Sections are a part of this specification and the Contractor shall consult them in detail for instructions pertaining to this work. Section 16 is sub-divided for convenience only.

SCOPE

Furnishing of all labor, material, equipment, supplies, and services necessary to construct and install the complete electrical systems as shown on the drawings and specified herein. Work shall include but is not necessarily limited to the following items:

Service Entrance

Grounding

Lighting and controls

Demolition

Telecommunications

Exterior Distribution/Branch Circuits

Interior Distribution/Branch Circuits

Equipment Connections

Fire alarm

Intercom/Sound

Outdoor Lighting

JOB CONDITIONS

Site Inspections: Before submitting proposals, each bidder should visit the site and fully familiarize himself with all job conditions and shall be fully informed as to the extent of his work. No consideration will be given after bid opening date for alleged misunderstanding as to the requirements of work involved in connecting to the utilities, as to requirements of materials to be furnished, or as to the extent of demolition required.

Existing Conditions: All utilities, existing systems, and conditions shown on the plans as existing are approximate, and the Contractor shall verify all details of the project before any work is started.

Scheduled Interruptions: Planned interruptions of utilities service, to any facility affected by this contract, shall be carefully coordinated and approved by the Architect at least ten (10) days in advance of the requested interruption. The Contractor shall not interrupt services until specific approval has been granted by the Architect. The request shall indicate services to be affected, date and time of interruption and duration of outage. Request for interruption of service will not be approved until all equipment and material required for the completion of that particular phase of work are on the job site. The work may have to be scheduled after normal working hours.

Maintaining Service: Any existing service (or operating system) which must be interrupted for any length of time shall be supplied with a temporary service as necessary for continuation of the normal operation of this facility.

Removal of Existing Work: Where noted or indicated on the drawings, or specified herein, existing electrical materials and equipment shall be removed from the building. All materials designated to be removed by the Contractor, not to be salvaged and given to the Owner or required to be reinstalled, including scrap, shall become the property of the Contractor, and shall be promptly removed from the site. Existing items required to be removed temporarily in order to properly install new work shall be replaced in a satisfactory manner upon completion.

#### TEMPORARY POWER

Furnish and maintain temporary wiring system for light and power for use during construction by all trades. Use solidly grounded system. Limit over-current protection to 20 amperes on No. 12 conductors. Coordinate all requirements for temporary power with the serving utility and pay for all charges incurred while furnishing power for construction. Verify whether charges for electrical power consumption are specified in Division One; if so, payment of bills for power consumption are not included under this section.

Accidental Interruptions: All excavation and/or remodeling work required shall be performed with care so as not to interrupt other existing services (water, gas, electrical, sewer, sprinklers, etc.). If accidental utility interruption resulting from work performed by the Contractor occurs, service shall be immediately restored to its original condition without delay, by and at the expense of the Contractor, using skilled workmen of the trade required.

#### CODES, PERMITS AND INSPECTIONS

The installation shall comply with all local, state, and federal laws and ordinances applicable to electrical installation and with the regulations of the latest published edition of the National Electrical Code (N.E.C.) where such regulations do not conflict with those laws and ordinances. The Contractor shall obtain and pay for all permits and inspection fees, and after completion of the work, shall furnish the Architect a certificate of final inspection and approval from the applicable local inspection authorities. Any charges by a utility (Power, Telephone, Cable TV, etc.) for providing service as shown shall be included in the bid and paid by the Contractor. The installation shall comply with:

International building Code 2015  
International Fire Code 2015

NFPA 70-2014, National Electrical Code  
NFPA 72-2013, National Fire Alarm and Signaling Code  
ASHRAE Standard 90.1-2013 Energy Standard for Buildings Except Low-Rise Residential Buildings

### DRAWINGS AND SPECIFICATIONS

The drawings and these specifications are complimentary each to the other. What is called for by one shall be as binding as if called for by both. Where the drawings and/or specifications differ as to quantity or quality, the greater quantity or higher quality shall be provided. Omissions from the drawings and specifications of details of work which are evidently necessary to carry out the intent of the drawings and specifications, or which are customarily performed, shall not relieve the Contractor from performing such work. In any case of discrepancy in the figures or catalog numbers, the matter shall be submitted to the Architect, who shall promptly make a determination in writing. Any adjustment by the Contractor shall be at the Contractor's own risk and expense. Electrical drawings are diagrammatic only. Do not scale these drawings. All equipment shall be installed in accordance with manufacturer's recommendations and any conflicting data shall be verified before bidding.

### STANDARDS OF MATERIALS AND WORKMANSHIP

Materials: All materials shall be new and shall be listed and approved by the Underwriters' Laboratories, Inc., in every case where a standard has been established for a particular type of material in question. All work shall be executed in a workmanlike manner and shall present a neat appearance.

Prior Approvals: Equipment and materials of the same type or classification and used for the same purpose, shall be products of the same manufacturer. It is the intention of these specifications to indicate a standard of performance and quality for all materials incorporated in this work. Manufacturer's names and catalog numbers are used to designate the item of equipment or material as a means of establishing grade and quality. Where several manufacturers are named, only those named manufacturers' products will be considered and the Contractor's bid shall be on their products. The first named of several manufacturers is the manufacturer whose product was used in engineering the project. Other named manufacturers, although acceptable as manufacturers, shall guarantee that their product will perform as specified and will meet space requirements. Where performance characteristics of such equipment differs from the equipment scheduled on the drawings, the engineer shall reserve the right to reject it. Where use of such equipment requires different quantity or arrangement of foundations, supports, ductwork, piping, wiring, conduit and any other equipment. The Contractor shall furnish said changes and additions and pay all costs for all changes to the work and the work of others affected by using such equipment.

For approval of products other than those specified, bidders shall submit to the Architect, a request in writing, at least ten (10) days prior to bid date. Requests received after this time will not be reviewed or considered regardless of cause. Requests shall clearly define and describe the product for which approval is requested. Requests shall be accompanied by manufacturer's literature, specifications, drawings, cuts, performance data, model numbers, list of references or other information necessary to completely describe the item. Approval will be in the form of an Addendum to the specifications issued to all prospective Prime Contract Bidders on record. The Addendum will indicate the additional products which are approved for this project.

If a bidder proposes to use substitute materials or equipment for the following items, he shall obtain a

minimum of ten (10) days before Bid "Prior Approval" or longer as described in "Instructions to Bidders" for the items indicated below:

Lighting controls.

Panelboards.

Safety switches.

Lighting fixtures.

Emergency battery units.

Fire alarm system.

Approval on other items shall be handled in the normal manner, as described in "Instructions to Bidders", under the heading "Approval of Materials", preferably before receipt of bids.

Substitutions: Reference to a particular product by manufacturer, trade name, or catalog number establishes the quality standards of material and equipment required for this installation and is not intended to exclude products equal in quality and similar design. The Architect reserves the sole right to decide the equality of materials proposed for use in lieu of these specified. It shall be the Contractor's responsibility to furnish the information and data sufficient to establish the quality and utility of the items in question, including furnishing samples if required.

Shop Drawings: The Contractor shall submit a list of items proposed for use. He shall also submit catalog data and shop drawings on proposed systems and their components, panelboards, safety switches, starters and contactors, transformers, lighting fixtures, and wiring devices. Where substitutions alter the design or space requirements, the Contractor shall defray all items of cost for the revised design and construction including costs to all allied trades involved. Data shall be submitted within ten (10) calendar days after the contract is awarded. Provide six (6) copies of shop drawings unless a greater number of copies is required by the General Conditions. Each submittal data section shall be covered with an index sheet listing Contractor, Sub-Contractor, Project Name, and an index to the enclosed submittals.

Each major section of submittals such as power, equipment, lighting equipment, fire alarm, etc., shall be secured in a booklet or stapled with a covering index which lists the following information:

General contractor with phone number and project manager.

Subcontractor with phone number and project manager.

Supplier of equipment with phone number and person responsible for this project.

Index of each item covered in submittal and model number as proposed in the attached.

Any deviation from contract documents shall be specifically noted on submittal cover index and boldly

on specific submittal sheet.

#### TYPE OF PERMANENT ELECTRICAL SERVICE

Existing electrical service is 240 volts, 3-phase, 4-wire. Contractor shall verify all details of electrical service with the serving utility company prior to bid. Contractor shall include any and all costs associated with the service in his bid price and shall pay these costs to the serving utility company.

Operating and Maintenance Manuals: At completion of the work, furnish three (3) copies of written operation instructions which shall include manufacturer's descriptive bulletins, operating and maintenance manuals and parts lists of all equipment installed. Also include in such instructions, the specified size and capacity ratings of all equipment installed. Each set of instructions shall be assembled into a suitable loose-leaf type binder and presented to the Architect for delivery to the Owner.

Record Drawings: Maintain one extra set of black-line, white print drawings for use as Record drawings. Records shall be kept daily, using colored pencil. As the work is completed, relevant information shall be transferred to a reproducible set, and copies made to be given to the Architect.

Comply with the following for all work specified in Division Sixteen. As-built information shall be shown to scale, using standard symbols listed in the legend. As a minimum, show the following:

Location of stub-outs, dimensioned from permanent building lines.

Location and depth of under-slab and in-slab raceways.

All routing of raceways.

Corrected panelboard and equipment schedules.

Corrected circuit numbers as they appear on panelboard directories.

Corrected motor horsepower and full load amperages.

Number, size, type of insulation, and number of wires in each conduit or multi-conductor cable whether in conduit or exposed.

Location of junction boxes and splices.

Location of access panels.

#### INTERFACE WITH OTHER CONTRACTS

It shall be the responsibility of the Contractor to cooperate with all other crafts working on this project. All cutting, trenching, backfill, and structural removals to permit entry of the electrical system components shall be done by this Contractor. All patching and finishing shall be done by the General Contractor.

It shall be the responsibility of the Electrical Contractor to coordinate, provide, and install the

overcurrent protection devices, wire, and conduit as required for the specific mechanical equipment installed.

It shall be the responsibility of the Contractor to cooperate with all other crafts working on this project to ensure there are not pipes, ductwork or other foreign systems as described in the latest version of the NEC within the working space or the dedicated space for the electrical equipment. All piping, ductwork or other foreign systems as described in the latest version of the NEC located above the dedicated space shall have shields or other protection as approved by the NEC.

#### EQUIPMENT FURNISHED UNDER OTHER SECTIONS

This Contractor shall furnish and install complete electrical roughing-in and connection to all equipment furnished under other sections as indicated on drawings. All such equipment shall be set in place as work of other sections.

The Electrical Contractor is to provide and install all components, wire, conduit, boxes, etc. to interlock the exhaust fans with the HVAC equipment as required.

The Electrical Contractor is to provide and install the required device boxes for the HVAC controls. A raceway, 3/4" conduit minimum, is to be provided and installed from the device location to the accessible space above the ceiling or as appropriate for the application. Line voltage thermostats are to be installed by the Electrical Contractor. Exact requirements for control wiring, conduit, boxes, etc. shall be coordinated with the mechanical contractor and mechanical documents prior to bid.

#### EQUIPMENT CONNECTIONS

In general, provide electrical power and control systems connections to all equipment shown on drawings. Included are wiring raceways, disconnects, starters, and other devices shown. Excluded are devices furnished integrally with the manufacturer's package and work specified in other sections of these specifications.

#### GROUNDING

Provide grounding and bonding systems in strict accordance with the latest published edition of N.E.C., except where more stringent requirements are specified herein. Inter-connection of neutral and ground is not permitted except at service entrance equipment or as required for a separately derived system. Install grounding conductors to permit shortest and most direct path to ground. Inaccessible joints are not to be made in grounding conductors. Where grounding conductors are in raceway, bond conductor and raceway at both ends. Grounding and bonding fittings used shall be UL listed and be compatible with metals used in system. Sheet metal type straps are not acceptable.

Service entrance ground shall consist of driven electrodes, ground ring, building steel, water pipe electrodes, concrete encased electrode, rod and pipe electrodes, or plate electrodes as available. The driven electrodes, building steel, water pipe electrodes, and concrete encased electrodes are the minimum requirements. Unless otherwise shown on drawings, each driven electrode shall consist of

one 3/4 inch diameter 10 ft. long copperweld steel rod. Rod made of wrought iron may be used in lieu of copperweld at option of contractor. Water pipe connection shall be made to a minimum one inch diameter metallic cold water pipe. Extend grounding conductor to main telephone equipment space. Interconnect conduits entering and leaving service entrance equipment using grounding bushing and copper conductor.

A green insulated ground conductor shall be run in all branch circuit and feeder conduit with phase and/or neutral conductors. Ground conductor shall be sized per NEC or as noted on drawings. Minimum size #12 AWG. Conduit box to device strap or yoke screw connection is not sufficient. Provide an insulated grounding jumper for receptacle circuits.

The Electrical Contractor shall test and provide written certification of final ground system; including test method, equipment model and serial numbers, and final measurements at each point. The ground electrode system must be less than 25 ohms.

#### GUARANTEE AND SERVICE

Upon completion of all tests and acceptance, the Contractor shall furnish the Owner of a written guarantee covering the electrical work done for a period of one (1) year from date of acceptance. Guarantee includes equipment capacity and performance ratings specified without excessive noise levels. Upon notice from the Architect or the Owner, the Contractor shall, during the guarantee period, rectify and replace any defective material or workmanship and repair any damage caused thereby without additional cost.

#### PART 2 - PRODUCTS

##### GENERAL

All equipment and materials shall have ratings established by the recognized independent agency or laboratory. The Contractor shall apply the items used on the project within the ratings and subject to any stipulations or exceptions established by the independent agency or laboratory. Use of equipment or materials in applications beyond that certified by the agency or beyond that recommended by the manufacturer shall be cause for removal and replacement of such misapplied items.

##### LOW VOLTAGE SWITCHBOARD

- A. General - The Contractor shall furnish and install, where indicated, a free-standing, dead-front type low-voltage distribution switchboard, utilizing group mounted circuit protective devices as specified herein, and as shown on the contract drawings. The low-voltage distribution switchboards and all components shall be designed, manufactured and tested in accordance with the latest applicable following standards:
1. NEMA PB-2
  2. UL Standard 891.

The manufacturer of the assembly shall be the manufacturer of the circuit protective devices within the assembly. The low-voltage switchboard shall be UL labeled.

- B. Ratings - The assembly shall be rated to withstand mechanical forces exerted during short-circuit conditions when connected directly to a power source having available fault current as shown on the drawings. Voltage rating to be as indicated on the drawings.
- C. Construction
1. Switchboard shall consist of the required number of vertical sections bolted together to form a rigid assembly. The sides and rear shall be covered with removable bolt-on covers. All edges of front covers or hinged front panels shall be formed. Provide adequate ventilation within the enclosure.
  2. All sections of the switchboard shall be rear aligned with depth as shown on the drawings. All protective devices shall be group mounted. Devices shall be front removable and load connections front accessible enabling switchboard to be mounted against a wall.
  3. The assembly shall be provided with adequate lifting means.
  4. The switchboard shall be equal to Cutler-Hammer type Westinghouse Pow-R-Line C utilizing the components herein specified and as shown on the drawings.
  5. The switchboard shall be suitable for use as service entrance equipment and be labeled in accordance with UL requirements.
  6. The switchboard shall be capable of metering requirements as indicated on the drawings.
- D. Bus
1. All bus bars shall be silver-plated copper. Bus sizing shall be based on NEMA standard temperature rise criteria of 65 degrees C over a 40 degrees C ambient (outside the enclosure).
  2. Provide a full capacity neutral bus.
  3. A copper ground bus (minimum 1/4 x 2 inch), shall be furnished firmly secured to each vertical section structure and shall extend the entire length of the switchboard.
  4. All hardware used on conductors shall be high-tensile strength and zinc-plated. All bus joints shall be provided with conical spring-type washers.
- E. Wiring/Terminations
1. Small wiring, necessary fuse blocks and terminal blocks within the switchboard shall be furnished as required. Control components mounted within the assembly, such as fuse blocks, relays, pushbuttons, switches, etc., shall be suitably marked for identification corresponding to appropriate designations on manufacturer's wiring diagrams.
  2. Mechanical-type terminals shall be provided for all line and load terminations suitable for copper cable rated for 75 degrees C of the size as indicated on the drawings.
  3. Lugs shall be provided in the incoming line section for connection of the main grounding conductor. Additional lugs for connection of other grounding

conductors shall be provided as indicated on the drawings.

- F. Circuit Breakers - Where indicated, provide circuit breakers UL listed for application at 100% of their continuous ampere rating in their intended enclosure.
- G. Nameplates
  - 1. Engraved nameplates, mounted on the face of the assembly, shall be furnished for all main and feeder circuits as indicated on the drawings. Nameplates shall be laminated plastic, black characters on white background. Characters shall be 3/16-inch high, minimum. Nameplates shall give item designation and circuit number as well as frame ampere size and appropriate trip rating. Furnish master nameplate giving switchboard designation, voltage ampere rating, short-circuit rating, manufacturer's name, general order number, and item number.
  - 2. Control components mounted within the assembly, such as fuse blocks, relays, pushbuttons, switches, etc., shall be suitably marked for identification corresponding to appropriate designations on manufacturer's wiring diagrams.
- H. Finish - All exterior and interior steel surfaces of the switchboard shall be properly cleaned and provided with a rust-inhibiting phosphatized coating. Color and finish of the switchboard shall be ANSI 61 light gray.

#### PANELBOARDS

General: Furnish and install circuit breaker lighting and appliance panelboards where shown on the drawings and as indicated in the panelboards schedule. Panelboards shall comply with the following industry standard:

NEMA Standard PB-1

UL Standards: Cabinets and Boxes -UL50; Panelboards - UL 67

National Electric Code

Panelboards shall be labeled as suitable for use as service equipment in accordance with Article 408 of the National Electrical Code.

Box: The panel box shall not be less than 20 inches wide and fabricated from galvanized or galvanized annealed steel. Box shall have adjustment screws to provide easy alignment for flush mounted applications. Removable end walls to be blank with no KO's. Panelboard box is to have separate UL label and minimum wire bending and gutter requirements to meet the NEC and UL standards. Wiring gutters shall be completely free of any part of trim clamp to prevent damaging wire insulation.

Interior Type S3: All interiors shall be completely factory assembled. The design of the interior should permit replacement of circuit breakers without disturbing adjacent units and without machine drilling or tapping. Bus bars and breaker branch bus shall be of 98% conductivity copper. Bus sequence shall start

at the top left phase bus of the interior for both top and bottom fed panels. Panelboard bus structure and main breaker or main lugs shall have current ratings as shown on the plans or as indicated in panel schedule. Such ratings shall be established by heat rise test in accordance with Standard UL 67. Bus bars shall be supported by glass filled polyester type insulators. All bolts used to connect current carrying parts together shall be case hardened, thread-forming type and be accessible for tightening from the front of the panel. Provide an individual circuit number button with an embossed number next to each breaker or provision. Stick on numbers are unacceptable.

Dead front to be provided with flange for easy attachment of trim. Incoming cable lugs shall be grouped at one end to separate them from the load side cables. Neutral bussing shall have a lug for each outgoing branch requiring a neutral connection. For easy wiring and shortest cable run possible, load side neutral connection lugs to be split with each side taking 50% of load neutral connections. The interior shall be provided with wing nuts for securing to box without tools.

All computer isolation panels shall have 200% neutral bus.

Fas-Latch Trim: The panel trim shall be surface or flush as indicated on the drawings. It shall be fabricated from cold rolled steel, painted with an ANSI-61 light gray finish and equipped with concealed hinges, flush lock and a holder for circuit directory card. Trim shall have two separate supports designed to engage the box flange to stabilize and secure the trim during installation. Trim screws to be located behind the lockable door for tamper resistance. No external screws on trims will be allowed. Trims shall be hinged to box.

Description: The panelboards shall be Sentron type for use on systems as indicated on each panelboard schedule. The panelboard enclosures shall be NEMA Type 1 construction for top or bottom cable entrance and suitable for surface or flush mounting unless otherwise noted on panelboard schedules. Panels shall be interchanged from top or bottom feeds.

Short circuit rating shall be as indicated on panel schedule.

Provide main lug only or main circuit breaker panel boards as shown on panelboard schedules. Also provide branch and subfeed circuit breakers of the quantity, trip rating and number of poles as shown on schedules. All panels shall accept additional feed thru lugs or subfeed breaker without modification to bus.

Molded case circuit breakers shall be thermal magnetic, quick make, quick break, trip free. Multi-pole breakers shall be common trip. All breakers shall be equipped with antiturn solderless, pressure type connectors. All provisions shall be located at the bottom of the panelboard and be fully bussed complete with all necessary mounting hardware less the breaker. No plug in breakers will be allowed.

All panels shall be fully rated. No series rating of breakers is acceptable.

Provide subfeed lugs, feed through lugs, handle blocking devices, pad locking devices, shunt trips and ground bus bars as shown on schedules.

Panelboards shall be manufactured by Siemens, General Electric or Square D or prior approved.

### NAMEPLATES

Each new panel shall have an external micarta engraved nameplate. Disconnect switches, starters or similar devices shall have a micarta engraved nameplate mechanically affixed (no glue) indicating the load served and the location, such as "A/C 2" or "A/C 3 above ceiling". Letters shall be 1/4" black on a white background. Panels shall be designated in this manner.

"Panel A  
120/240 Volts  
3 Phase, 4 Wire"

### DIRECTORIES

For panelboards, install typewritten directories, listing each branch circuit, identifying space and equipment it controls. Label panels, disconnect switches, pushbuttons, motor starters, and time clocks with identification shown on plans using engraved nameplates, identify main and switches ahead of mains, noting equipment they serve.

### DISCONNECT SWITCHES

Furnish heavy duty disconnect switches. Switches shall be a product of the same manufacturer as panelboards, using a quick-make, quick-break mechanism. Enclosure shall be Nema Type conforming to area in which it is installed. Shop drawings include manufacturer's catalog data and physical dimensions for each size switch.

### FUSES

Furnish fuses for fusible equipment. Supply one (1) set of 3-spares fuses for each size used. Provide spare fuse cabinet. Fuses specified are coordinated and shall be manufactured by Bussman. Chase-Shawmut and Little Fuse will be approved provided shop drawing submittal demonstrates selective coordination.

### RACEWAY AND FITTINGS

Rigid Metal Conduit - Shall have threaded fittings, galvanized steel or threadless compression galvanized steel or threadless compression cadmium plated malleable iron. Fittings shall be rain tight/concrete tight.

Electrical Metallic Tubing (EMT) - Material of steel or malleable iron is acceptable. Couplings and connectors shall be concrete and rain tight, with connectors having insulated throats. Use gland and ring compression type couplings and connectors for conduit sizes 2" and smaller. Use set screw type couplings with four set screws each for conduit sizes over 2". Use set screws of casehardened steel with hex head and cup point to firmly seat in wall of conduit for positive grounding. Indent type connectors or couplings are prohibited. Die-cast or pressure-cast zinc-alloy fittings or fittings made of "pot metal" are prohibited.

Rigid Non-Metallic Conduit - shall have polyvinyl chloride (PVC) fittings suited for the purpose and joined together by a method approved for the purpose. Schedule 80 conduit sections may be joined together with threaded fitting connectors.

Flexible Metal Conduit - fittings shall be zinc plated steel or cadmium plated malleable iron screw type with insulated throat and angular wedge fitting between convolutions of conduit.

Liquidtight Flexible Metal Conduit - fittings shall be cadmium plated, malleable iron or steel with compression type steel ferrule and neoprene gasket sealing rings, with insulated throat.

Conduits installed concealed in earth fill, concrete or, solid masonry structures shall be PVC 40. PVC shall not be installed in any exposed locations. All exposed exterior conduits shall be GRS. Any GRS installed below grade or in concrete shall have bitumastic applied prior to installation.

Conduits used for connection to recessed lighting fixtures shall be FLEX. Conduits for connection to motors or vibrating equipment shall be LQFLEX not less than 18" long and not over 60" long. All flexible conduits are to be secured at a minimum of every three feet using approved methods.

Conduits run concealed in the hollow space of non-masonry walls or, above suspended/hard ceilings shall be EMT. Exposed conduits shall be run at right angles to or parallel with building lines and exposed structure. In all cases, conduit runs shall be grouped together where possible and shall be supported from the building structure, not from any suspended ceiling support system.

PVC 80 shall be used only where specifically indicated on the drawings and shall be UL listed as sunlight resistant. Install conduits passing through building sidewalls or through beams below grade with expansion/deflection fittings. Install expansion fittings where conduit crosses an expansion joint. Where conduit penetrates damp-proofing membranes, cut the membrane carefully around the conduit and seal the joint with pressure sensitive tape.

All conduit bends are to be made with a device made for the application. All conduit runs are to be parallel or perpendicular to the building structure. Conduit offsets are to be utilized at junction boxes and device boxes and a strap placed on conduit at the point nearest the box for support.

Support raceways securely with pipe straps, wall brackets, conduit hangers or ceiling trapeze. Fastenings shall be by wood screws or screw type nails to wood, by toggle bolts to concrete block, expansion bolts on concrete or brick, and beam clamp types on steel or bar joists. Raceways shall not be fastened to suspended ceiling supports but must have independent support from the structure. Supporting devices shall be of materials having corrosion protection at least equal to the raceway. A support shall be provided as close as practical to, and not exceeding 18" from an unsupported box or from change of direction. In horizontal runs, this support may be omitted if the box is independently supported and the box connection is not made with chase nipple or threadless box connector. In vertical runs, load produced by weight of the raceway and conductors shall not be carried by the raceway terminal, but must be carried entirely by conduit supports. Install conduit supports in strict accordance with the following table, except as required by support for boxes and changes in direction:

MAXIMUM SUPPORT

TRADE SIZE

LOCATION OF RUNS

SPACING

1/2, 3/4	Exposed, Horizontal	7 feet
1 and larger	Exposed, Horizontal	10 feet
All sizes	Concealed, Horizontal	10 feet
1/2, 3/4	Exposed, Vertical	7 feet
1, 1-1/4	Exposed, Vertical	8 feet
1-1/2 and larger	Exposed, Vertical	10 feet
All sizes	Concealed, Vertical	10 feet

For conduit runs that are not sized on drawings, the maximum conduit fill shall be computed using the requirements for Type THW conductors although the actual wiring is with Type THWN or other type of conductors having smaller cross-sections. This requirement is made to provide spare conduit capacity.

Install all required sleeves for conduits passing through concrete slabs. Fire proof space between conduit and sleeve after installation using of mineral wool as required. All fire wall penetrations are to be sealed with a U. L. approved method. Any penetrations of the roof membrane must be sealed by a certified roofing contractor using an approved method.

#### Expansion Joints:

Conduits 3" and larger, that are secured to the building structure on opposite sides of a building expansion joint, required expansion and deflection couplings. Install couplings in accordance with the manufacturer's recommendations.

Provide conduits smaller than 3" with junction boxes on both sides of the expansions joint. Connect conduits to junction boxes with sufficient slack of flexible conduit to produce 5" vertical drop midway between ends. Flexible conduit shall have a green copper ground-bonding jumper installed. In lieu of this flexible conduit, expansion and deflection couplings as specified above for three inches and larger conduits are acceptable.

Expansion fittings shall be provided for raceways to compensate for thermal expansion and contraction in conduit runs 200ft or greater and at building expansion joints. Bonding jumpers shall be provided for electrical continuity of the raceway system at the expansion fittings.

#### Conductors:

All conductors shall be installed in conduit. Conductors for building wiring shall have THHN/THWN, 600-volt insulation and shall be soft-drawn copper of standard American Wire Gauge (AWG) size. Minimum size shall be No. 12. 20-amp branch circuits more than 100 feet in length shall be upsized to No. 10. Provide individual neutral conductors for all single-pole branch circuits. Tied breaker handles are not acceptable. All wire No. 8 and larger shall be stranded. All branch circuits No. 10 and smaller shall be wired with color-coded wire with the same color used for a system throughout the building. Power feeders and branch circuits larger than No. 10 shall either be fully color coded or shall have black insulation and be similarly color coded with tape or paint in all junction boxes and panels. Where tape or paint is used to identify conductors, apply at all terminations, junction boxes, pull boxes and wireways. Apply tape, butt lapped, or paint for a minimum distance of 2" and, where applied to ends of conductors, start at cut end of the conductor insulation. Tape shall not cover manufacturers conductors

shall be color coded or labeled as necessary for clear identification. Color coding of all conductors shall be as follows:

Grounding

Bare or Green

120/208 volt Three Phase (wye)

Phase Conductors:

A-Black, B-Red, C-Blue

Neutral:

White

All circuits are to be run with a neutral conductor: No shared neutral conductors are allowed.

Suitable bushings, shields or fittings having smooth rounded edges shall be provided where conductors pass between wire ways, through partitions, around bends, between wire ways and cabinets or junction boxes, and at other locations where necessary to prevent abrasion of the insulation of the conductors. As a clarification, this also applies to conduits stubbed into the ceiling.

JUNCTION AND PULL BOXES

Junction and pull boxes shall meet requirements of National Electrical Code. Standard manufactured boxes shall be listed by Underwriters' Laboratories, Inc. Where custom designed and fabricated boxes are needed, they shall meet the construction standards of Underwriters' Laboratories, Inc. and the N.E.C.

Junction and pull boxes shall be installed where required by National Electrical Code and where necessary to facilitate pulling of wire or cable. Considerations are sizes of wire and cable, number of bends in raceway, and conductor support requirements in vertical raceways. Maximum distance between terminations at junction or pull boxes, cabinets, or other points of termination shall not exceed 250 feet for straight horizontal runs. This length shall be decreased 50 feet for each 90 degree bend. All junction boxes shall be independently and rigidly supported from the building structure. Junction box type shall conform to the area in which it is installed (i.e. wet location areas shall be moisture resistant type junction boxes).

Junction boxes and associated conduit for Fire Alarm shall be painted red. Junction boxes for low voltage controls, communication, technology, etc. shall be permanently marked indicating use.

OUTLETS

Outlet boxes shall be one piece or projection welded, galvanized stamped steel for gang sizes required. Where several devices are located on drawings in the same general location, use multi-gang boxes. Sectional boxes are not acceptable. Boxes shall be sized in accordance with National Electrical Code. Boxes required for communications systems, mechanical control devices, etc., shall be installed under this section of the specifications. Verify outlet box locations and sizes required for systems other than electrical power from shop and manufacturer's drawings, and install outlets as per those requirements.

Boxes for wall and ceiling outlets shall finish flush and straight. Wall outlets in exposed concrete block, masonry, and tile walls shall be installed with extra deep square corner boxes or with standard boxes and square cornered tile wall covers so that conduit offsets are not required. Openings in concrete

blocks or masonry walls shall be saw cut with an opening tolerance of 1/8" on all sides, the opening shall have bottom of box at nearest masonry joint to dimension indicated. For other wall finishes, boxes shall be installed with plaster or device type covers as required. No outlets shall be installed back-to-back. Where outlets occur in stud walls back to back on opposite sides, they shall be isolated by a solid stud between them or shall have a 24" separation. For boxes installed in a fire rated barrier, a U.L. approved putty pad shall be installed as required.

#### WIRING DEVICES

Colors: Wiring device and plate colors shall be selected by Architect.

Receptacles: Duplex receptacles shall be specification grade, 20 amps, 125 volts with grounding terminal. The receptacles are to be rigidly secured independent of device plate and such that the device plate secures to the device as the design specifies.

Switches: Standard flush tumbler switches shall be specification grade, 20 amps, 120/277 volts A-C only, single pole, three-way or four-way as shown, single throw with screw terminals arranged for side wiring. The switches are to be rigidly secured independent of device plate and such that the device plate secures to the device as the design specifies.

Device Plates: Shall be of the specification grade high impact resistant, stainless steel plates. The nominal thickness is to be .070". Color to match device.

Ground Fault Receptacles: Furnish and install receptacles with ground fault circuit interrupters as indicated on plans. Receptacles shall be NEMA 5-20R configuration with 120V ac 20 amperes circuit rating. All receptacles shall be such depth as to permit mounting in outlet boxes 1-1/2" or greater in depth without the use of spacers. Units shall have line and load terminals such that connection to load terminals will provide ground fault protection for other receptacles. All receptacles shall accept standard duplex wall plates. All receptacles shall be noise suppressed and shall be UL listed. Any device located within 76" of a source of water is to be GFCI protected.

All devices are to be installed such that devices do not move when in normal use. The device plate shall not be used to secure device in place.

#### LIGHTING FIXTURES

Provide wired, cleaned, and with lamps specified, all fixtures designated on drawings. Contractor shall verify the ceiling construction for correct trim and support arrangement of lighting fixtures; corrosion resistant plaster frames are required in plaster ceilings. Shop drawing submittals shall consist of properly identified copies of manufacturer's catalog pages showing all features and accessories specified.

Secure mounting and support of all lighting fixtures shall be accomplished under this section of these specifications. Lighting fixtures shall be installed plumb, square, and level with the ceiling, wall, and in alignment with adjacent lighting fixtures. Mounting heights indicated shall be to the bottom of the fixture for ceiling-mounted fixtures and to center of fixture for wall-mounted fixtures. Lay-in troffer fixtures shall be supported with a minimum of 4 ceiling support wires per fixture and not more than 6 inches from each corner of the fixture. For fixtures smaller in size than the ceiling grid, provide a

minimum of four wires per fixture. Do not support fixtures by ceiling acoustical panels. All concealed fixture mounting accessories shall be securely tied to structure. Flexible connections to fixtures shall not exceed 6 feet in length. Fixtures shall be solidly grounded to raceway system.

In areas where the reflected ceiling plan is shown, all work shall be in conformance with this plan. If the ceiling grid is installed other than shown on the electrical plan, it shall be the responsibility of the installer of the lighting fixtures to call this fact immediately to the attention of the Architect and Contractor, and work shall not proceed until Architect's decision in the matter is obtained.

LED drivers shall be highly efficient, class A noise rating, 0.9 or greater power factor, power supplies rated for the wattage requirements of the fixture. THD at full load shall be <10% at 120v and <20% at 277v. <3% line regulation, <1W stand-by power. LED power up time to be <1 sec. Load regulation <5%. Provide over voltage protection, non-latching output short circuit protection, current reduction LED load temperature protection. Ambient operating temperature range -30 degrees Celsius to 50 degrees Celsius at 85% non-condensing relative humidity. Driver shall meet ANSI C62.41 Cat.A 2.5kv transient protection. Power supply shall be field programmable with 1mA resolution. Programmer shall not require the power supply to be powered up or connected to AC line voltage while programming. Provide integrated configurable LED thermal protection. Drivers shall be universal voltage input. Power supply shall be UL Class 2. LED dimming drivers shall provide continuous flicker-free dimming from 100%-1%.

#### TELEPHONE SYSTEM

The Contractor shall furnish and install PVC 40, EMT, boxes, etc. as appropriate, for telephone cables. All turns shall be made with no more than two (2) bends to a run. All telephone conduit is to have bushings provided at both terminated ends. The electrical contractor shall consult the local telephone company for complete rules and regulations and the telephone conduit shall be installed according to these rules.

#### PRODUCT DELIVERY, STORAGE AND HANDLING

Protections: Take necessary precautions to protect all material, equipment, apparatus, and work from damage. Failure to do so to the satisfaction of the Architect will be sufficient cause for the rejection of the material, equipment, or work in question. Contractor is responsible for the safety and good condition of the materials installed until final acceptance by the Owner.

Cleaning: Conduit openings shall be capped or plugged during installation. Fixtures and equipment shall be tightly covered and protected against dirt, moisture, chemical, and mechanical injury. At the completion of the work, the fixtures, material and equipment shall be thoroughly cleaned and delivered in condition satisfactory to the Architect.

#### PART 3 - EXECUTION

##### EXCAVATION, TRENCHING AND BACKFILLING

Trenches for all underground conduits shall be excavated to the required depth. The bottom of trenches shall be tamped hard. Before backfilling the excavation shall be cleaned of trash and debris. Backfill shall consist of excavation or borrow of sand, gravel, or other approved material free of trash,

lumber, sawdust or other debris. Backfill shall be placed in 9" thick moistured and hand or machine tamped layers. Backfill shall be brought to suitable elevation above ground to provide for anticipated settlement and shrinkage. All paving broken up shall be repaired and returned to the original condition.

#### PAINTING

Contractor shall touch-up or refinish all items of electrical equipment furnished with a factory finish coat of paint and which may have been damaged regardless of cause.

#### TESTING AND BALANCING

Balance all single-phase loads connected to all panelboards to ensure an approximate equal division on these loads on main power supply serving building. All tests shall be made in accordance with the latest standards of the IEEE and the NEC. The installation shall be tested for performance, grounds and insulation resistance. "Megger" type instruments shall be used. Contractor shall perform circuit continuity and operational tests on all equipment furnished or connected by Contractor. The tests shall be made prior to final inspection. The Contractor shall provide all testing equipment and all costs shall be borne by him. Written reports shall be made of all tests. These reports shall be turned over to the Architect at time of final inspection. All faults shall be corrected immediately.

#### CLEANING UP

The Contractor shall remove all oil, grease, or other stains resulting from his work performed in the building or the exterior thereof.

#### WARRANTY AND MAINTENANCE

The Electrical Systems and associated materials shall be covered by the warranty for a period of one year. All materials, installation, and workmanship shall be warranted during the warranty period. That is, any item will be repaired at no charge for any defects for one year after the date of acceptance.

END OF SECTION 16 1000

## SECTION 16 1100 - LIGHTING CONTROLS

### PART 1 - GENERAL

#### INTRODUCTION

The work covered in this section is subject to the requirements in the General Conditions of the Specifications. Contractor shall coordinate the work in this section with the trades covered in other sections of the specification to provide a complete and operable system.

#### SYSTEM DESCRIPTION

Extent of lighting control system work is indicated by drawings and by the requirements of this section. It is the intent of this section to provide an integrated, energy saving lighting control system including Lighting Control Panels, Occupancy Sensors, and Daylighting Controls from a single supplier. Contractor is responsible for confirming that the panels and sensors interoperate as a single system.

#### QUALITY ASSURANCE

Manufacturers: Firms regularly engaged in the manufacture of lighting control equipment and ancillary equipment, of types and capacities required, whose products have been in satisfactory use in similar service for not less than 5 years.

Comply with NEC, NEMA, and FCC Emission requirements for Class A applications.

UL Approvals: Relay panels and accessory devices are to be UL listed under UL 916 Energy Management Equipment. Configured to order or custom relay panels shall be UL Listed under UL 508, Industrial Control Panels.

#### SUBMITTALS

Submit manufacturer's data on lighting control system and components including shop drawings, detailed point to point wiring diagrams, and floor plans showing occupancy and daylighting sensor locations. Provide typical mounting details for occupancy and daylighting sensors for this application.

#### MANUFACTURERS

This specification is based on products from Watt Stopper/Legrand, Santa Clara, CA. Any other system wishing to be considered must submit descriptive information 10 days prior to bid. Prior approval does not guarantee final approval by the electrical engineer. The contractor shall be completely responsible for providing a system meeting this specification in its entirety. All deviations from this specification must be listed and individually signed off by the consultant.

### PART 2 - PRODUCTS

#### OCCUPANCY SENSORS AND POWER PACKS

Occupancy Sensors:

All products listed are Watt Stopper product numbers and will integrate fully with the Lighting Control system listed in the project specifications.

Ceiling sensors: DT-200, DT-300.

Wall sensors: DW-100:

Dual technology sensors shall:

Use passive infrared and ultrasonic technologies for occupancy detection. Products that react to noise or ambient sound shall may be considered.

Ultrasonic sensors shall:

Utilize Advanced Signal Processing to adjust the detection threshold dynamically to compensate for constantly changing levels of activity and airflow throughout controlled space.

Have an ultrasonic operating frequency that is crystal controlled at 25 kHz within  $\pm$  0.005% tolerance, 32 kHz within  $\pm$  0.002% tolerance, or 40 kHz  $\pm$  0.002% tolerance to assure reliable performance and eliminate sensor cross-talk. Sensors using multiple frequencies are not acceptable.

All sensors shall be capable of operating normally with electronic ballasts, PL lamp systems and rated motor loads.

Coverage of sensors shall remain constant after sensitivity control has been set. No automatic reduction shall occur in coverage due to the cycling of air conditioner or heating fans.

All sensors shall have readily accessible, user adjustable settings for time delay and sensitivity. Settings shall be located on the sensor (not the control unit).

All sensors shall provide an LED as a visual means of indication at all times to verify that motion is being detected during both testing and normal operation.

Circuit Control Hardware – (POWER PACKS)

Control Units - For ease of mounting, installation and future service, control unit(s) shall be able to externally mount through a 1/2" knock-out on a standard electrical enclosure and be an integrated, self-contained unit consisting internally of an isolated load switching control relay and a transformer to provide low-voltage power. Control unit shall provide power to a minimum of two (2) sensors.

Relay Contacts shall have ratings of:

13A - 120 VAC Tungsten  
20A - 120 VAC Ballast  
20A - 277 VAC Ballast  
20A – 347 VAC Ballast

Control wiring between sensors and control units shall be Class II, 18-20 AWG, stranded U.L. Classified, PVC insulated or TEFLON jacketed cable suitable for use in plenums, where applicable:

1. Minimum acceptable wire gauge from the circuit control hardware relays shall be #14 AWG.

#### EXTERIOR PHOTOCELLS

Each photocell shall be mounted in the appropriate location for measuring the available daylight. Each photocell will have a separate control/calibration module mounted separately and in an accessible location.

#### PART 3 - EXECUTION

##### SUPPORT SERVICES

Service Description:

System Startup:

Manufacturer shall provide a factory authorized technician to confirm proper installation and operation of all system components. The startup requirement is intended to verify:

That all occupancy and daylighting sensors are located, installed, and adjusted as intended by the factory.

The occupancy sensors and daylighting sensors are operating within the manufacturers specifications.

The sensors interact as a complete and operational system to meet the design intent.

Manufacturer to provide a written statement verifying that the system meets the above requirements.

Training:

Manufacturer shall provide factory authorized technician to train owner personnel in the operation, programming and maintenance of the lighting control system.

Documentation:

Manufacturer shall provide system documentation including:

System one-line showing number and type of switches and sensors, dataline.

Typical wiring diagrams for each component.

The manufacturer will certify that the products will meet the product specifications and local energy codes. If any additional equipment is required to meet the coverage patterns or local energy codes, the manufacturer will provide the additional equipment at no cost to the owner.

Programming:

Manufacturer shall provide system programming including:

Wiring documentation.

Switch operation.

Operating schedules.

END OF SECTION 16 1100

**SECTION 16 2000 – SURGE SUPPRESSION DEVICE****PART 1 – GENERAL****RELATED DOCUMENTS**

Drawings and general provisions of Contract, including General and Supplementary Conditions, Special Conditions, Mechanical and Electrical Supplementary Requirements 15000/16000, and Division 1 Specification sections, apply to work specified in this section.

**DEFINITIONS**

LED: Light Emitting Diode

SCR: Silicon Controlled Rectifier

SPD: Transient Voltage Surge Suppressor

**SUBMITTALS**

Provide submittals for all required testing and pertinent manufacturer information described herein. Submittals for products by manufacturers not listed as “acceptable” below, must submit proper documentation showing detailed (line-by-line) compliance with this specification not less than fifteen (15) business days prior to bid date, to allow ample engineering time for review of submitted products. Prior approvals not received by the deadline date defined above will not be considered. Along with the line-by-line comparison from manufacturers not listed herein, surge suppression submittals shall include, but shall not be limited to the following items:

Dimensioned drawing of each suppressor type indicating mounting arrangement.

Manufacturer shall include its UL 1449 Second Edition file number(s).

Manufacturer shall include its UL 1283 file number(s).

Letter from manufacturer verifying SPD incorporates “directly-connected-protection -elements” between all possible modes in every given service rating (i.e. line-to-neutral, line-to-line, line-to-ground, neutral-to-ground).

Certified test data documenting IEEE C62.41.2 performance (as defined herein), and the ability of the device to meet or exceed all requirements of this specification.

Warranties: As specified in this Section.

**QUALITY ASSURANCE**

Manufacturer Qualifications: At least 10 years of engineering experience in the design and manufacture of permanently connected SPD devices.

Operates a Quality System Certified manufacturing facility as ISO 9001:2000 Compliant.

**CODES AND REFERENCED STANDARDS**

UL 1449 2<sup>nd</sup> Edition listed, UL 1283 listed, CUL, ANSI/IEEE C62.41.1-2002, C62.41.2-2002, C62.45-2002, NEMA LS-1, 1992 2.2.7, IEEE Std. 1100-1999 Section 8.6.1

ANSI C84.1, American National Standard for Electric Power Systems and Equipment – Voltage Ratings.

National Electrical Code (NEC) Article 285

**SUPPRESSOR LOCATIONS**

Provide surge suppressor at each building service entrance switchboard and at other panelboard locations as indicated on the Contract Drawings. SPD Devices are to be mounted integrally to the panels.

#### MANUFACTURERS

The listing of a manufacturer as "acceptable" does not imply automatic approval. It is the sole responsibility of the Contractor to ensure that any submittals made are for products that meet or exceed the specifications included herein. Subject to compliance with requirements, provide products by the following manufacturer(s) or approved equal as described above:

Commonality: All SPD devices at the service entrance, distribution panels and sub-panels shall be provided by same SPD manufacturer.

Approved equals will be accepted (see submittal procedures per section 16100).

#### GENERAL REQUIREMENTS

SPD devices shall be rated for the class of service necessary for the application.

SPD devices shall be designed for AC power systems with a minimum of AC follow current after operation.

The SPD shall have sine-wave tracking capability.

Manufacturer shall provide permanently-connected devices mounted parallel to the service, distribution and sub panels and series connected devices as required for individual equipment protection as indicated on Contract Drawings. SPD device drawings shall be made available upon request.

SPD circuitry shall include only solid-state clamping components to limit the surge voltage and divert the surge current. SPD components that "crowbar" (e.g. spark gaps, gas tubes, SCR's, etc...) shall not be accepted. Device circuitry shall be bi-directional, enclosed in a UL listed encapsulated thermal stress reducing compound and be of a parallel design.

Electrical performance characteristics:

Service ratings:

120/208V	Three-phase	4-wire + Gnd	Wye
277/480V			

Other voltages (as indicated on the drawings)

SPD ratings: SPD devices supplied shall meet or exceed (as a minimum) the capabilities listed below:

Modes Of Protection Required  (10) TEN independent, dedicated, discrete modes of protection required)	<sup>b</sup> Max. ANSI/IEEE Let-Through Voltage  <b>Category C (Main Service)</b>  <b>208/480 3PH</b>	<sup>b</sup> Max. ANSI/IEEE Let-Through Voltage  <b>Category B (Distribution)</b>  <b>208/480 3PH</b>	<sup>c</sup> Max. ANSI/IEEE Let-Through Voltage  <b>Category A (Branch)</b>  <b>208/480 3PH</b>	Peak Surge Current <sup>a</sup> “kA” (Per Phase)		
					**Service Entrance	**Dist. Panels
<b>L-N</b>	940/1250	410/580	40/70	360kA	240kA	180kA
<b>L-L</b>	1200/1450	600/800	40/145	360kA	240kA	180kA
<b>L-G</b>	835/1150	410/600	60/100	360kA	240kA	180kA
<b>N-G</b>	880/1450	675/1100	60/70	360kA	240kA	180kA

\*\* For clarification purposes, higher (and lower) peak surge current (PSC) ratings are required for specific panels. Please verify the Peak Surge Currents per the amperages of the equipment that is being protected, are in accordance with the recommendations below:

- 4000 Amps and Higher = 600kA “per phase”**
- 3000 Amps – 4000 Amps = 480kA “per phase”**
- 2000 Amps – 3000 Amps = 360kA “per phase”**
- 800 Amps – 1600 Amps = 240kA “per phase”**
- 225 Amps – 800 Amps = 180kA “per phase”**
- 100 Amps – 225 Amps = 120kA “per phase”**

<sup>a</sup> kA “per phase” value is determined by the following:  
[kA “per mode” (x) # of modes available, subtract N-G value, divide the remaining kA by phase(s). The sum will be your kA “per phase”]

<sup>b</sup> Measured at IEEE C62.41.2-2002 Category C High; 20kV 1.2x50 μS/10 kA 8 x 20μS waveform & Category C Low/B High; 6kV, 1.2x50 μS/3 kA 8 x 20μS waveform. Transient shall be applied at the 90° phase angle unless otherwise indicated above.

<sup>c</sup> Measured at IEEE C62.41.2-2002 Category A-Ringwave at 2kV 0.5 μS/67A 100kHz. Transient shall be applied at the 270° phase angle, positive polarity unless otherwise indicated above.

Measured Limiting Voltage Test Environment: All voltages shall be peak (±10%) Positive Polarity, Time base = 20μS, Sampling Rate = 250ms/s to ensure maximum transient capture. Surge voltages shall be measured from the insertion of the surge on the sine wave to the peak of the surge. All tests are Static (un-powered), except for the 120V circuits which are Dynamic (powered). All tests shall be performed in accordance with UL 1449 Second Edition with measurements performed at a point on the leads 15.24 cm (6 inches) outside of the device enclosure. No data measured at a module, lugs, component, or undefined location will be accepted.

Modes: The SPD system shall provide dedicated, independent, distinct protection circuitry for every mode found in the electrical distribution system at the point of SPD application. For example, a 400/230V, 3-phase Wye, 4-wire plus ground system has TEN (10) distinct modes that require independent and dedicated protection (i.e., L1-L2, L2-L3, L3-L1, L1-N, L2-N, L3-N, L1-G, L2-G, L3-G, N-G). For 6 mode Delta systems, SIX (6) dedicated, independent, distinct protection modes are required (L1-L2, L2-L3, L3-L1, L1-G, L2-G, L3-G).

Fusing:

The SPD shall provide as a minimum, over-current, over temperature protection in the form of component-level thermal fusing to ensure safe failure and prevent thermal runaway. Surge protective devices shall contain short circuit current safety fusing within each device where no circuit breaker is specified, for over-current requirements of the NEC.

The fusing mechanisms employed must effectively coordinate their performance in conjunction with the high current abnormal over-voltage testing under UL 1449 2<sup>nd</sup> Edition.

The Transient Voltage Surge Suppressor (SPD) shall be of a parallel design using fast-acting transient energy protection that will divert and dissipate the surge energy.

The SPD shall be self-restoring and fully automatic with a total response time approximately 1 nanosecond.

The maximum continuous operating voltage shall be capable of sustaining 115% of nominal RMS voltage continuously without degrading.

The SPD shall be UL listed at or above the available fault current level at the point of SPD application, per UL 1449 2<sup>nd</sup> Edition, as amended. The SPD shall be marked with the short circuit current rating. The SPD short circuit rating shall be, as a minimum, the same rating as the power distribution equipment to which it is connected.

Circuit Configuration: The circuit configuration of the suppression units shall be bi-directional, thermal stress reducing, totally encapsulated, custom parallel and solid state.

Features: Surge protective devices shall provide on-board visual status of their operational readiness by LED indicator lights.

Maintenance Restrictions:

No suppression unit shall be supplied which requires scheduled preventive- maintenance or replacement parts. Units requiring functional testing, special test equipment, or special training to monitor surge protection device (SPD) status are not acceptable. SPD devices shall require no routine maintenance. SPD devices are considered non-repairable items and shall be fully replaced upon expiration.

Warranty:

The manufacturer shall provide unlimited free replacement of the entire SPD (not just modules, components or sub-assemblies) for all inoperable SPD during the warranty period. Minimum warranty period shall be 10 (TEN) years.

Enclosures:

Unless otherwise noted, NEMA 4 (or better) enclosures for indoor installations where fire suppression systems are utilized and NEMA 4X or better enclosures for outdoor/wet locations shall be utilized.

### PART 3 – EXECUTION

Provide surge suppressor to be installed at each building service entrance gear, transfer switch, or other location (service entrance), that the service encounters as it enters the facility and/or as indicated on Contract Drawings. Also, provide SPD devices at all distribution and panel-board locations as indicated on Contract Drawings. The SPD shall be located immediately adjacent to the switchboard or panel-board being protected (close-nipple). (The SPD may not be located integral within the switchboard or panel-board(s) unless the switchgear manufacturer providing such products expressly meets or exceeds all parameters of this specification for the SPD.) Any SPD devices not meeting or exceeding the performance of this specification will be deemed unacceptable. The surge protection devices shall be connected on the load side of the over-current protective device to which it is connected as per UL 1449 and NEC Art. 285, of the electrical service it is protecting. Unless otherwise specified, provide a 30A breaker for each SPD device.

**\*\*NOTE\*\*** SPD marked L1, L2, L3, N, and GND (as applicable) must be connected, respectively, to phase(s), neutral, and ground.

Surge protective devices shall be installed neatly. Bind the phase, neutral, and ground conductors tightly, over the entire run, from the suppressor to the service panel, and always use the shortest length of connecting cable possible.

Connect surge protector to the grounding system.

The electrical contractor (installer) shall verify the proper application of the SPD (i.e., voltage, phases, etc.). The electrical contractor shall assure that all Neutral conductors are bonded to the system Ground at the service entrance or the serving isolation transformer prior to installation of the associated SPD. The electrical contractor shall further ensure that neutral-to-ground bonds do not exist at locations that are not service entrances or newly derived power sources.

All labor, materials, equipment, and services necessary for, and incidental to, the installation of the SPD system components as specified herein shall be provided by the electrical contractor (installer).

END OF SECTION 16 2000

## SECTION 16 3000 - LOW VOLTAGE DRY TRANSFORMERS

## PART 1 - GENERAL

## GENERAL

Self-cooled, dry type two winding power transformer for general power and lighting application. Listed by Underwriters' Laboratories, Inc., and labeled with appropriate listing mark. Single or three phase as indicated with KVA rating as indicated. Separate coil for each phase of three phase units. Unless otherwise indicated, designed for 480 volt primary. Three phase transformers connected delta-wye with 120/208 volt wye secondary unless otherwise indicated. Single-phase units with 120/240 volt secondary unless otherwise indicated. Enclosure for indoor application. Ventilation openings, corrosion treatment, cable space, ground pad, wiring compartment temperature, and wiring terminations in accordance with UL 506.

Primary Taps: 25 KVA and smaller; four 2-1/2% taps, two above and two below normal. Larger than 25 KVA; six 2½% taps, two above and four below normal.

Temperature Classification: 25 KVA and smaller; 185°C insulation system temperature classification, 115°C winding temperature rise. Larger than 25 KVA; 220°C insulation system temperature classification, 115°C winding temperature rise.

Load Rating: Capable of operating continuously at full nameplate rating in 40°C ambient. Capable of withstanding daily overload requirements of ANSI-C57.12 with no loss in normal life expectancy.

Sound Rating: In accordance with ANSI-C89 and NEMA standard sound ratings.

Impedance: 75 KVA and smaller; 3.0% impedance, minimum. Larger than 75 KVA; 4.5% impedance, minimum.

15KVA and Smaller: May be wall mounted with suitable frame supports providing wall is of sufficient strength to adequately support imposed load, and providing such method is acceptable to Architect, unless otherwise indicated on the drawings.

Larger than 15 KVA: Floor mount.

For non linear loads use a minimum of K-13 or ASF shown on drawing.

Transformers are to have copper windings and be NEMA-TP1 rated.

Acceptable: General Electric; Siemens; Westinghouse; Sorgel; Schneider.

END OF SECTION 16 3000

## SECTION 16 7200 - FIRE DETECTION AND ALARM SYSTEMS

### PART 1 - GENERAL

#### SUMMARY

Includes But Not Limited To

Furnish and install a fire alarm and detection system as described in Contract Documents.

Furnish and install raceway, conductors, boxes, and miscellaneous items necessary for complete system.

#### Related Sections

Division 16 - Quality and installation standards for wiring, raceway, conduit, and boxes.

#### SYSTEM DESCRIPTION

An automatic fire alarm system consisting of control panel, power supplies, alarm initiating devices, and notification appliances.

Class B (Style B) initiating device circuits and Class B (Style W) notification appliance circuits including end-of-line devices.

#### Performance Requirements

Operation of manual station or automatic activation of any smoke detector, shall:

- Cause system notification appliances to operate.
- Indicate device in alarm at control pane LCD display.
- Indicate device in alarm on remote annunciator LCD display
- Initiate off-site alarm notification system.

System shall return to normal when operated device is returned to normal and control panel is manually reset, except alarms may be silenced as specified below.

Alarm may be silenced by switch in control panel.

Ring Back Feature - When silenced, this shall not prevent the resounding of subsequent alarms if another zone should alarm.

When alarms are silenced, indicating red LEDs on control panel and remote annunciator shall remain on until operated device is returned to normal and control panel is manually reset.

Green pilot LED shall normally be on indicating that system is receiving normal power. Failure of normal power shall cause this LED to extinguish.

Amber trouble LED and trouble alarm, operating together, shall signal trouble condition.

Following conditions shall signal trouble condition:

Failure of normal power.  
Opens or short circuits on indicating circuits.  
Disarrangements in system wiring.  
Control panel circuit board removal.  
Ground faults.

Trouble silencing switch shall silence trouble alarm which shall be arranged so trouble LED shall remain lit until system is restored to normal. As ring-back feature, trouble alarm shall resound as reminder to return silencing switch to normal position.

Supervisory LED, separate from trouble LED, and alarm, operating together, shall signal opening of door shown on drawings. Alarm silence switch shall operate in same manner as trouble alarm.

#### SUBMITTALS

Shop Drawings:

Prepared by authorized factory representative and including:

Single line diagram of actual system. Typical riser diagrams are not acceptable.  
Complete wiring diagrams.  
Manufacturer's original catalog data and descriptive information on each piece of equipment to be used.  
All documentation and submittals required by the Authority Having Jurisdiction are to be submitted within 30 day of the contract award.  
Approval of the Authority Having Jurisdiction and permitting are required before work on the project is to commence.

Quality Assurance/Control - Certificate of completion, from Manufacturer's Representative, in accordance with NFPA 72 requirements.

Closeout:

Operations And Maintenance Manual Data:

Provide operating and maintenance instructions for each item of equipment submitted under Product Data. Provide instruction manual from Manufacturer which explains what is to be done in event of various indications.

Include copy of approved shop drawings.

#### QUALITY ASSURANCE

##### Regulatory Requirements:

System shall meet approval of Authority Having Jurisdiction (AHJ). NEC and local ordinances and regulations shall govern unless more stringent requirements are specified.

Equipment, devices, and cable shall be UL or Factory Mutual listed for use in fire alarm systems.

#### OWNER'S INSTRUCTIONS

Instruct Owner's representative in proper operation and maintenance procedures.

#### PART 2 - PRODUCTS

##### COMPONENTS

Equipment and accessories furnished under terms of this Specification shall be standard products of single manufacturer, or include written statement by Control Panel Manufacturer confirming compatibility of components and inclusion of these components under system warranty.

Main FACP or network node shall contain a microprocessor based Central Processing Unit (CPU) and power supply. The CPU shall communicate with and control the following types of equipment used to make up the system: intelligent addressable smoke and thermal (heat) detectors, addressable modules, printer, annunciators, and other system controlled devices.

##### Operator Control

###### Acknowledge Switch:

Activation of the control panel acknowledge switch in response to new alarms and/or troubles shall silence the local panel piezo electric signal and change the alarm and trouble LEDs from flashing mode to steady-ON mode. If multiple alarm or trouble conditions exist, depression of this switch shall advance the LCD display to the next alarm or trouble condition.

Depression of the Acknowledge switch shall also silence all remote annunciator piezo sounders.

Alarm Silence Switch: Activation of the alarm silence switch shall cause all programmed alarm notification appliances and relays to return to the normal condition after an alarm condition. The selection of notification circuits and relays that are silenceable by this switch shall be fully field programmable within the confines of all applicable standards. The FACP software shall include silence inhibit and auto-silence timers.

Alarm Activate (Drill) Switch: The Alarm Activate switch shall activate all notification appliance circuits. The drill function shall latch until the panel is silenced or reset.

System Reset Switch: Activation of the System Reset switch shall cause all electronically-latched initiating devices, appliances or software zones, as well as all associated output devices and circuits, to return to their normal condition.

Lamp Test: The Lamp Test switch shall activate all local system LEDs, light each segment of the liquid crystal display and display the panel software revision for service personal.

System Capacity and General Operation:

The control panel or each network node shall include Form-C alarm, trouble, and supervisory relays rated at a minimum of 2.0 amps @ 30 VDC.

It shall include Class B (NFPA Style Y) or Class A (NFPA Style Z) programmable Notification Appliance Circuits.

The Notification Appliance Circuits shall be programmable to Synchronize with System Sensor, and Notification Appliances.

The system shall include a full featured operator interface control and annunciation panel that shall include a backlit Liquid Crystal Display (LCD), individual color coded system status LEDs, and an alphanumeric keypad with easy touch keys for the field programming and control of the fire alarm system.

The system shall be programmable, configurable, and expandable in the field without the need for special tools, PROM programmers or PC based programmers.

The system shall allow the programming of any input to activate any output or group of outputs

The FACP or each network node shall provide the following features:

Drift compensation to extend detector accuracy over life. Drift compensation shall also include a smoothing feature, allowing transient noise signals to be filtered out.

Detector sensitivity test, meeting requirements of NFPA 72, Chapter 7.

Maintenance alert, with two levels (maintenance alert/maintenance urgent), to warn of excessive smoke detector dirt or dust accumulation.

Multiple sensitivity levels for alarm, selected by detector. The system shall also support sensitive advanced detection laser detectors. The system shall also include multiple levels of Prealarm, selected by detector, to indicate impending alarms to maintenance personnel.

The ability to display or print system reports.

Alarm verification, with counters and a trouble indication to alert maintenance personnel.

PAS presignal, meeting NFPA 72 3-8.3 requirements.

Devices shall meet NFPA 72 Chapter 1 requirements for activation of notification circuits within 10 seconds of initiating device activation.

Periodic detector test, conducted automatically by the software.

Self optimizing pre-alarm for advanced fire warning, which allows each detector to learn its particular environment and set its prealarm level to just above normal peaks.

Cross zoning with the capability of counting: two detectors in alarm, two software zones in alarm, or one smoke detector and one thermal detector.

Walk test, with a check for two detectors set to same address.

Day/night automatic adjustment of detector sensitivity.

The FACP shall be capable of coding main panel node notification circuits in March Time (120 PPM), and Temporal (NFPA 72 A-2-2.2.2). Panel notification circuits (NAC 1,2,3 and 4) shall also support Two-Stage operation. Two stage operation shall allow 20 Pulses Per Minute (PPM) on alarm and 120 PPM after 5 minutes or when a second device activates.

#### Network Communication

The FACP shall be capable of communicating on a Local Area Network (LAN), a firmware package that utilizes a peer-to-peer, inherently regenerative communication format and protocol.

#### Central Microprocessor

The microprocessor shall be a state-of-the-art, high speed device and it shall communicate with, monitor and control all external interfaces. It shall include an EPROM for system program storage, Flash memory for building-specific program storage, and a "watch dog" timer circuit to detect and report microprocessor failure.

The microprocessor shall contain and execute all control-by-event programs for specific action to be taken if an alarm condition is detected by the system. Control-by-event equations shall be held in non-volatile programmable memory, and shall not be lost even if system primary and secondary power failure occurs.

The microprocessor shall also provide a real-time clock for time annotation of system displays, printer, and history file. The time-of-day and date shall not be lost if system primary and secondary power supplies fail. The real time clock may also be used to control non-fire functions at programmed time-of-day, day-of-week, and day-of-year.

A special program check function shall be provided to detect common operator errors.

An auto-program (self-learn) function shall be provided to quickly install initial functions and make the system operational.

For flexibility and to ensure program validity, an optional Windows(TM) based program utility shall be available. This program shall be used to off-line program the system with batch upload/download, and have the ability to upgrade the manufacturers (FLASH) system code changes. This program shall also have a verification utility, which scans the program files, identifying possible errors. It shall also have the ability to compare old program files to new ones, identifying differences in the two files to allow complete testing of any system operating changes. This shall be in compliance with the NFPA 72 requirements for testing after system modification.

#### System Display

The system shall support the following display mode options:

80 character display option. The display shall include an 80-character backlit alphanumeric Liquid Crystal Display (LCD) and a full PC style QWERTY keypad.

The display shall provide all the controls and indicators used by the system operator:

The 80-character display shall include the following operator control switches: ACKNOWLEDGE, ALARM SILENCE, ALARM ACTIVATE (drill), SYSTEM RESET, and LAMP TEST.

The display shall annunciate status information and custom alphanumeric labels for all intelligent detectors, addressable modules, internal panel circuits, and software zones.

The display shall also provide Light-Emitting Diodes.

The 80-character display shall provide 12 Light-Emitting-Diodes (LEDs), that indicate the status of the following system parameters: AC POWER, FIRE ALARM, PREALARM WARNING, SUPERVISORY SIGNAL, SYSTEM TROUBLE, DISABLED POINTS, ALARM SILENCED, Controls Active, Pre-Discharge, Discharge and Abort.

The display shall have QWERTY type keypad.

The 80-character display keypad shall be an easy to use QWERTY type keypad, similar to a PC keyboard. This shall be part of the standard system and have the capability to command all system functions, entry of any alphabetic or numeric information, and field programming. Two different password levels shall be provided to prevent unauthorized system control or programming.

The system shall support the display of battery charging current and voltage on the 80-character LCD display.

#### Voice Command Center (VCC)

The facility shall have an emergency voice alarm communication system. Digitally stored message sequences shall notify the building occupants that a fire or life safety condition has been reported. A Message generator shall be capable of automatically distributing up to four (4) simultaneous, unique messages to appropriate audio zones within the facility based on the type and location of the initiating event. The Fire Command Center (FCC) shall also support Emergency manual voice announcement capability for both system wide or selected audio zones, and shall include provisions for the system operator to override automatic messages system wide or in selected zones.

The digital audio message generator shall be of reliable, non-moving parts, and support the digital

storage of at least 16 or 32 minutes of tones and emergency messages, shall support programming options to string audio segments together to create up to 1000 messages, or to loop messages and parts of messages to repeat for pre-determined cycles or indefinitely.

The audio portion of the system shall sound the proper audio signal (consisting of tone, voice, or tone and voice) to the appropriate zones.

Notification Appliance Circuits (NAC) speaker circuits shall be arranged such that there is a minimum of one speaker circuit per floor of the building or smoke zone which ever is greater.

Audio amplifiers and tone generating equipment shall be electrically supervised for normal and abnormal conditions.

Speaker circuits shall be electrically supervised for open and short circuit conditions. If a short circuit exists on a speaker circuit, it shall not be possible to activate that circuit.

Speaker circuits shall be either 25 VRMS or 70VRMS. Speaker circuits shall have 20% space capacity for future expansion or increased power output requirements.

The emergency voice alarm communication system shall incorporate a Two-way emergency telephone communication system.

Two-way emergency telephone communication circuits shall be supervised for open and short circuit conditions.

Two-way emergency telephone (Fire Fighter Telephone) communication shall be supported between the Audio Command Center and up to seven (7) remote Fire Fighter's Telephone locations simultaneously on a telephone riser.

Means shall be provided to connect FFT voice communications to the speaker circuits in order to allow voice paging over the speaker circuit from a telephone handset.

Alarm Initiating Devices:

Ceiling Mounted Smoke Detectors - Combination of photoelectric and thermal type.

Photoelectric type.

Listed under UL Standard 268.

Provide visual indication of alarm on unit when normally pulsed supervisory LED glows continuously.

Duct Mounted Smoke Detectors:

Photoelectric type.

Listed under UL Standard 268.

Manual Fire Alarm Boxes:

Double-action requiring two actions to initiate alarm.  
Box shall mechanically latch when actuated and require key to reset. Key shall match control panel door lock.

Notification Appliances:

Combination Horn/Strobe:

Wall mounted flush or semi-flush.  
Non-coded audible output of 90 dB minimum at 10 feet.  
Integrally mounted flashing light unit with block letters 'FIRE'. Minimum light intensity of 75 candela and flash rate between one and three Hertz.  
Listed under UL Standards 464 and 1971.

Strobe Only:

Wall mounted flush or semi-flush.  
Integrally mounted flashing light unit with block letters 'FIRE'. Minimum light intensity of 75 candela and flash rate between one and three Hertz.  
Listed under UL Standard 1971.

Speakers:

All speakers shall operate on 25 VRMS or with field selectable output taps from 0.5 to 2.0 Watts.

Speakers in corridors and public spaces shall produce a nominal sound output of 84 dBA at 10 feet (3m).

Frequency response shall be a minimum of 400 HZ to 4000 HZ.  
The back of each speaker shall be sealed to protect the speaker cone from damage and dust.

Accessory Devices:

Air handler shutdown relays. Provide and install an addressable interface module at the air handling units to shut down activation of the appropriate level alarm.

ACCEPTABLE MANUFACTURERS

Existing main fire alarm control is a Simplex Model 4005 system. The fire alarm panel for the new building shall be a Simplex model 4007 or equal. New panel shall be compatible with existing fire alarm system. New panel shall be an addressable type that can be integrated with the existing zone type system to have one fully functional campus wide fire alarm system.

Cerebrus Pyrotronics, Cedar Knolls, NJ (973) 593-2600  
Edwards Systems Technology, Cheshire, CT (203) 699-9300

Faraday Inc, Tecumseh, MI (517) 423-2111  
Honeywell, Minneapolis, MN (800) 328-5111  
Notifier, Northford, CT (800) 454-9779  
Simplex, Gardner, MA (800) 221-7336

### PART 3 - EXECUTION

#### INSTALLATION

Install fire alarm and detection systems as indicated, in accordance with equipment manufacturer's written instructions, and complying with applicable portions of NEC, NFPA and NECA's 'Standard of Installation'.

#### Mounting Heights:

Unless otherwise indicated, mount center of outlets or boxes at following heights above finish floor:

Manual Fire Alarm Boxes (Pull Stations) - 48 inches  
Fire Alarm Horns/Strobes - 80 inches

#### Conductors:

Install conductors in conduit.

Fire alarm system conductors from different devices may be combined in common conduit. Make certain that raceway size and wire quantity, size, and type is suitable for equipment supplied and is within NEC standards. Label pull and junction boxes 'FIRE ALARM'.

Install conductors and make connections to elevator control panel and duct smoke detectors.

Loop wires through each device on zone for proper supervision. Tee-taps not permitted.

Minimum conductor size shall be 14 AWG unless otherwise specified.

Do not install ceiling mounted detectors within 3 feet of air discharge grilles. Do not install manual fire alarm boxes close to light switches. Coordinate with other trades as required.

#### FIELD QUALITY CONTROL

#### Manufacturer's Field Service:

Provide factory trained representative to perform complete system testing in presence of Owner's representative and local fire department personnel upon completion of installation.

Test each initiating and annunciating device for proper operation, except fixed temperature heat detectors.

Test operation of trouble annunciation on each circuit.  
Perform complete testing of control panel functions.

PROTECTION

Provide dust protection for installed smoke detectors until finish work is completed and building is ready for occupancy.

Protect conductors from cuts, abrasion and other damage during construction.

END OF SECTION 16 7200

SECTION 16 7300 - GPS WIRELESS CLOCK SYSTEMS

PART 1 - GENERAL

(Reference Division 16730 Clock Systems)

SECTION INCLUDES:

Transmission Systems:

G.P.S. Receiver  
Primary Transmitter

Clocks:

Analog (battery)

RELATED SECTIONS

Division 16: Electrical (120 volt grounded dedicated outlet required for transmitter).

REFERENCES

This Technical Specification and Associated Drawings

Wireless GPS Satellite Time System User Manual.

DEFINITIONS

GPS: Global Positioning System, a worldwide system that employs 24 satellites in an integrated network to determine geographic location anywhere in the world, and which employs and transmits atomic time, the most accurate and reliable time.

SYSTEM DESCRIPTION

GPS wireless clock system shall continually synchronize clocks throughout the facility, and shall be capable of clock readouts in multiple time zones where desired.

The system shall synchronize all clocks to each other. The system shall utilize GPS technology to provide atomic time. The system shall not require hard wiring. Clocks shall automatically adjust for Daylight Savings Time.

Analog Clocks shall be synchronized to within 10 milliseconds 6 times per day, and the system shall have an internal oscillator that maintains plus or minus one second per day between synchronizations, so that clock accuracy shall not exceed plus or minus 0.2 seconds.

The system shall include an internal clock reference so that failure of the GPS signal shall not cause the clocks to fail in indicating time.

The system shall incorporate a "fail-safe" design so that failure of any component shall not cause failure of the system. Upon restoration of power or repair of failed component, the system shall resume normal operation without the need to reset the system or any component thereof.

Clock locations shall be as indicated, and clocks shall be fully portable, capable of being relocated at any time.

The system must operate in accordance with a "Radio Station Authorization", Form FCC 601 – LM, granted by the Federal Communications Commission (FCC). This license will be issued to and held by the end user.

#### REGULATORY REQUIREMENTS:

Equipment and components furnished shall be of manufacturer's latest model.

The end user will hold a license, known as a "Radio Station Authorization" granted by the FCC.

This license grants the end user protected use for wireless transmission at the designated frequency.

This license will designate a unique "call sign" for each end user.

Transmitter and receiver shall comply with Part 90 of FCC rules as follows:

This device may not cause harmful interference, and

This device must accept interference received, including interference that may cause undesired operation.

Transmitter frequency shall be governed by FCC Part 90.35.

Transmitter output power shall be governed by FCC Part 90 257 (b)

System shall be installed in compliance with local and state authorities having jurisdiction.

#### SUBMITTALS

**Product Data:** Submit complete catalog data for each component, describing physical characteristics and method of installation. Submit brochure showing available colors and finishes of clocks.

**Operating License:** Submit evidence of application for FCC Radio Station Authorization prior to installing equipment. Furnish the license or a copy of the application for the license, to the Owner prior to operating the equipment. The original license must be delivered to the Owner.

**Samples:** Submit one clock for approval. Approved sample shall be tagged and shall be installed in the work at location directed.

**Manufacturer's Instructions:** Submit complete installation, set-up and maintenance instructions.

Floor plans indicating the location of system transmitter(s), approved by manufacturer, will be submitted to owner prior to installation.

#### SUBSTITUTIONS

Proposed substitutions, to be considered, shall be manufactured of equivalent materials that meet or exceed specified requirements of this Section.

Proposed substitutions shall be identified not less than 10 days prior to bid date.

Other systems requiring wiring and/or conduit between master and clocks will not be accepted.

Other systems using wireless technology in an unlicensed frequency range will not be accepted.

Other systems using wireless technology where the license is held by any party other than the end user will not be accepted.

#### QUALITY ASSURANCE:

Permits: Obtain operating license for the transmitter from the FCC.

#### Qualifications:

Manufacturer: Company specializing in manufacturing commercial time system products with a minimum of 30 continuous years of documented experience including 4 years experience producing GPS wireless time systems.

Installer: Company with documented experience in the installation of commercial time systems.

Prior to installation, a site survey must be performed to determine proper transmitter placement.

#### DELIVERY, STORAGE, AND HANDLING

Deliver all components to the site in the manufacturer's original packaging. Packaging shall contain manufacturer's name and address, product identification number, and other related information.

Store equipment in finished building, unopened containers until ready for installation.

#### PROJECT SITE CONDITIONS

Clocks shall not be installed until painting and other finish work in each room is complete.

Coordinate installation of GPS receiver for access to the roof or exterior side wall so that the bracket and related fasteners are watertight.

#### SYSTEM STARTUP

At completion of installation and prior to final acceptance, turn on the equipment; ensure that all equipment is operating properly, and that all clocks are functioning.

#### WARRANTY

Manufacturer will provide a 5 year warranty on GPS receiver, transmitter, and satellite transmitter. All other components will have a 1 year warranty.

#### PART 2 - PRODUCTS

##### MANUFACTURER

GPS wireless clock system shall be manufactured by SIOSCAN Wireless, Inc., or approved manufacturer with an equal system.

##### SEQUENCE OF OPERATION:

**Transmitter Operation:** When power is first applied to the transmitter, it checks for and displays the software version. It then checks the position of the switches and stores their position in memory. The transmitter looks for the GPS time signal. Once the transmitter has received the GPS time, it sets its internal clock to that time. The transmitter then starts to transmit its internal time once every second. The transmitter updates its internal clock every time it receives valid time data from the GPS.

##### Analog Clock Operation:

**Insert batteries:** Follow set up procedures detailed in manufacturer's instructions.

After initial setup, the clock will shut off the receiver. Six times each day, the microprocessor will activate the receiver and starting with the stored channel, it will again look for a valid time signal. If necessary, the clocks will resynchronize to the correct time.

If the clock has not decoded a valid time signal for a pre-determined number of days, it will go to a step mode. Non signal reception can be caused by low battery voltage. If this occurs, replace the batteries.

##### EQUIPMENT

**General:** The clock system shall include a transmitter, a roof or window mounted GPS receiver, indicating clocks, and all accessories for complete operation.

**GPS Receiver:** GPS roof mounted, with 10 foot cable (3m) attached Wireless extension cable available: 200 ft.

The GPS Receiver shall be a complete GPS receiver including antenna in a waterproof case, designed for roof or outdoor mounting. Provide mounting bracket for attachment to roof structure.

The GPS Receiver cable must be plenum rated where required by local code.

**Transmitter:** Consisting of wireless transmitter with GPS receiver, a surge suppressor/battery backup, and a mounting shelf. Unit shall obtain current atomic time from satellite. The clock system shall

transmit time continuously to all clocks in the system.

Transmission:

Frequency Range: 72.100 to 72.400 MHz.  
Transmission Power: 1 watt (30dBm) maximum  
Radio technology: narrowband FM  
Number of channels: 16  
Channel bandwidth: 20 kHz maximum  
Transition mode: one-way communication  
Data rate: 2 KBps  
Operating range: 32°F to 158°F (0°C. to 70°C).

Transmitter:

Transmitter output power: +26 to +30 dBm  
Frequency deviation: +/- 4 kHz  
Transmitter power requirements: 120 VAC 60 Hz  
Internal power requirements: 5 VDC  
Carrier frequency stability: +/- 20 ppm

Transmitter shall have 16 selectable channels to assure interference-free reception.  
Transmitter shall have the following switches:

Time zone adjustment switches for all time zones in the world.

Includes: Eastern, Central, Mountain, Pacific, Alaska, and Hawaii.

Daylight Saving Time bypass switch.  
12-hour or 24-hour display.

Transmitter housing shall be black metal case, 16-3/4 inches (424.4mm) by 12 inches (304.8mm) by 1-7/8 inches (46.4mm) in size.

Antenna shall be 46 inches (1168mm) high, commercial type, mounted on top center of transmitter housing. Antenna gain shall be < 2.2 dB. Antenna polarization shall be vertical.

Transmitter housing shall incorporate a display which shall include the following:

Time readout AM and PM indicator if 12-hour time display is set  
Day and date readout  
Indicator for daylight savings or standard time LED which shall flash red in event of reception problem  
GPS reception indicator.

Transmitter shall contain an internal clock such that failure of reception from the GPS will not disable the operation of the clocks.

Power supply (included):

Input: 120 volt AC 50/60 Hz, 0.4 amps.

Output: 9 volt DC, 1.5 amps.

Surge Protector/Battery Backup (included).

Input: 120 volt AC 60 Hz +/- 1 Hz.

Output: 120 volt AC, 500VA, 300 watts

Surge Energy Rating: 365 joules

Additional Equipment:

Wireless Receiver Switches: Switches shall receive time packets from the Primary Transmitter and relay the synchronized time to the Satellite Transmitter connected to it. The unit shall include the following:

Antenna mounted on top of the switch housing, 11-1/2 inches (292mm) long.

Power Supply:

Input: 120 VAC 50/60 Hz, 0.4 amps

Output: 9 volt DC, 1.5 amps

RS 232 data cable, 5 feet (1.5mm) long

Daylight Savings Time bypass switch

Dimensions: 4-1/4 inches (108mm) long, 5-3/4 inches (146mm) wide, 1-1/4 inches (31.75mm) deep.

Weight: 12 ounces (.34kg)

Operating Range: 32°F to 158°F  
(0° to 70°C)

Satellite Transmitters shall receive the signal from the Wireless Receiver Switches and transmit the signal to the devices in its vicinity, which are out of the range from the Master Transmitter. The unit shall include the following:

Antenna mounted on top of the housing, 46 inches (1168mm) long.

Wireless Receiver Switch:

Power Supply:

Input: 120 VAC, 50/60 Hz, 0.4 amps

Output: 9 volt DC, 1.5 amps.

6 foot (1.83m) cord

Surge Suppressor/Battery Backup

Mounting Shelf.

Transmission Power: 1 watt maximum

72 MHz frequency.

Traditional analog clocks (battery): Analog clocks shall be wall mounted. Clocks shall have polycarbonate frame and polycarbonate lens. Face shall be white. Hour and minute hands shall be black.

12-1/2 inch (317.5mm) diameter analog clock:

Additional colors, finishes, and dial faces are available from manufacturer.

Analog clocks shall be battery-operated, and shall have minimum 5-year battery life.

Analog clocks shall be capable of automatically adjusting for Daylight Saving Time. An on-off switch located on the transmitter shall disable this function if desired.

Time shall be automatically updated from the transmitter 6 times per day.

Analog clocks shall remember the time during changing of batteries.

9 inch (228.6mm) and 12.5 inch (317.5mm) analog clocks shall have a tamper proof/theft resistant clock lock mounting slots.

Provide two alkaline batteries. (9 inch /228.6mm– C cells, 12.5inch/317.5mm, 16 inch/406.4mm – D cells and 24 inch/610mm – C cells)

Analog clock receivers shall be as follows:

Receiver sensitivity: >-110 dBm

Receiver power: two alkaline D-cells

Antenna type: internal

Antenna gain: -7 dBd

If the transmitter stops transmitting valid time signals due to power failure, the clocks will continue to function as accurate quartz clocks until a valid time signal is decoded. If signal transmission is not restored after 48 hours, the second hand will “five step” as a visual indicator that the signal has been lost. Should the clocks lose power and signal, the clocks will not function.

Traditional analog clocks (AC): Analog clocks shall be wall mounted. Clocks shall have polycarbonate frame and polycarbonate lens. Face shall be white. Hour and minute hands shall be black.

Cable Connection Sealant: Radio Shack Coaxial Cable Connector Sealant 278-1645, or approved electrical grade silicone sealant.

PART 3 - EXECUTION

## EXAMINATION

Verify that construction is complete in spaces to receive equipment and that rooms are clean and dry.

Verify that 120 volt electrical outlet is located within 6 feet (1.83m) of location of transmitter and the outlet is operational and properly grounded.

## INSTALLATION

GPS Unit: Install on roof in location indicated, in clear view of the sky. Install unit in location free from standing water, and above accumulations of leaves or debris. Seal cable connection to GPS with cable connection sealant. Any added cable lengths must be protected from outside elements.

Transmitter:

Locate transmitter where indicated, a minimum of 2 to 3 feet (.6 to 1 meter) above the floor, away from large metal objects such as filing cabinets, lockers or metal framed walls. Transmitter(s) will be placed at locations per plans.

Attach receiver to transmitter using cable.

Connect antenna to transmitter, using care not to strip threads.

Connect power supply to the transmitter.

Set the channel number on the display to correspond to the FCC license.

Plug power supply into electrical outlet.

Analog clocks (battery): Perform the following operations with each clock:

Install D-cell batteries.

Set clock to correct time in accordance with manufacturer's instructions.

Observe analog clock until valid signals are received and analog clock adjusts itself to correct time.

Install the analog clock on the wall in the indicated location, plumb, level and tight against the wall. If using 12-1/2 inch (317.5mm) clock, attach using clock-lock hanging method and suitable fasteners as approved by clock manufacturer.

## ADJUSTING

Prior to final acceptance, inspect each clock, adjust as required, and replace parts which are found defective.

## CLEANING

Prior to final acceptance, clean exposed surfaces of clocks, using cleaning methods recommended by clock manufacturer. Remove temporary labels from clock faces. Do not remove labels from backs of clocks.

DEMONSTRATION

Provide training to Owner's representative on setting and adjusting clocks, replacing batteries and routine maintenance.

PROTECTION

Protect finished installation until final acceptance of the project.

TESTING

All devices must be tested at their operational location under normal operational conditions to assure reception of signal.

END OF SECTION 16 7300

**SECTION 16 9500 - COMMUNICATIONS****PART 1 - GENERAL****RELATED DOCUMENTS**

The General and/or Special Conditions Sections are a part of this specification and the Contractor shall consult them in detail for instructions pertaining to this work.

**SCOPE**

Furnishing of all labor, material, equipment, supplies, and services necessary to construct and install the complete communications systems as shown on the drawings and specified herein. Contractor shall report any discrepancies pertaining to this project scope between the plans given and the existing building. All work pertaining to cutover, removal of electronics and any other items indicated on plans shall be coordinated with Baldwin County Board of Education IT dept. Work shall include but is not necessarily limited to the following items:

Data

Telephone

Contractor shall be solely responsible for quality control and shall maintain quality control over supervision, subcontractors, suppliers, manufacturers, products, services, workmanship, safety, temporary facilities, and site conditions, to produce Work in accordance with Contract Documents.

Work shall be free from faults and defects in workmanship. Materials and equipment incorporated into the work shall be new, unless noted otherwise.

Required testing and inspection are intended to assist in determination of probable compliance of the work with the Contract Documents, but do not relieve Contractor of responsibility for this compliance. Specified testing and inspection are not intended to limit Contractor's quality control program.

**CONTRACTOR QUALIFICATIONS**

The Structured Cabling System Contractor (SCSC) shall be an experienced firm regularly engaged in the layout and installation of structured cabling systems of similar size and complexity as required for this installation. The Structured Cabling System Contractor, under the same company name, shall have successfully completed the layout, installation, testing and warranty of not less than five Structured Cabling Systems of the scope of the largest system on this project for a minimum period of three years prior to the bid date, and shall have been regularly engaged in the business of Structured Cabling Systems contracting continuously since. The Contractor shall have an existing permanent office located within 100 miles of the job site from which installation and warranty service operations will be performed.

The contractor shall be a certified contractor by the structured cabling system (SCS) manufacturer and shall be in good standing. The contractor shall provide certificates of said certifications if required. In

addition, the RCDD/ Project manager and not less than 50% of the installing technicians shall be BICSI certified installers and/or manufacturer certified. The contractor shall assure that all requirements of the warranty of this project can be met by the manufacturer and the contractors subsequent certification from the SCS manufacturer.

The head Installer assigned for the project shall be a BICSI registered Level II installer.

The Structured Cabling System Contractor shall present, with his signed contract, the name and certification number of a BICSI certified Registered Communications Distribution Designer (RCDD) who is a permanent employee of the Contractor. **Contract RCDD's shall not be acceptable.** The Contractor shall maintain this RCDD, or another RCDD approved by the Engineer, in his permanent employment throughout this project. The RCDD shall have overall responsibility for certifying that the installed structured cabling system conforms to these contract documents and to the referenced EIA/TIA, IEEE, BICSI, and UL standards. Specific requirements for the RCDD are as follows:

The RCDD shall be, in the judgment of the Engineer, thoroughly experienced in the design, layout, and installation of structured cabling systems of similar size and complexity as required for this installation. The RCDD shall submit evidence of these qualifications to the Engineer upon request.

The RCDD shall affix his stamp to the Contractor's pre-installation submittal drawings, indicating that he has reviewed and approved the drawings for conformance to the contract documents and to the referenced codes and standards.

The RCDD shall periodically visit the site and inspect the work in progress. RCDD site visits shall be made not less than once per month when the job is in active progress. The RCDD shall prepare a field report for each site visit for submission to the Engineer.

The RCDD shall sign off on all copper and fiber optic cable test results, indicating that he was in responsible charge of all cable testing procedures and that all cables were tested in compliance with the contract documents and met or exceeded the requirements stated therein.

The RCDD shall affix his stamp to the Contractor's as-built drawings, indicating that he has reviewed and approved the drawings as being complete, accurate, and representative of the system as actually installed.

The RCDD shall be present for and participate in not less than four hours of user training.

#### CONTRACTOR QUALIFICATIONS – CONDUIT INSTALLATION:

All conduit shall be installed by a licensed electrical contractor using tradesmen who are skilled and experienced in the types of conduit installations indicated in the bid documents.

#### BID REQUIREMENTS

The Structured Cabling System Contractor shall provide the following documentation, to be presented with the bid, as evidence that the requirements for Structured Cabling System Contractor qualifications listed above are satisfied. If the bidder does not meet the requirements of this specification section for

structured cabling system work, he shall provide the following documentation, to be presented with the bid, as evidence that the requirements listed above are satisfied by the Structured Cabling System Contractor he proposes to use as a subcontractor to perform work under this section. In either case, all work under this section shall be performed by permanent employees of the Structured Cabling System Contractor listed on the bid form, and shall not be performed by another subcontractor, employees of another company, or by temporary employees.

A list of not less than five (5) references for jobs of similar size and complexity including project name, location, contact person and phone number. These projects shall all be performed in K-12 schools while school was in session.

RCDD name, BICSI certification number, and qualifications.

Location of office from which installation and warranty work will be performed.

#### ADDITIONAL MATERIAL REQUIREMENTS

In addition to the contract documents, the structured cabling contractor shall provide additional parts/materials for additional services and unforeseen conditions and additions. These additional materials shall include all labor to install and test per these specifications. These additional requirements shall include:

25 data cables and outlets ports, including faceplates, cable, patch panels (if needed) in locations to be determined under construction. Assume cables to be approximately 75' in length and terminated on nearest consolidation point or patch panel. These shall include all cable pathway requirements.

Four installations of data surge protection (as specified on drawings), including grounding conductor and enclosure.

These additional materials shall be used to replace existing damaged cables or newly added outlets. These items shall only be installed when approved by the Owner and engineer.

Effort has been made to identify/locate all existing outlets on the drawings. It is anticipated that 10% of the outlets in the building have not been identified. Contractor shall locate these outlets when found and provide with new cabling, jacks, faceplates, labeling etc., and test as required by the plans and specifications. *The quantity of additional, new outlets listed above are not included in these 10% of existing outlets that were not identified on the drawings.*

#### RELATED REQUIREMENTS

The contractor shall understand and apply the Baldwin County Board of Education telecommunications infrastructure standard to their installation. Any discrepancies between these specifications and the design drawings from these standards shall be noted and expressed to the Owner and engineer for a decision and direction.

Division 16 Specification Sections regarding conduit and raceway apply to work under this section, with the additions and modifications specified herein and on the drawings. The special requirements

indicated on the drawings for structured cabling system conduit shall take precedence over any requirements specified in Division 16 Specification Sections.

#### EXAMINATION OF SITES AND TOTAL SYSTEM RESPONSIBILITY

Prior to providing a proposal for this work, the Contractor shall visit the proposed sites of work to become familiar with any condition that may in any manner affect the work to be performed. No allowances shall be made because of lack of knowledge of these conditions.

The Contractor shall have total system responsibility to assure a fully operational system. Any additional labor and components required for the installation of a complete operating system but not specifically required by the bid documents shall be provided and the cost borne by the Contractor.

The Contractor remains the owner of all components provided under this contract and is responsible for all risk of loss or damage to all components up to and including the date and time of Final Acceptance by the Engineer and the Owner's Authorized Representative. After the date of Final Acceptance, the Owner shall assume full ownership of the equipment.

#### JOB CONDITIONS

**Existing Conditions:** All existing systems, and conditions shown on the plans as existing are approximate, and the Contractor shall verify all details of the project before any work is started.

**Scheduled Interruptions:** Planned interruptions of telephone/data/, to any facility affected by this contract, shall be carefully coordinated and approved by the Architect at least ten (10) days in advance of the requested interruption. The Contractor shall not interrupt services until specific approval has been granted by the Architect. The request shall indicate services to be affected, date and time of interruption and duration of outage. Request for interruption of service will not be approved until all equipment and material required for the completion of that particular phase of work are on the job site. The work may have to be scheduled after normal working hours.

**Maintaining Service:** Any existing service (or operating system) which must be interrupted for any length of time shall be supplied with a temporary service as necessary for continuation of the normal operation of this facility.

**Removal of Existing Work:** Where noted or indicated on the drawings, or specified herein, existing electrical materials and equipment shall be removed from the building. All materials designated to be removed by the Contractor, not to be salvaged and given to the Owner or required to be reinstalled, including scrap, shall become the property of the Contractor, and shall be promptly removed from the site. Existing items required to be removed temporarily in order to properly install new work shall be replaced in a satisfactory manner upon completion.

#### CODES, PERMITS AND INSPECTIONS

Minimally, the following standards must be met when applicable to the work performed:

International Standards Organization/International Electrotechnical Commission (ISO/IEC) DIS 11801

Underwriters Laboratories (UL) Cable Certification and Follow up Program.

ANSI/TIA/EIA-568-B.1 -- *Commercial Building Telecommunications Cabling Standard, Part 1: General Requirements*

ANSI/TIA/EIA-568-B.2-1 -- *Commercial Building Telecommunications Cabling Standard, Part 2: Balanced Twisted Pair Cabling Components*

ANSI/TIA/EIA-568-B.3 -- *Optical Fiber Cabling Components Standard*

ANSI/TIA/EIA-569-A -- *Commercial Building Standard for Telecommunications Pathways and Spaces*

ANSI/TIA/EIA-606(A) -- *The Administration Standard for the Telecommunications Infrastructure of Commercial Buildings*

ANSI/TIA/EIA-607(A) -- *Commercial Building Grounding and Bonding Requirements for Telecommunications*

ANSI/TIA/EIA-526-7 -- *Measurement of Optical Power Loss of Installed Single-Mode Fiber Cable Plant*

ANSI/TIA/EIA-526-14A -- *Measurement of Optical Power Loss of Installed Multimode Fiber Cable Plant*

ANSI/TIA/EIA-758(A) -- *Customer-Owned Outside Plant Telecommunications Cabling Standard*

AHJ -- Local Authority Having Jurisdiction (AHJ)

NEC -- National Electrical code

NFPA -- National Fire Protection Association

NESC -- National Electrical Safety Code

BICSI -- BICSI Telecommunications Distribution Methods Manual (TDMM)

The installation shall comply with all local, state, and federal laws and ordinances applicable to communication equipment installation and with the regulations of the latest published edition of the National Electrical Code (N.E.C.) and the Federal Communications Commission (FCC) where such regulations do not conflict with those laws and ordinances. The Contractor shall obtain and pay for all permits and inspection fees, and after completion of the work, shall furnish the Architect a certificate of final inspection and compliance with the standards listed above as applicable. Any charges by a utility (Data, Telephone, etc.) for providing service as shown shall be included in the bid and paid by the Contractor.

#### JOB-SITE CONDITIONS:

The Contractor shall be required to coordinate working hours at each site with the School Principal. Work at the site shall not be allowed during hours when school is in session, unless specifically approved by the School Principal on a day-by-day and case-by-case basis. The Contractor shall work at night and/or weekends (or at any time school is not in session) to meet these requirements at no additional charge to the

Owner.

The Contractor shall be responsible for ensuring that his employees and any subcontractors:

Refrain from smoking or the use of tobacco in any facility, property or vehicles owned by the School District. Any person wishing to use tobacco products must leave School District property to do so.

Refrain from the use of vulgarities while on School District property.

Wear proper attire to include full length pants or jeans and appropriate shirts. Clothing shall have no vulgarities or sexually suggestive graphics. Clothing shall bear contractor's company name.

Refrain from contact with students or staff. Communications with staff shall be limited to that related to the work.

The School District retains the right to require the Contractor to dismiss any employee or any employee of his subcontractors deemed incompetent, careless, insubordinate or otherwise objectionable, or any personnel whose actions are deemed to be contrary to the public interest or inconsistent with the best interest of the School District.

The Contractor shall be responsible for all damages to any building, equipment, furnishings, or other property of the School District that are caused by the Contractor or his subcontractors. The Contractor shall, as directed by the Engineer or the Owner's Authorized Representative, repair or replace any damaged item at the Contractor's expense. Any item which the Engineer or the Owner's Authorized Representative allow to be repaired shall be restored to the condition which existed prior to the damage occurring, or better.

#### PRE-INSTALLATION WALK-THRU:

Contractor shall schedule a walk-thru with principal and school district IT representative. The purpose of the walk-thru will be to identify any damage that exists prior to installation and potential conflicts/discrepancies with the design documents. All issues shall be documented and signed off by the principal and school district IT representative.

#### PRE-CONSTRUCTION CONFERENCE:

Contractor shall schedule a pre-construction conference with principal, school district IT representative and engineer. Contractor shall present any issues/discrepancies from pre-installation walk-thru, schedule of construction including start date and completion date, scheduled progress meetings, anticipated daily work schedule and any required scheduling with principal, school IT representative and engineer.

#### DRAWINGS AND SPECIFICATIONS:

The drawings and these specifications are complimentary each to the other. What is called for by one shall be as binding as if called for by both. Where the drawings and/or specifications differ as to quantity or quality, the greater quantity or higher quality shall be provided. Omissions from the

drawings and specifications of details of work which are evidently necessary to carry out the intent of the drawings and specifications, or which are customarily performed, shall not relieve the Contractor from performing such work. In any case of discrepancy in the figures or catalog numbers, the matter shall be submitted to the Architect, who shall promptly make a determination in writing. Any adjustment by the Contractor shall be at the Contractor's own risk and expense. Electrical drawings are diagrammatic only. Do not scale these drawings. All equipment shall be installed in accordance with manufacturer's recommendations and any conflicting data shall be verified before bidding.

#### STANDARDS OF MATERIALS AND WORKMANSHIP:

**Materials:** All materials shall be new and shall be listed and approved by the Underwriters' Laboratories, Inc., in every case where a standard has been established for a particular type of material in question. All work shall be executed in a workmanlike manner and shall present a neat appearance.

**Prior Approvals:** Equipment and materials of the same type or classification and used for the same purpose, shall be products of the same manufacturer. It is the intention of these specifications to indicate a standard of performance and quality for all materials incorporated in this work. Manufacturer's names and catalog numbers are used to designate the item of equipment or material as a means of establishing grade and quality. Where several manufacturers are named, only those named manufacturers' products will be considered and the Contractor's bid shall be on their products. The first named of several manufacturers is the manufacturer whose product was used in engineering the project. Other named manufacturers, although acceptable as manufacturers, shall guarantee that their product will perform as specified and will meet space requirements. Where performance characteristics of such equipment differs from the equipment scheduled on the drawings, the engineer shall reserve the right to reject it.

For approval of products other than those specified, bidders shall submit to the Architect, a request in writing, at least ten (10) days prior to bid date. Requests received after this time will not be reviewed or considered regardless of cause. Requests shall clearly define and describe the product for which approval is requested. Requests shall be accompanied by manufacturer's literature, specifications, drawings, cuts, performance data, model numbers, list of references or other information necessary to completely describe the item. Approval will be in the form of an Addendum to the specifications issued to all prospective Prime Contract Bidders on record. The Addendum will indicate the additional products which are approved for this project.

**Substitutions:** Reference to a particular product by manufacturer, trade name, or catalog number establishes the quality standards of material and equipment required for this installation and is not intended to exclude products equal in quality and similar design. The Architect reserves the sole right to decide the equality of materials proposed for use in lieu of these specified. It shall be the Contractor's responsibility to furnish the information and data sufficient to establish the quality and utility of the items in question, including furnishing samples if required.

**Shop Drawings:** The Contractor shall submit a list of items proposed for use. He shall also submit catalog data and shop drawings on proposed systems and their components, panelboards, safety switches, starters and contactors, transformers, lighting fixtures, and wiring devices. Where substitutions alter the design or space requirements, the Contractor shall defray all items of cost for the revised design and construction including costs to all allied trades involved. Data shall be submitted

within ten (10) calendar days after the contract is awarded. Provide six (6) copies of shop drawings unless a greater number of copies is required by the General Conditions. Each submittal data section shall be covered with an index sheet listing Contractor, Sub-Contractor, Project Name, and an index to the enclosed submittals.

Each major section of submittals such as power, equipment, lighting equipment, fire alarm, etc., shall be secured in a booklet or stapled with a covering index which lists the following information:

General contractor with phone number and project manager.

Subcontractor with phone number and project manager.

Supplier of equipment with phone number and person responsible for this project.

Index of each item covered in submittal and model number as proposed in the attached.

Any deviation from contract documents shall be specifically noted on submittal cover index and boldly on specific submittal sheet.

**Operating and Maintenance Manuals:** At completion of the work, furnish three (3) copies of written operation instructions which shall include manufacturer's descriptive bulletins, operating and maintenance manuals and parts lists of all equipment installed. Also include in such instructions, the specified size and capacity ratings of all equipment installed. Each set of instructions shall be assembled into a suitable loose-leaf type binder and presented to the Architect for delivery to the Owner.

**Record Drawings:** Maintain one extra set of black-line, white print drawings for use as Record drawings. Records shall be kept daily, using colored pencil. As the work is completed, relevant information shall be transferred to a reproducible set, and copies made to be given to the Architect.

#### INTERFACE WITH OTHER CONTRACTS

It shall be the responsibility of the Contractor to cooperate with all other crafts working on this project. All cutting, trenching, backfill, and structural removals to permit entry of the communications system components shall be done by this Contractor. All patching and finishing shall be done by the General Contractor.

#### GROUNDING

Provide grounding and bonding systems in strict accordance with the latest published edition of N.E.C., except where more stringent requirements are specified herein. Inter-connection of neutral and ground is not permitted at any point in the communications system. Install grounding conductors to permit shortest and most direct path to ground. Inaccessible joints are not to be made in grounding conductors. Where grounding conductors are in raceway, bond conductor and raceway at both ends. Grounding and bonding fittings used shall be UL listed and be compatible with metals used in system. Sheet metal type straps are not acceptable.

The Equipment Rack shall be connected to the existing ground system that consists of driven electrodes, ground ring, building steel, water pipe electrodes, concrete encased electrode, rod and pipe electrodes, or plate electrodes by a #3/0 conductor. The driven electrodes, building steel, water pipe electrodes, and concrete encased electrodes are the minimum requirements. Extend grounding conductor to main telephone equipment space.

The Contractor shall test and provide written certification of final ground system; including test method, equipment model and serial numbers, and final measurements at each point. The ground electrode system must be less than 25 ohms.

#### GUARANTEE AND SERVICE

Upon completion of all tests and acceptance, the Contractor shall furnish the Owner of a written guarantee covering the electrical work done for a period of one (1) year from date of acceptance. Guarantee includes equipment capacity and performance ratings specified without excessive noise levels. Upon notice from the Architect or the Owner, the Contractor shall, during the guarantee period, rectify and replace any defective material or workmanship and repair any damage caused thereby without additional cost.

#### PART 2 - PRODUCTS

##### GENERAL

All equipment and materials shall have ratings established by the recognized independent agency or laboratory. The Contractor shall apply the items used on the project within the ratings and subject to any stipulations or exceptions established by the independent agency or laboratory. Use of equipment or materials in applications beyond that certified by the agency or beyond that recommended by the manufacturer shall be cause for removal and replacement of such misapplied items. See section 16100 for raceway and junction/pull box requirements.

##### CABLES

Data/Communication Cable: Cable shall be Category 5e unshielded twisted pair. The vendor shall determine if plenum or riser rated cable is required for the specific installation.

Cable Pathway: Extension of all data cables shall be within raceway, conduit, cable tray or j-hook cable delivery system provided and installed by the contractor.

Fiber: Fiber shall be 6 strand count multi-mode fiber optic cable.  
Cabling will have a 15 year *manufacturers* warranty on all parts and labor.

All copper cable terminations shall comply with, and be tested to TIA/EIA 568B and TSB-67 standards for Category 5e installations.

All test results shall be compiled and given to the Owner in electronic format.

Cables to be provided by the Contractor:

One 6' patch cord with terminations per data connection point.

One 6' telephone cable with terminations per telephone connection point.

RCA outlet connection cabling as shown on the plans.

Cat-5e cabling and labeled terminations from the Data Equipment Rack to all data connection points.

Cat-5e cabling and labeled terminations from the Telephone Equipment Rack to all Telephone connection points.

All cables and labeled terminations required in the MDF/IDF's to interconnect patch panels, data equipment, fiber optic patch panels, Telephone distribution hub, computers, etc. to provide a fully functional and operational system.

Cables and labeled terminations between all Main Distribution Frames (MDF's) and Intermediate Distribution Frames (IDF's) (existing and new), and between all Cable TV and Telephone distribution backboards/network centers.

#### CABLE ROUTING

##### Cabling:

All communications cabling used shall comply with the requirements as outlined in the National Electric Code (NEC) article 760 and the appropriate local codes. All cabling shall bear CMP (Plenum Rated), CM/CMR (Riser Rated) markings. All cabling shall be solid copper, 24 AWG, 100 W balanced twisted-pair (UTP) Category 5e cables with four individually twisted pairs, which meet or exceed the mechanical and transmission performance specifications in ANSI/TIA/EIA-568-B.2-1 up to 1 GHz.

##### Cabling Bundling:

Install horizontal cabling shown to be free-routed parallel and perpendicular to building lines, up high and over piping, ductwork, conduit and other utilities, and in protected locations. All cabling shall be neatly and symmetrically bundled (maximum individual bundle size 25 four pair Category 5e cables), bound with black velcro wraps at a minimum of four feet on center, properly supported, and otherwise installed as indicated on the drawings. Support all free-routed horizontal cabling bundles individually with Category 5e J-hooks (Erico "CABL CAT") at a minimum of four feet on center. Attach J-hooks to building structural members only using factory support system components. Secure cables bundles within J-hooks with factory contact free containment cable ties. Do not attach J-hooks to ceiling grids, ceiling supports, piping, ductwork, conduit or anything other than building structural members unless specifically approved by the Engineer. Do not support free-routed horizontal cabling by running over or directly attaching to building structural members, piping, ductwork, conduit or any other utility.

Do not pull cables in conduits until plastic insulating bushings have been installed. Cables installed in conduits without plastic insulating bushings shall be removed and replaced with new cables. Route conduits together wherever possible.

Provide wire management devices on backboards and racks as indicated and as required to facilitate organized routing of cables and patch cords. Bundle cables together behind racks and fan out to points of termination. The finished installation shall meet the approval of the Engineer for overall quality and neatness of appearance.

The Contractor, in providing a bid, shall be fully responsible for any and all damage to cabling which may occur during the installation, and shall replace any damaged cabling with new cabling of the type specified for the application.

#### Fire Stopping:

Sealing of openings between floors, through rated fire and smoke walls, existing or created by the contractor for cable pass through shall be the responsibility of the contractor. Sealing material and application of this material shall be accomplished in such a manner, which is acceptable to the local fire and building authorities having jurisdiction over this work.

#### Warning Labels:

All fiber optic cable running through crawl spaces, in attics, or above drop ceilings shall be clearly and noticeably marked as fiber optic cable, unless completely covered and protected in conduit. Warning markings must be placed at a minimum of every five (5) feet.

#### STRUCTURED CABLING SYSTEM

All drops installed and maintained by vendor must support (but not be limited to) the following application standards: 100Base-T (IEEE 802.3), 1000Base-T (Fast Ethernet), 100VG - AnyLAN (IEEE 802.12), 4/16 Mbps Token Ring (IEEE 802.5), and 52/155Mbps ATM (ATM Forum).

#### SYSTEM DESCRIPTION

The system work or projects shall consist of a network of fiber optic, and unshielded twisted pair, riser, tie, patch, and station cables. Cables and terminations shall be provided and located as shown and in the quantities indicated on any drawings, or determined during school walk through. Fiber cables shall terminate on fiber distribution centers (FDC's), fiber patch panels (FPP's), lightguide interconnect unit (LIU's), and/or modular patch panels located in all designated demarcation points. All cables and terminations shall be identified at all locations. All cables shall be terminated in alphanumeric sequence at all termination locations. All copper cable terminations shall comply with, and be tested to TIA/EIA 568B and TSB-67 standards for Category 5e installations. Station cables shall terminate on wall plates equipped as designated by Baldwin County Board of Education (BCBE) personnel.

Outlets: Outlets for data communication shall consist of two gang utility outlet boxes. Wall plates will be equipped with 8-pin modular (RJ-45) jacks, utilizing T568B wiring. Single-gang mounting plates may have one, two, three, or four openings. The following are the specifications for each type of opening:

Voice Outlet - AMP, Ortronics, or Hitachi 8-pin modular, category 3, unkeyed, black, pinned to T568B Standard.

Data Outlet - AMP, Ortronics, or Hitachi 8-pin modular, category 5e, unkeyed, orange, pinned to T568B Standard.

**Optical Fiber Connectors - MTRJ adapter.**

All wall boxes, faceplates, track, and all other associated pieces shall be the color of white. Each port shall be clearly marked what type of port it is and the number in which that port associates to in the termination point. All outlet cabling shall terminate on termination patch panels in their associated TC or WC.

**Station Cable:** Category 5e UTP, 4 Pair, data cables shall be extended between the station location and its associated TC or WC. These cables shall consist of 4 pair, 24 gauge, UTP, and shall be terminated on the 8-pin modular jacks provided at each outlet. Cable jacket shall comply with Article 800 NEC for use as a plenum cable. The 4 pair UTP cable shall be UL certified.

**Fiber Optic Cabling:** Fiber optic cabling shall be provided between MDFs and classrooms, libraries, and other rooms and furnished with the quantity of fibers designated by Baldwin County Board of Education.

**Same Manufacturer:** All fiber in a cable run shall be from the same manufacturer and shall be of the same type. A mix of fibers from different manufacturers may not be used without BCBE permission.

**Multimode Fiber Specifications:** All fiber optic cables within the premises will use multimode, graded index, fibers with 62.5 micron cores only. Fibers must comply with EIA/TIA 492 specifications and IS 11801 standards. Fibers will have dual-wavelength capability: transmitting at 850nm and 1300nm ranges. All fibers shall be color coded to facilitate individual fiber identification.

**Fan-out Kits:** All loose tube cables will be provided with fan-out kits at each termination point.

**Equipment Racks:** The TC, TWC, or ER shall be equipped with a floor mounted EIA/TIA standard 19" rack as designated. Provide shelves and wire managers as required by Baldwin County Board of Education. Racks shall be manufactured by Ortronics or approved equal. Provide and install all wire management hardware. Rack wire management is to be vertical and mounted on the sides.

The minimum rack size shall be a standard 19 inch rack with sufficient rack space to allow the fiber distribution center (FDC) to be placed at the top of the rack.

Floor mounted racks shall be secured from the top rail to the backboard in the room with a length of cable runaway to prevent movement. All racks shall be grounded to the isolated ground bar within the ER using a standard ground lug and #6 jacketed green cable.

**Patch Panels:** Patch panels shall be in 12, 24, 48, and 96 port configurations as designated and be AMP, Ortronics or Hitachi. Patch panels shall be wired for T568B configuration.

Designation strips for each jack shall be provided on the patch panel. All cables shall be terminated in numerical sequence.

**Category 5e Patch Cords:** Provide Category 5e Modular Patch Cords for each assigned port on the patch panel. All cords shall conform to the requirements of EIA/TIA 568B Commercial Building Telecommunications Cabling Standard and be part of the UL LAN Certification Follow-up Program. Cords shall be equipped with an eight (8) pin modular connector on each end and shall conform to the length(s) required maintain proper installation and bend radiuses.

Fiber Patch Panels: Lightguide Interconnect Unit (LIU): LIU is a termination and administration point for the fiber in the network. The LIU will protect the fiber connectors from mechanical stress, macro-bending, and tampering with the circuit. The LIU will provide circuit identification and will be wall-mounted. The LIU shall be manufactured by Siecor and have connector panels that accommodate ST connectors. The LIU shall provide terminating, cross-connecting or interconnecting capability of 6, 12, or 24 fibers.

Fiber Patch Panels: Lightguide Distribution Shelves (LDS): LDS is a high fiber-count termination and administration point for the fiber cables in the network. The LDS will provide a place for circuit identification and be mounted securely at the top of the equipment rack. LDS shall be manufactured by Siecor or approved equal. The LDS shall have connector panels that accommodate ST connectors. The LDS must be mountable in a 19" rack and have front and rear access panels. The LDS shall provide terminating capability of 24, 48, 72, or 144 fibers.

Fiber Patch Cords: The fiber patch cords shall consist of a buffered, graded index fiber with 62.5 micron core and a 125 micron cladding for multimode application. The fiber buffer shall be covered by aramid yarn and have a jacket of flame retardant PVC. The connector shall be ST as manufactured by Siecor or approved equal.

Multimode Fiber Optic Connector: Provide a field installable multimode connector to terminate fiber optic cables from cable-to-cable, cable-to-equipment or equipment-to-equipment, and make jumpers. The connector must be AMP light crimp, ST, stainless steel.

#### CABLE LADDER

The cable ladder is to be as indicated on the plans with heavy-duty 3/8" steel bar construction. Channel cross slats are to be welded between stringers. Provide and install all associated support hardware, transitions, curves. See the plans for the actual size of the ladder.

A CSD Firsto firestop system is to be provided and installed where fire barriers are penetrated by cable ladders.

#### IDENTIFICATION:

All labels shall be produced using a laser printer and shall be easily readable from floor level when viewing a backboard, panel, or communications outlet from the front.

Labels for communications outlets, horizontal patch panels, and fiber optic drawers shall be made using factory laser printer label sheets furnished by the outlet and block manufacturer. Sheets shall be preformatted with perforated tear-out labels sized for the specific application. Use spreadsheets furnished by the manufacturer to enter data for printing. Handwritten labels are not acceptable. Provide data sheets describing proposed labeling products for cable and conduit with pre-installation submittals.

Label each main cable at each end based on source and destination room numbers using Engineer approved permanent labeling system.

Label each horizontal wiring conduit at the backboard or panel end based on the identification of the CO served using Engineer approved permanent labeling system.

Label each main (backbone) cable at each end based on source telcom room number and destination telcom room number using write-on mylar wrap wire markers.

Label each existing communications outlet to match new labeling scheme as shown on the plans. Label each communications outlet, horizontal wiring terminal block, backbone wiring terminal block, communications panel, rack, enclosure, and other devices as indicated on the drawings.

#### CABLE TESTING

Prior to the installation of patch cords, the Contractor shall test all cables. As part of cable test procedures verify all labeling and correct all inaccurate labeling. Cable testing shall include existing outlets/cables, TC's and new outlets/cables.

The Contractor's RCDD shall be in responsible charge of all cable testing procedures and shall provide a letter to the Engineer at the completion of successful testing certifying that all cables have been tested in compliance with the contract documents and have met or exceeded the requirements stated therein.

The requirement for this project is full compliance/zero tolerance. Cables which do not comply shall be removed and replaced. If certain existing cables do not comply, contractor shall notify engineer and may be deemed (at engineer's discretion) considered part of contractor's required "Additional Materials Requirement" in the specifications and be replaced with new. Partial use of cables by claiming good pairs or strands and abandoning others is not allowable. Defective cables shall be removed.

Tests shall be performed in strict accordance with the test instrument manufacturer's printed instructions.

Technicians performing testing shall be thoroughly trained in the use of the test instruments employed. Factory certification of technicians is desirable. The Contractor shall provide evidence of training if requested by the Engineer.

Test instruments shall be calibrated and traceable to the National Institute of Standards (NIST). Test instruments shall have been recently calibrated. The Contractor shall provide evidence of test instrument calibration if requested by the Engineer.

The Contractor shall be required to retest installed cables in the Engineer's presence to verify the Contractor's test documentation. The percentage of cables to be retested shall be determined by the Engineer based on compliance of the installation with the contract documents, quality of workmanship, and results of initial cable tests. Retesting shall be performed as required until all cables, in the judgment of the Engineer, comply with the requirements of the contract documents.

#### Cable Test Manual:

Prior to the Substantial Completion Inspection, complete the digital (CD/DVD format) Cable Test Manual. Submit the Cable Test Manual to the Engineer at the Substantial Completion Inspection. Provide transmittal letter addressed to the Engineer indicating that the Contractor is providing one CD/DVD disk containing cable test results.

Quantity: One (1).

Format: *CD/DVD disk with printed label indicating the following:*

Project Name  
Contractor's Name  
Owner's Name  
Owner's Project Number or Purchase Order Number

CD/DVD Contents:

RCDD Certification (PDF format):

Written Certification of Contractor's RCDD, digitally signed, stating that all fiber optic, Category 5e, and multi-pair telephone cables have been tested in compliance with the contract documents and have met or exceeded the requirements stated therein.

Test Reports:

Test reports of all fiber and copper cabling. Provide with software compatible reader, similar to Fluke Networks LinkWare. Refer to test requirements in this section.

Fiber Optic Cable Testing:

Fiber optic cable shall be tested with an OTDR tester.

Notify the Engineer in writing not less than five days prior to commencing fiber optic cable testing. The Engineer may elect to be present for and witness fiber optic cable testing.

Clean all fiber optic connectors, sleeves and test cords prior to testing. Follow all other recommendations of the test instrument manufacturer for cable and instrument preparation.

Record all test conditions and setup parameters and include in a typed discussion to be provided with test documentation. Setup parameters shall include the length of the fiber launch cord.

All fiber optic cable tests shall be performed with a section of launch cord of known length preceding the FUT (fiber under test) and with a section of cord following the FUT. The trace for each test shall clearly display the two-point loss in db, which shall include the loss of the FUT and both mated connectors of the FUT. The operator shall carefully position the first cursor just ahead of the first mated connector of the FUT, and the second cursor just behind the second mated connector of the FUT.

Post-Installation Testing:

After installation and termination of fiber optic cable, test each strand of fiber to verify that the installed cable meets the performance requirements described below. Each strand shall be tested at both the 850nm and 1300nm wavelengths. Provide a printout of the trace for each test to the Engineer for review and approval.

**Documentation:**

Test documentation for fiber optic cabling shall include the following:

A digitally signed PDF document from the Contractor's RCDD certifying that all cables have been tested in compliance with the contract documents and have met or exceeded the requirements stated therein.

An introductory discussion documenting test instruments used, qualifications of operators, test conditions, setup parameters, length of the fiber launch cord, and any other pertinent information.

A full size full page of the OTDR trace for each strand at 850nm and 1300nm wavelengths. Each strand shall be clearly identified using the labeling nomenclature described on the drawings. Each trace shall clearly indicate the name of the operator who performed the test, and the date of the test.

Insert all fiber optic cable test documentation in the Cable Test Manual.

**Fiber Optic Cable Performance Requirements:**

Each strand of the installed fiber optic cabling, with mated connectors at each end, shall have a total power loss (in db) less than or equal to the manufacturers' performance specifications for the cable and connectors called for in the contract documents, when adjusted for the installed length, and with an allowable deviation of 1.0 db. If the test results for a given strand or strands, in the judgement of the Engineer, indicate excessive power loss, the Contractor shall repolish, reconnectorize, or replace the affected cables as required to achieve specified performance levels as demonstrated by retesting.

**Category 5e UTP Cable Testing:**

Category 5E cable shall be tested with a Level II tester.

Notify the Engineer in writing not less than five days prior to commencing Category 5E UTP cable testing. The Engineer may elect to be present for and witness cable testing.

Record all test conditions and setup parameters and include in a typed discussion to be provided with test documentation.

**Post-Installation Testing:**

After installation and termination of the Category 5e UTP cable, test each cable in accordance with TIA/EIA test specifications. Test each cable from both ends with a Category 5e tester, Fluke DSP 4000 series or approved equal, to verify compliance with TIA/EIA specifications for Category 5e UTP, "Basic Link" configuration, Level II accuracy, with no allowable deviation. Test at the full range of frequencies indicated by TIA/EIA up to and including 100 MHz. Use the tester to measure near-end crosstalk (NEXT) and attenuation-to-crosstalk (ACR) from both ends of each cable. Make connections at each end using access cables provided by the tester manufacturer.

**Documentation:**

Test documentation for Category 5e cabling shall include the following:

A letter from the Contractor's RCDD certifying that all cables have been tested in compliance with the contract documents and have met or exceeded the requirements stated therein.

An introductory discussion documenting test instruments used, qualifications of operators, test conditions, setup parameters, and any other pertinent information.

One copy of a full page hardcopy printout for each cable test using the tester manufacturer's standard "Cable Certification Report - CAT5e Link Autotest". Each report shall include the NEXT and ACR results for each pair combination from both ends of each cable. Each cable shall be clearly identified using the labeling nomenclature described on the drawings. Each report shall clearly indicate the name of the operator who performed the test, and the date of the test.

Insert all Category 5e cable test documentation in the Cable Test Manual.

Category 5e Cable Performance Requirements:

If the test results for a given cable or cables, in the judgment of the Engineer, fail to confirm acceptable performance, the Contractor shall reconnectorize or replace the affected cables as required to achieve specified performance levels as demonstrated by retesting.

PRODUCT DELIVERY, STORAGE AND HANDLING:

Protections: Take necessary precautions to protect all material, equipment, apparatus, and work from damage. Failure to do so to the satisfaction of the Architect will be sufficient cause for the rejection of the material, equipment, or work in question. Contractor is responsible for the safety and good condition of the materials installed until final acceptance by the Owner

Cleaning: Conduit openings shall be capped or plugged during installation. Fixtures and equipment shall be tightly covered and protected against dirt, moisture, chemical, and mechanical injury. At the completion of the work, the fixtures, material and equipment shall be thoroughly cleaned and delivered in condition satisfactory to the Architect.

PART 3 - EXECUTION

CLEANING UP

Prior to the Substantial Completion Inspection, perform final cleanup of all work and all areas in which work was performed. All work areas shall be left vacuum clean. All raceway, faceplates, jack assemblies, racks, panels, data hub equipment, and the like shall be wiped down to remove dust accumulated during the course of the project. All painted surfaces such as backboards shall be touched up with paint to remove scuff marks, pencil marks, scratches, etc. All factory surfaces shall be touched with matching paint.

SUBSTANTIAL COMPLETION

After Final Checkout of system operation, and with the Final Checklist, Final Compliance Cable Test Results CD/DVD disk, and the O&M Manuals in hand, the Contractor shall notify the Architect/Engineer

in writing and with a completed copy of the Final Checklist. The Contractor's project manager and project senior technician shall be present for the Substantial Completion Inspection.

#### CORRECTIVE ACTION

The contractor shall correct any and all deficiencies listed for completion or correction within a reasonable amount of time after deficiency is noted.

If, in the opinion of Owner, Architect, or Engineer (A/E), the Contractor fails to correct any items to the A/E's satisfaction after sufficient corrective action has been attempted by the contractor, then the A/E shall have the right, after forty-eight (48) hours written notice, to employ such workmen to complete the requirements of this project, who will perform work as required to the satisfaction of the A/E, and the cost to complete the Work shall be charged to Contractor.

#### OWNER PERSONNEL TRAINING

Subsequent to Substantial Completion but prior to Final Completion, the Contractor shall provide on-site training to Owner personnel on the operational use of the features of the system and the use of all equipment provided. The cost of training shall be included in the cost of the system.

The Engineer shall be notified prior to training and may participate in training at their discretion.

The instruction shall be presented in an organized and professional manner by personnel who are thoroughly familiar with the structured cabling system in the existing facility. Training shall include a "walk-through" of the systems to identify and locate closets, panels, and important system components, a discussion of overall system concepts and configuration, specific instruction in labeling and patch cord move/changes, a review of the as-built drawings, a review of the system verification and acceptance documentation, and guidelines for basic trouble-shooting and operation of the structured cabling system and data hub equipment.

The Contractor shall provide documentation of training (including names of personnel present at each training session) to the Engineer at the Final Completion Inspection. The documentation shall be signed-off by the Owner. The documentation shall be three-hole punched and ready for insertion in the O&M manuals.

#### FINAL COMPLETION

Following completion of punch list items generated by the Architect/Engineer as a result of the Substantial Completion Inspection, the Contractor shall notify the architect/Engineer in writing, stating that all punch list items have been completed.

#### WARRANTY AND MAINTENANCE

Contractor warrants all work performed by him directly and all work performed for him by others. Contractor shall assume ownership of all data systems within area of work as defined by the plans. Contractor shall provide new outlets/jacks/cabling as required for systems to ensure permanent link solution testing. The requirement for this project is full compliance/zero tolerance. Cables which do not

comply shall be removed and replaced. If certain cables do not comply, contractor shall notify engineer and may be deemed (at engineer's discretion) considered part of contractor's required "Additional Materials Requirement" in the specifications and be replaced with new.

All materials, equipment and workmanship incorporated in the work shall be guaranteed by the Contractor for a period of fifteen years from the date of Substantial Completion of the project.

Any work, material or equipment which during the warranty period is, in the opinion of the Engineer or the Owner's Authorized Representative, defective or inferior and not in accordance with the contract documents, shall be made good at no additional cost to the Owner, including any other work which may have been damaged because of such deficiencies. The Contractor shall be the contact person and the person responsible for coordinating all warranty work for the Owner.

When equipment cannot be repaired at the site, the Contractor shall be completely and solely responsible for the coordination and completion of equipment repairs, including pickup at the project site, transportation and shipping costs to and from the repair site, and reinstallation and reintegration into the system. Equal or better loaner equipment shall be provided and installed by the Contractor any time equipment cannot be repaired at the site, so that the system is maintained in continuous working order as before the equipment failed.

The services of a qualified technician shall be available to make necessary warranty repairs in a timely manner during the warranty period.

#### SUPPORT SERVICES

##### Service Description:

##### System Startup:

After Equipment Verification and before Final Checkout, the Contractor shall start the systems up, and in coordination with the Owner make it fully operational. The System Startup shall be made at a time, approved in writing by the School District, when school is not in regular session. A weekend startup may be required, and if so shall be provided at no additional cost to the School District. All existing circuits and

connections disturbed by work under this contract shall be reconnected, properly identified/labeled, and checked out for proper operation during the System Startup.

##### Final checkout:

After System Startup and before the first day of school following System Startup, the Contractor shall perform a Final Checkout of the system as a whole to verify that it is ready for use by school personnel. The Contractor shall utilize a Final Checklist to fully document Final Checkout. Provide a copy of the Final Checklist to the Engineer at the Final Inspection.

##### First day operation:

The Contractor shall have a senior technician present at the site for the first full 8 hour day of school following the Final Checkout to train/assist school personnel and to verify/fine tune system operation.

The senior technician shall make follow-up visits as required to bring the system into full operating condition to the satisfaction of the School Principal, the Owner's Authorized Representative, and the Engineer.

Documentation:

Manufacturer shall provide system documentation including:

System one-line showing all patch panels, racks, number and type of devices and the connections between systems and to the service entrance.

Drawings for each system showing hardware configuration and numbering.

Typical wiring diagrams for each component.

The manufacturer will certify that the products will meet the product specifications.

END OF SECTION 16950