

PROJECT MANUAL

100% CONSTRUCTION DOCUMENTS

ORANGE BEACH NEW ADULT FITNESS CENTER  
ORANGE BEACH, ALABAMA



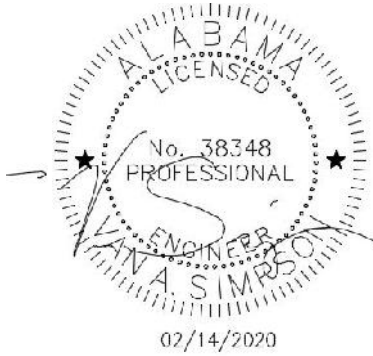
**DAVIS**

120 Twenty-Third Street South  
Birmingham, AL 35233  
TEL: 205/322-7482  
FAX: 205/322-7485  
Architect's Project # 3891.02  
Resolution No. 19-172



February 14, 2020

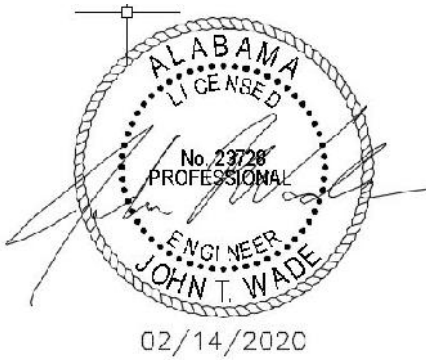
MECHANICAL & PLUMBING ENGINEER



ELECTRICAL ENGINEER



FIRE PROTECTION ENGINEER



STRUCTURAL ENGINEER



CIVIL ENGINEER

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**END OF SECTION**

### 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 Blvd Orange Beach, AL 36561 until 2:00 PM, CST March 26, 2020 for

PROJECT: ORANGE BEACH ADULT FITNESS CENTER  
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 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 the office of the Architect on and after February 23, 2020.

Name of Architect: Jim Hartsell / Jeff Menasco  
Name of Associate Architect: Sted McCollough  
Name of Company: Davis Architects, Inc.  
Address: 120 Twenty Third Street South, Birmingham, Alabama 35233  
Phone No.: (205) 322-7482 Fax No.: (205) 322-7485

Bid Documents can also be reviewed at McCollough Architecture in Orange Beach and online at F.W. Dodge Plan Rooms, Construction Market Data Plan Room and obtained from Alabama Graphic Digital Plan Room. Cost of printing plans and specifications are non-refundable.

General Contractor Bidders may obtain a digital copy of the documents from Davis Architects, Jeff Menasco - jmenasco@dadot.com. Also, 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: Alabama Graphics (2801 Fifth Avenue South, Birmingham, Alabama 35233; phone 205/252-8505). 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.

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.

ORANGE BEACH NEW ADULT FITNESS CENTER  
CITY OF ORANGE BEACH  
ORANGE BEACH, ALABAMA

February 14, 2020  
DAI 3891.02

A Pre-Bid Conference will be held at the City of Orange Beach in Council Chambers located at Orange Beach City Hall, 4099 Orange Beach Blvd Orange Beach, AL 36561 at 11:00 A.M. Thursday, March 12, 2020. **Attendance by General Contractor Bidders at Pre-Bid Conference is mandatory.**

Awarding Authority:  
City of Orange Beach  
Ken Grimes, Jr., City Administrator

Architect:  
McCollough Architecture: Sted McCollough, President  
Davis Architects: Jim Hartsell, Vice President / Jeff Menasco, Project Architect

**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.

Sealed bids must be mailed to the following address:

City of Orange Beach, Attention: City Clerk, P.O. Box 458, Orange Beach, Alabama 36561

Or hand delivered to:

City of Orange Beach, Attention: City Clerk, 4099 Orange Beach Blvd., Orange Beach, Alabama 36561.





**SECTION 00 2113  
INSTRUCTIONS TO BIDDERS (As Modified)  
(PUBLIC WORKS PROJECTS)**

**1.0 INTRODUCTION**

All bidders will be bound to the bid documents and requirements set forth in these general instructions and such instructions shall form an integral part of each construction contract awarded by the Orange Beach City Council. 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:

Orange Beach City Hall  
4099 Orange Beach Boulevard  
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 or anticipated 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 Procurement Officer (Renee Eberly at 251-981-6806 or [reberly@orangebeachal.gov](mailto:reberly@orangebeachal.gov)).
- 4.2 The Procurement Officer 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 All instructions shall be in written form. Oral instructions shall be considered invalid.

## **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.
- 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 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.



## **11.0 EXECUTION OF CONTRACT**

11.1 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.

11.2 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.

## **12.0 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.

## **13.0 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.

## **14.0 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.

## **15.0 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.

## **16.0 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.

## **17.0 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.



## **18.0 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 insure 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: City Clerk  
P.O. Box 458  
Orange Beach, AL 36561  
Fax (251) 981-1442

## 19.0 COMPLETION DATE

19.1 See Section 01 1000 – Summary, Paragraph 1.02 B.

19.2 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.

## 20.0 LIQUIDATED DAMAGES

20.1 See Paragraph 9.11 of Section 00 7200 - General Conditions of the Contract for Construction as modified by Section 00 7300 – Supplemental Conditions.

**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 Contract Documents, as follows:
- B. Geotechnical Report: Entitled Report of Geotechnical Exploration; Proposed Adult Fitness Center; Canal Road, Orange Beach, Alabama. GeoCon Engineering & Materials Testing Inc. Project No DL 2024-20, dated January 15, 2020. Copy attached following this Section.
  - 1. This report identifies properties of below grade conditions and offers recommendations for the design of foundations, prepared primarily for the use of Architect.
  - 2. The recommendations described shall not be construed as a requirement of this Contract, unless specifically referenced in Contract Documents.
  - 3. 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.

**1.02 PRELIMINARY DATA**

- A. Certain preliminary investigations and studies made by the Owner are available to the bidders but will not be part of Contract Documents, as follows:
- B. ComChek

**PART 2 PRODUCTS (NOT USED)**

**PART 3 EXECUTION (NOT USED)**

**END OF SECTION**







## Report of Geotechnical Exploration

**Proposed Adult Fitness Center**  
Canal Road  
Orange Beach, Alabama

GeoCon Project No. DL 2024-20

Prepared For:

Sawgrass Consulting, LLC  
Mr. Ercil Godwin  
30673 SGT E.I. "Boots" Thomas Drive  
Spanish Fort, Alabama

Date: January 15, 2020

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

# GeoCon

Engineering & Materials Testing, Inc.

January 15, 2020

**Sawgrass Consulting, LLC**  
30673 SGT E.I. "Boots" Thomas Drive  
Spanish Fort, Alabama 36527

Attn: Mr. Ercil Godwin

**RE: Report of Geotechnical Exploration**  
Proposed Adult Fitness Center  
Canal Road  
Orange Beach, Alabama  
GeoCon Project No. DL 2024-20

Dear Mr. Godwin:

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 grading and foundation design. This testing has been performed in general accordance with our signed proposal and our earlier discussions with you.

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 soundings and borings, laboratory test data, a Unified Soil Classification Chart, 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 adult fitness center located at the Orange Beach Recreation Complex in Orange Beach, Alabama. The location of the site is shown on the attached Site Location Map (Figure 1). During our January 2020 field exploration, the area of the new building exhibited several trees, a basketball court and playground area.

We understand that the new building will include a metal framed structure with concrete slab-on-grade floors and be supported on shallow foundations. Structural loading information was not available; however, we anticipate that maximum column loads will be less than 75 kips and maximum wall loads will be less than about 3 kips per linear foot.

We understand that the new building finished floor elevation (FFE) will be 21.00 feet msl. Based on the provided topographic information, the FFE will be within 2 feet of the existing ground surface.

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 four (4) Cone Penetration Test (CPT) soundings to depths of about 15 feet below the existing ground surface in the proposed building area. Three (3) manual hand auger borings were also extended to depths of about 4 feet in the proposed building area. The test soundings and borings were located at the site by GeoCon Engineering personnel who used the provided site plan and existing site features as reference. The approximate CPT 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 logs attached in the appendix shows the cone tip friction, sleeve friction, pore pressure, friction ratio, correlated "N" value and the soil behavior type (SBT).

The hand auger borings located in the proposed new building area included dynamic cone penetration (DCP) soundings to evaluate soil density/consistency characteristics. A 1½-inch diameter cone is seated to penetrate any loose cuttings, then driven in 1¾-inch increments with blows from a 15 pound weight falling 20 inches. The number of blows required to drive the cone the 1¾-inch increments is an index to soil strength and compressibility.

At each test sounding location, samples were collected of the soils encountered in the upper 4 feet of the soil-profile. These samples were visually classified by GeoCon, Inc. personnel, placed in containers and transported to our laboratory for further testing and for further review by our engineering staff. Samples will be retained at our lab for a period of 60 days after the date of this report. If no written instructions are given to GeoCon, we will discard the samples after 60 days.

### **3.0 Soil Conditions Encountered**

The test soundings and borings initially penetrated about 4 to 14 inches of organic topsoil material. Below the topsoil, the soundings and borings generally penetrated sand soils with varying amounts of silt to sounding and boring termination at depths of about 4 to 15 feet below the existing ground surface. Sounding C-1 and C-2 penetrated thin clay layers at a depth of about 8 feet below the existing ground surface.

Based on the cone tip friction and correlated N-values, the sand soils penetrated across the soil profile were in a loose to dense condition. The soil conditions penetrated are described in more detail on the CPT and Boring Logs attached in the Appendix.

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

Ground water was encountered from depths of about 10 inches to 2 feet below the existing ground surface at the time of the field exploration. Ground water conditions are subject to seasonal variations and are expected to fluctuate in response to 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. Based on the boring data, we anticipate that shallow ground water and/or water seepage will be encountered during foundation construction.

### **5.0 Laboratory Testing**

The soil samples taken from the site were visually classified in general accordance with the guidelines of ASTM D-2487 Standard Classification of Soils for Engineering Purposes (Unified Soil Classification System). The quantity and type of laboratory tests performed for this geotechnical study were determined and adjusted by GeoCon engineering personnel based on the uniformity and characteristics of the subsurface soil conditions encountered and our experience and knowledge of local soil conditions.

Laboratory soil tests were performed to aid in the classification of the soils and to help in the evaluation of engineering characteristics of the soils. Representative soil samples recovered from the soil test borings were selected for grain-size analysis (3 tests) and Atterberg limit determination (3 tests).

## **6.0 Site Preparation Recommendations**

### **6.1 General Site Preparation**

Care should be taken not to damage nearby existing structures during the undercutting and compaction activities. The owner and contractor should be aware that construction activities can potentially cause settlement of near-by structures due to vibrations (especially during undercutting and backfilling 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.

Areas beneath and 5 feet beyond the building footprint should be designated as the "building pad". The initial phase of site preparation should include the complete removal of surface vegetation, organic topsoil, debris, etc. from within the building pad area. The test soundings and borings encountered organic topsoil to depths of about 4 to 14 inches below the existing ground surface. We recommend that the initial phase of site preparation include a minimum level 1 foot undercut to remove surface vegetation, organic topsoil, unsuitable soils, etc. from within the building pad area. Additional undercut depths may be required in isolated areas to remove deeper layers of heavy organic material. A GeoCon representative should be present to observe the initial undercut process and make additional undercut recommendations as needed. Debris should be properly disposed of beyond the "controlled areas" or off-site.

Due to shallow ground water, the exposed native subgrade should not be compacted with a rubber tire roller compactor. The exposed native subgrade in the bottom of the undercut excavation should be level and "back dragged" with a small low ground pressure dozer to help prevent pumping of the saturated underlying soils. The resulting undercut excavation should be replaced with compacted structural fill as outlined in Section 6.2 of this report.

### **6.2 Placement of Structural Fill**

Structural fill should meet the color requirements of the City of Orange Beach along with the following minimum requirements:

- 1) Exhibit SP soil classification according to the Unified Soil Classification System
- 2) Have a maximum of 5% 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 100 pcf

The initial lift of structural fill should be placed in an 18 inch loose lift and compacted to 95% ASTM D-698 standard compaction. The remaining lifts of structural fill should be placed in 8 to 12 inch loose lifts and compacted to 100% 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. The surface of the lifts should not be exposed to weather for an extended period of time.

### **6.3 Site Drainage**

We recommend that the building pad and surrounding area be graded to divert surface water away from the building. We also recommend that gutters/roof drains be installed which discharge away from the building to reduce the possibility of ponding surface water within 5 feet of the edge of the building.

Positive drainage should also be established during the early stages of site grading and maintained throughout the project construction process. The building pad area should be maintained in a well-drained condition that will promote the continual removal of surface water that may flow over the construction areas. This drainage is critical for the fine-grained soils that are predominant at the site. Saturation of subgrade soils can result in substantial time delays in the construction and significant decreases in soil strengths. Water should not be allowed to pond against the building during and following construction. Ponding water adjacent to the building foundation can lead to settlement due to deterioration of the foundation bearing soils.

### **6.4 Unit Costs**

Although extensive undercutting is not anticipated, we recommend that the contract documents establish a unit cost (per cubic yard) for undercutting and replacing unsuitable soils in case they are encountered during site grading.

### **6.5 Testing Requirements**

To verify that our recommendations are followed, GeoCon should monitor and document the results of the topsoil stripping, debris removal, subgrade preparation, 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 at least 6 compaction tests be performed for each lift of fill in the building area. 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.

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.



## **7.0 Shallow Foundation Recommendations**

### **7.1 Foundation Design**

Due to the loose and saturated soils at the anticipated foundation bearing elevation along with the shallow ground water at this site, we recommend that the foundation footings bear over 12 inches of open graded crushed aggregate (No. 57 stone). Recommendations for foundation construction are provided in Section 7.2 of this report.

Provided the building pad and foundation footings are prepared as per the recommendations of this report, foundations can be designed using an allowable soil bearing pressure of up to 1,500 psf. The project structural engineer can determine the final foundation depths and 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 footing 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 98 pcf can be used for backfill atop foundations.

Provided foundations bear atop firm compacted native material or 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.

### **7.2 Foundation Construction**

The soundings and borings encountered ground water close to the existing ground surface to a depth of about 2 feet below the existing ground surface. These loose, saturated soils are unstable and will not provide adequate bearing to support the structural loadings of the building. Therefore, to provide a firm bearing condition, we recommend that the footings be undercut to a depth that will allow for the placement of 12 inches of open graded crushed aggregate (No. 57 stone) below the bottom of footing elevations. 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.

GeoCon should be called to observe the footing excavations to verify that the No. 57 stone is properly placed, compacted, and stabilized for support of the foundations. Excessively loose footing bearing soils will require additional undercutting or stabilization as per the recommendations of GeoCon's geotechnical engineer. Proper placement of the stone is important to help limit excessive foundation settlement.

## **8.0 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 area should be compacted to 95% ASTM D-698 standard density.

## **9.0 Closure**

This report has been prepared for the exclusive use of Sawgrass Consulting, LLC, 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 practice 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 four (4) CPT soundings, the three (3) 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.

We have not intended to reflect specific volumes of subsurface conditions at the site. Volumetric estimates often require a large number of borings placed on a close grid with the collected data associated with civil engineering cross-sections. If volume estimates are required of us for the design/development of this project to advance, please contact us for further comment.

Again, we appreciate the opportunity to provide our geotechnical engineering services for this project. To ensure that our recommendations are correctly interpreted and followed during construction, we recommend that the owner retain GeoCon, Inc. to provide construction observation and construction materials testing for the project.

# APPENDIX

- A-1 Site Location Map
- A-2 Test Location Plan
- A-3 Graphical Logs of the Soundings and Borings
- A-4 Laboratory Test Data
- A-5 Unified Soil Classification Chart
- A-6 Important Notes About Your Geotechnical Report
- A-7 Terms & Conditions Sheet

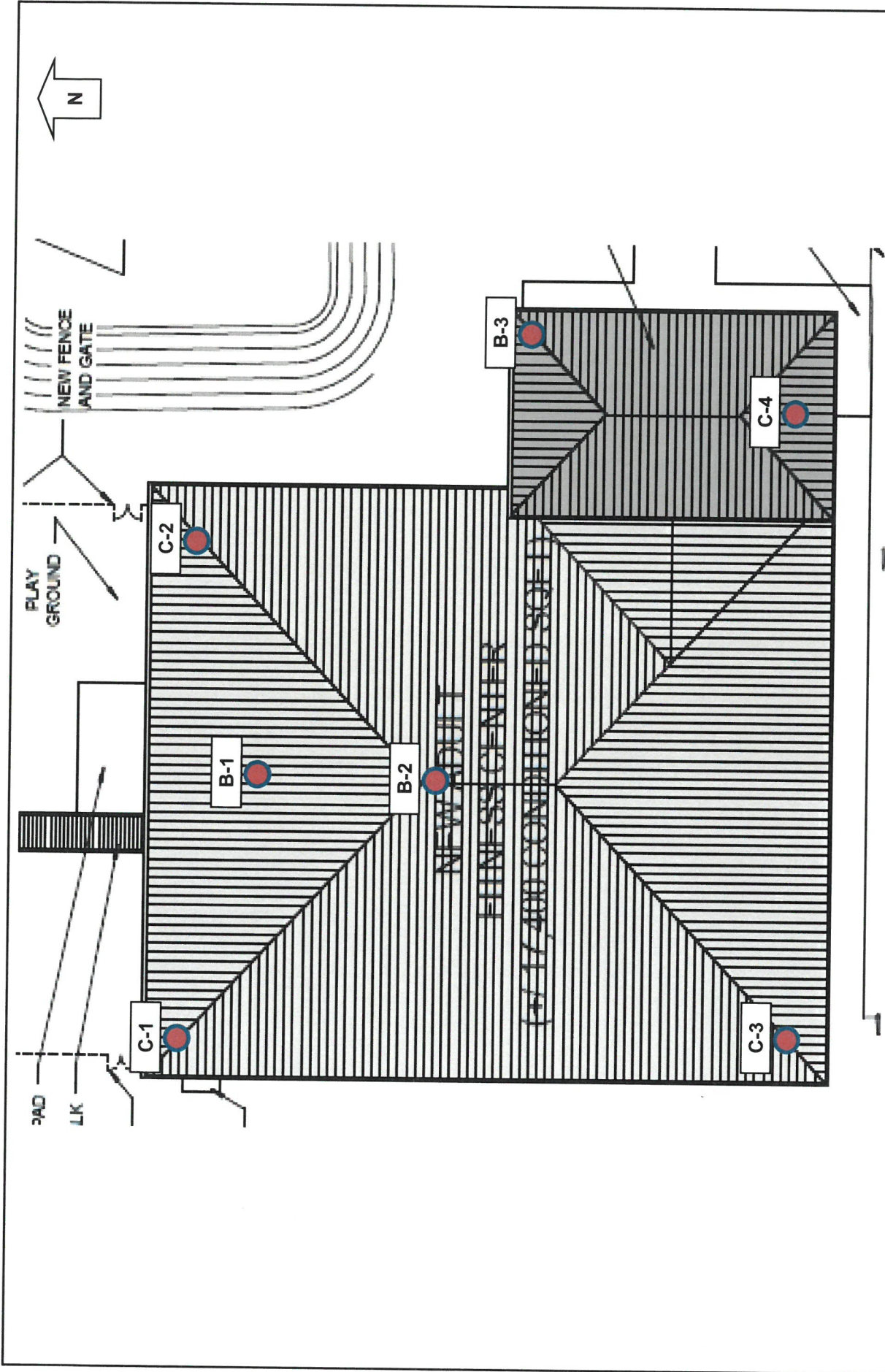


Figure 1

NOT TO SCALE  
**SITE LOCATION MAP**  
 Proposed Adult Fitness Center  
 Canal Road  
 Orange Beach, AL  
 DL 2024-20

**GEOCON, INC.**  
 22885 McAuliffe Drive  
 Robertsdale, Alabama 36567

Date  
 1/10/2020



**GEOCON, INC.**  
 22885 McAuliffe Drive  
 Robertsdale, AL 36567

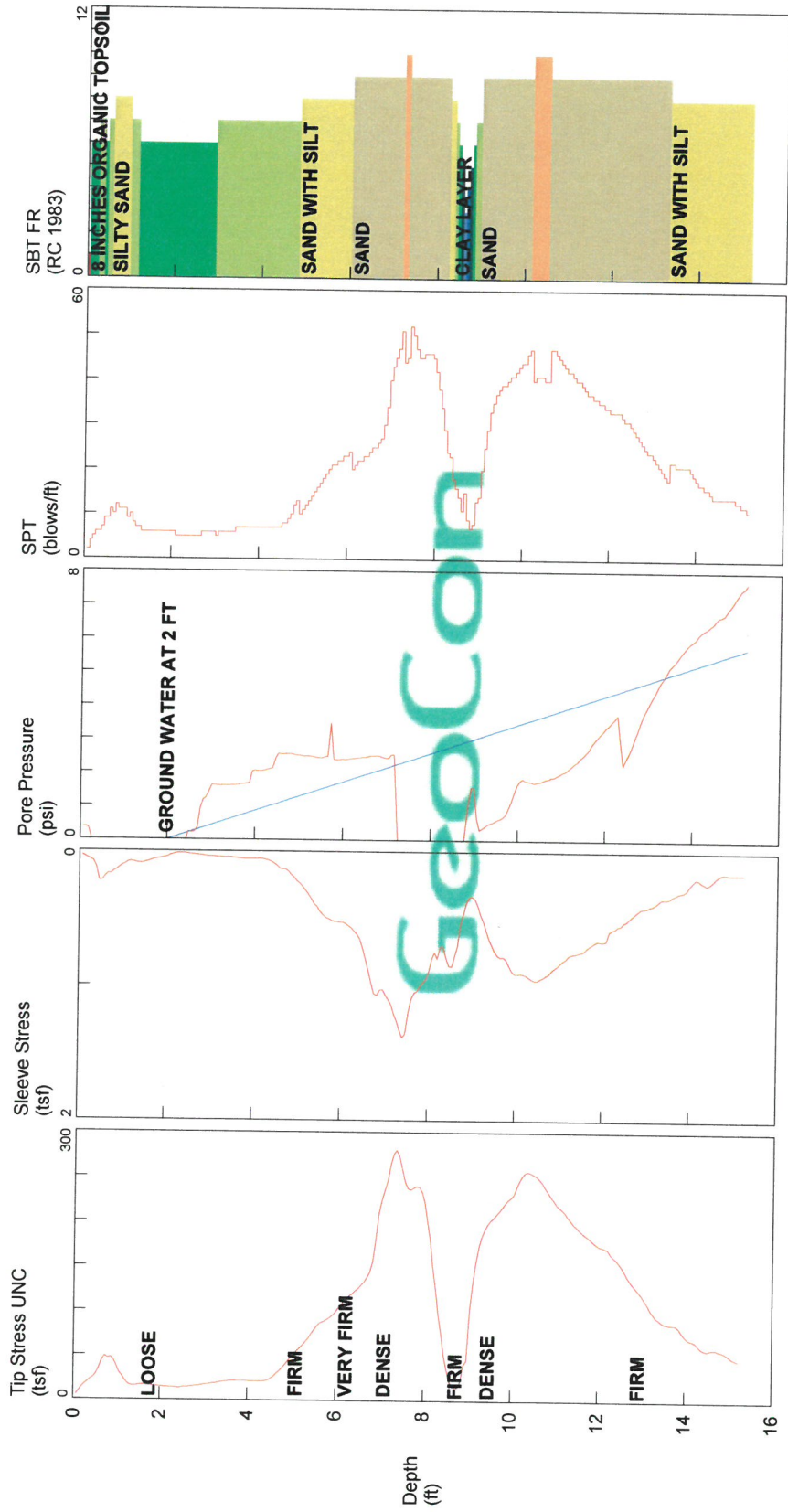
NOT TO SCALE  
**TEST LOCATION PLAN**  
 Proposed Adult Fitness Center  
 Canal Road  
 Orange Beach, AL  
 DL 2024-20

Figure 2
Date
1/10/2020

# C-1

CPT Testing Done By: GeoCon  
 Proposed : Adult Fitness Center  
 CUSTOMER: City of Orange Beach  
 LOCATION: Orange Beach, AL  
 HOLE NUMBER: C-1

JOB NUMBER: DL 2024-20  
 TEST DATE: 1/13/2020  
 OPERATOR: Chris Rea



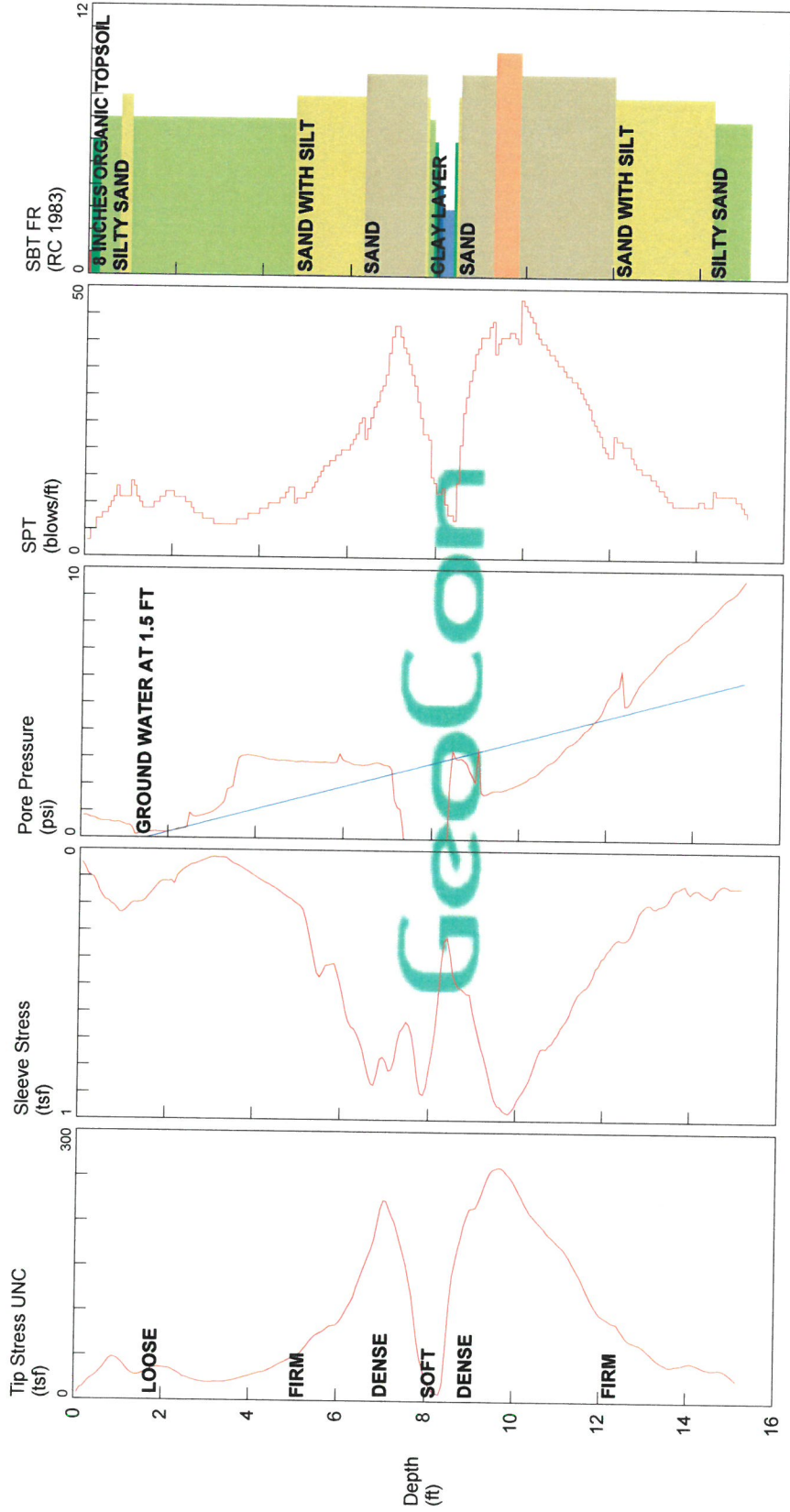
- SOUNDING**
- 1 sensitive fine grained
  - 2 organic material
  - 3 clay
  - 4 silty clay to clay
  - 5 clayey silt to silty clay
  - 6 sandy silt to clayey silt
  - 7 silty sand to sandy silt
  - 8 sand to silty sand
  - 9 sand
  - 10 gravelly sand to sand
  - 11 very stiff fine grained (\*)
  - 12 sand to clayey sand (\*)

\*SBT/SPT CORRELATION: UBC-1983

# C-2

CPT Testing Done By: GeoCon  
 Proposed : Adult Fitness Center  
 CUSTOMER: City of Orange Beach  
 LOCATION: Orange Beach, AL  
 HOLE NUMBER: C-2

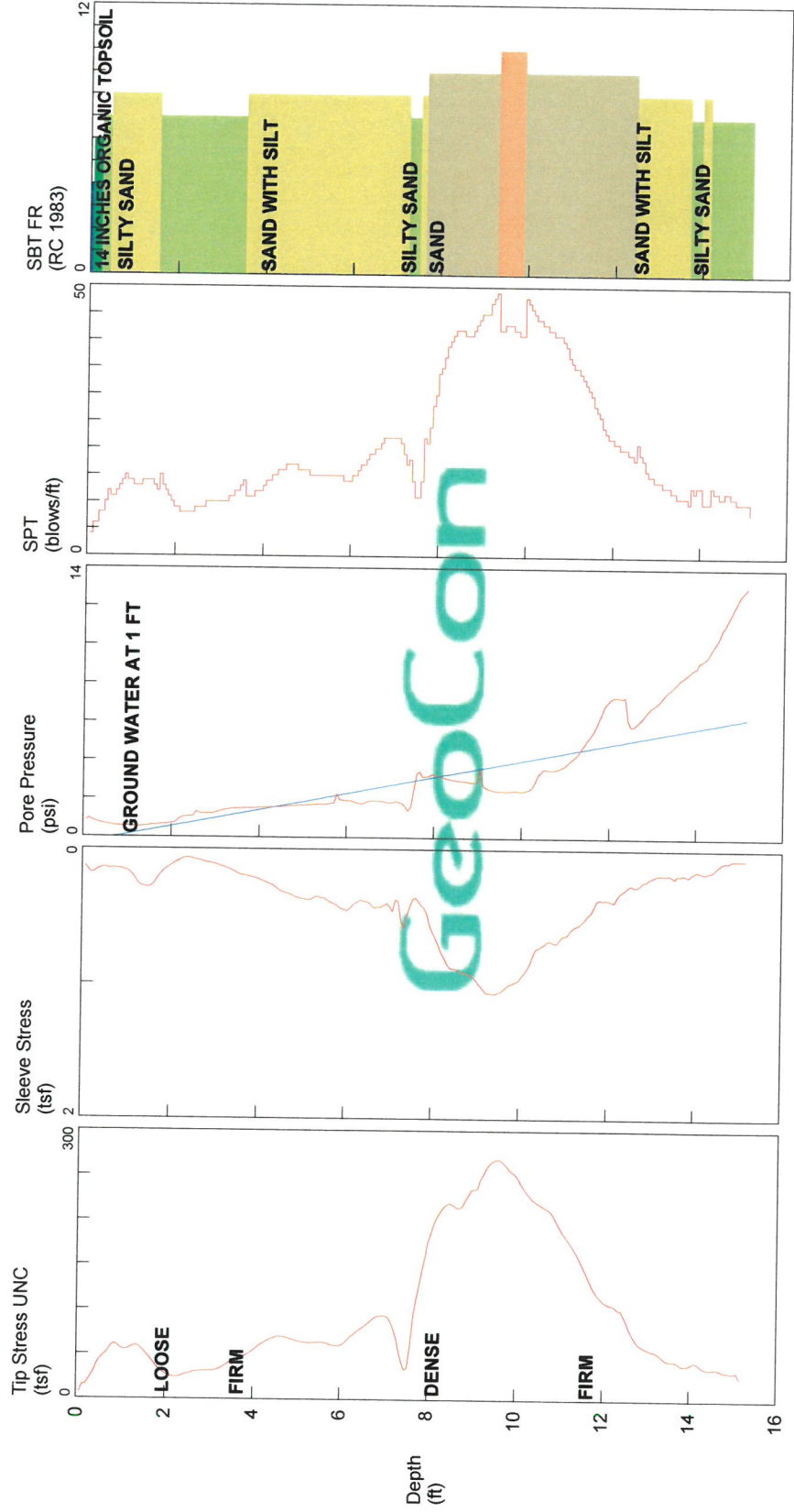
JOB NUMBER: DL 2024-20  
 TEST DATE: 1/13/2020  
 OPERATOR: Chris Rea



# C-3

CPT Testing Done By: GeoCon  
 Proposed : Adult Fitness Center  
 CUSTOMER: City of Orange Beach  
 LOCATION: Orange Beach, AL  
 HOLE NUMBER: C-3

JOB NUMBER: DL 2024-20  
 TEST DATE: 1/13/2020  
 OPERATOR: Chris Rea



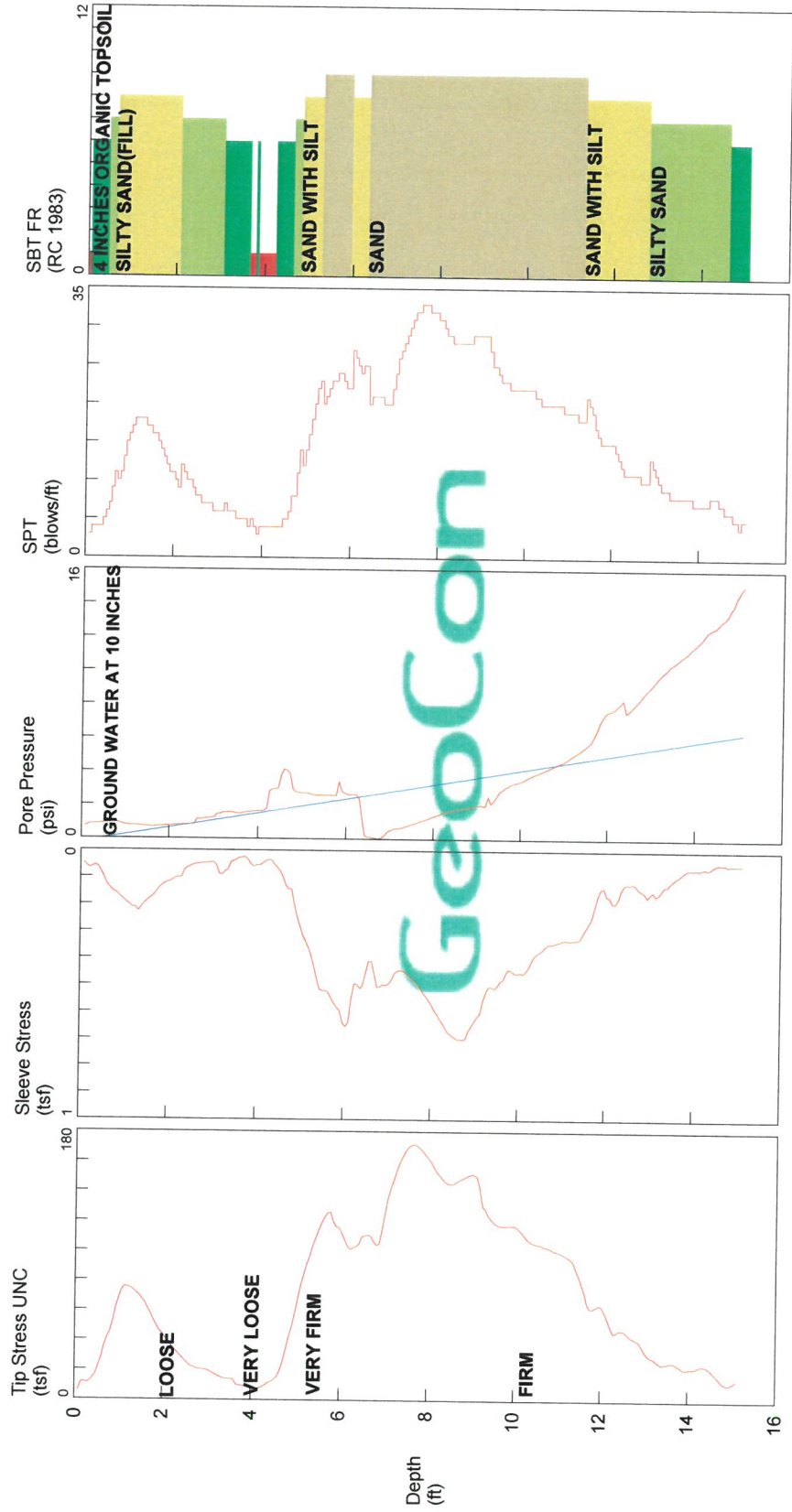
- SOUNDING**
- 1 sensitive fine grained
  - 2 organic material
  - 3 clay
  - 4 silty clay to clay
  - 5 clayey silt to silty clay
  - 6 sandy silt to clayey silt
  - 7 silty sand to sandy silt
  - 8 sand to silty sand
  - 9 sand
  - 10 gravelly sand to sand
  - 11 very stiff fine grained (\*)
  - 12 sand to clayey sand (\*)
- \*SBT/SPT CORRELATION: UBC-1983



# C-4

CPT Testing Done By: GeoCon  
 Proposed : Adult Fitness Center  
 CUSTOMER: City of Orange Beach  
 LOCATION: Orange Beach, AL  
 HOLE NUMBER: C-4

JOB NUMBER: DL 2024-20  
 TEST DATE: 1/13/2020  
 OPERATOR: Chris Rea



- SOUNDING**
- 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



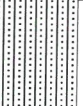
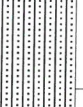
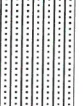
# DRILL HOLE LOG

BORING NO.: B-1

PROJECT: Proposed Adult Fitness Center  
 CLIENT: City of Orange Beach  
 LOCATION: Orange Beach, AL  
 DRILLER: Chris Rea  
 DRILL RIG:  
 DEPTH TO WATER> INITIAL  $\nabla$  : 2

PROJECT NO.: DL 2024-20  
 DATE: 1/13/2020  
 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										
0				12 Inches Organic Topsoil															
1			SM	Light Gray Silty Sand, Loose					5										
2		 $\nabla$	SM	Dark Gray Silty Sand with Organics Ground Water at 2 ft															
3			SM	Gray Silty Sand															
4				Boring Terminated at 4 ft															
5																			
6																			
7																			

"N Value" Equal to DCP Soundings

This information pertains only to this boring and should not be interpreted as being indicative of the site.

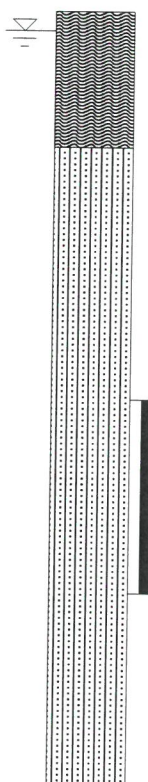
# DRILL HOLE LOG

BORING NO.: B-2

PROJECT: Proposed Adult Fitness Center  
 CLIENT: City of Orange Beach  
 LOCATION: Orange Beach, AL  
 DRILLER: Chris Rea  
 DRILL RIG:  
 DEPTH TO WATER> INITIAL  $\nabla$  : .1

PROJECT NO.: DL 2024-20  
 DATE: 1/13/2020  
 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
0				Ground Water at Surface 8 Inches Organic Topsoil Innermixed with Sandy Fill					10 30 50
1									
2			SM	Gray Silty Sand, Loose				4	●
3									
4				Boring Terminated at 4 ft					
5									
6									
7									

"N Value" Equal to DCP Soundings

This information pertains only to this boring and should not be interpreted as being indicative of the site.


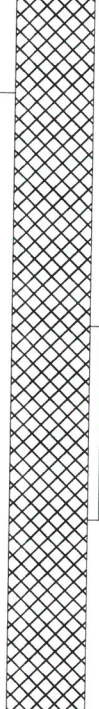
# DRILL HOLE LOG

BORING NO.: B-3

PROJECT: Proposed Adult Fitness Center  
 CLIENT: City of Orange Beach  
 LOCATION: Orange Beach, AL  
 DRILLER: Chris Rea  
 DRILL RIG:  
 DEPTH TO WATER> INITIAL  $\nabla$  : .8

PROJECT NO.: DL 2024-20  
 DATE: 1/13/2020  
 ELEVATION:  
 LOGGED BY: Jason Christian

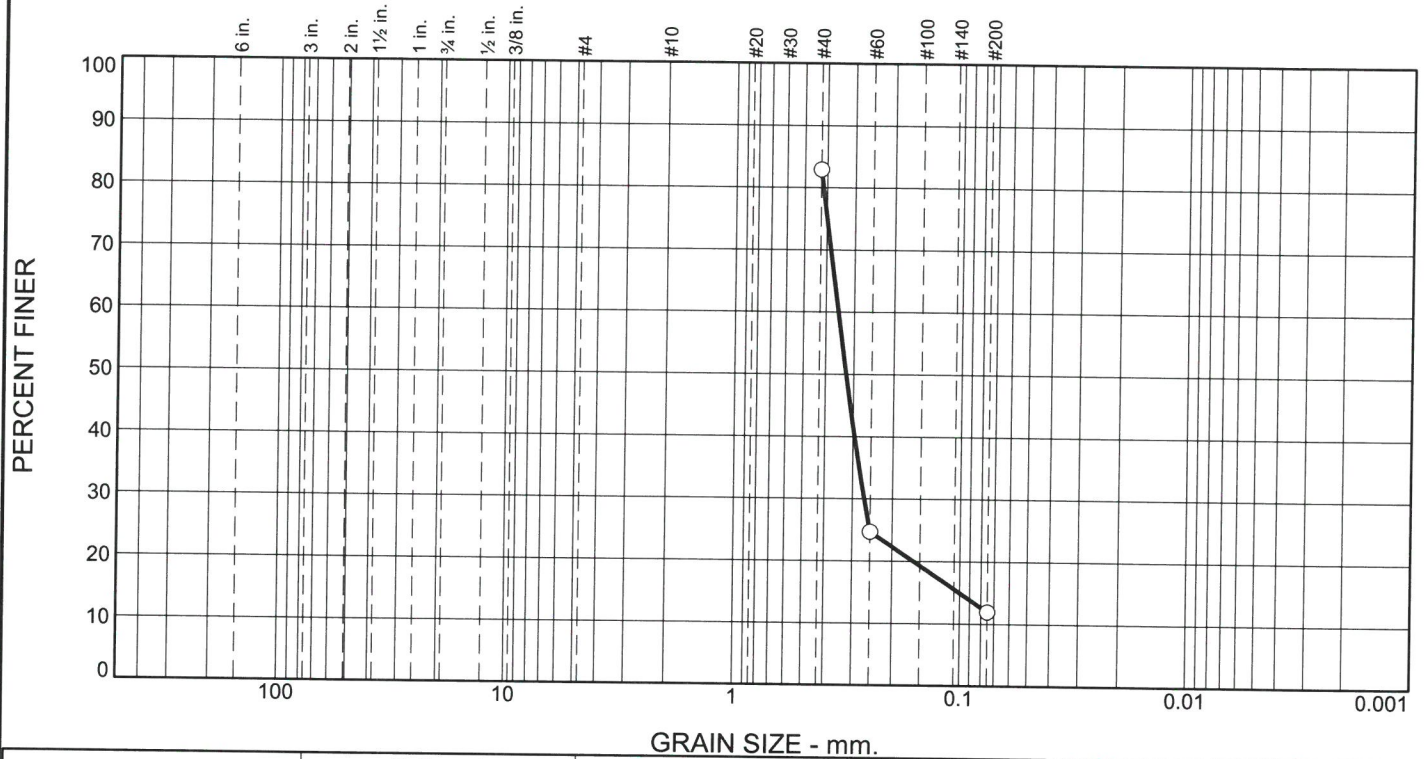
AT COMPLETION  $\nabla$  :

ELEVATION/ DEPTH	WELL DETAIL	SOIL SYMBOLS, SAMPLERS AND TEST DATA	USCS	Description	NM	DD	STANDARD PENETRATION TEST		
							DEPTH	N	CURVE
0				4 Inches Organic Topsoil					10 30 50
1		$\nabla$		Ground Water at 10 Inches					
2			FILL	Orange Silty Sand Fill, Very Loose				3	●
3									
4				Boring Terminated at 4 ft					
5									
6									
7									

"N Value" Equal to DCP Soundings

This information pertains only to this boring and should not be interpreted as being indicative of the site.

# Particle Size Distribution Report



% +3"	% Gravel		% Sand			% Fines	
	Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
					71.0		11.9

TEST RESULTS			
Opening Size	Percent Finer	Spec.* (Percent)	Pass? (X=Fail)
#40	82.9		
#60	24.7		
#200	11.9		

\* (no specification provided)

**Material Description**

Gray Sand with Silt

**Atterberg Limits (ASTM D 4318)**

PL= 12                      LL= 12                      PI= 0

**Classification**

USCS (D 2487)= SP-SM    AASHTO (M 145)=

**Coefficients**

D<sub>90</sub>=                      D<sub>85</sub>=                      D<sub>60</sub>= 0.3527  
D<sub>50</sub>= 0.3236              D<sub>30</sub>= 0.2661              D<sub>15</sub>= 0.1001  
D<sub>10</sub>=                      C<sub>u</sub>=                      C<sub>c</sub>=

Remarks

---

Date Received: \_\_\_\_\_ Date Tested: 1-14-2020

Tested By: DH \_\_\_\_\_

Checked By: JJC \_\_\_\_\_

Title: \_\_\_\_\_

**Location:** Orange Beach, AL

**Sample Number:** B-2      **Depth:** 2 ft

**Date Sampled:**

GeoCon

Robertsdale, Alabama

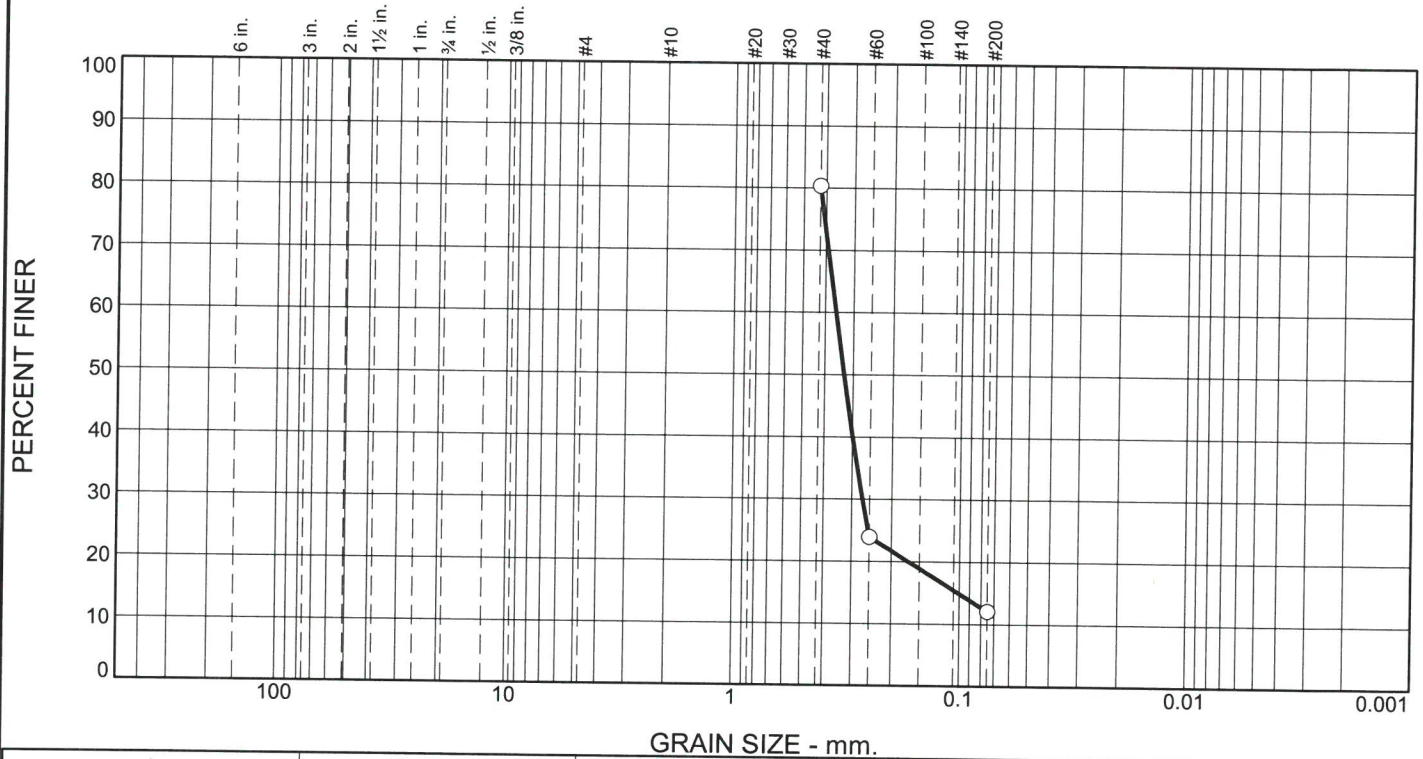
**Client:** City of Orange Beach

**Project:** Proposed Adult Fitness Center

**Project No:** DL 2024-20

**Figure**

# Particle Size Distribution Report



% +3"	% Gravel		% Sand			% Fines	
	Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
					68.3		12.1

TEST RESULTS			
Opening Size	Percent Finer	Spec.* (Percent)	Pass? (X=Fail)
#40	80.4		
#60	24.0		
#200	12.1		

\* (no specification provided)

**Material Description**

Gray Silty Sand

**Atterberg Limits (ASTM D 4318)**

PL= 12                      LL= 12                      PI= 0

**Classification**

USCS (D 2487)= SM                      AASHTO (M 145)=

**Coefficients**

D<sub>90</sub>=                      D<sub>85</sub>=                      D<sub>60</sub>= 0.3584  
D<sub>50</sub>= 0.3283              D<sub>30</sub>= 0.2690              D<sub>15</sub>= 0.1008  
D<sub>10</sub>=                      C<sub>u</sub>=                      C<sub>c</sub>=

Remarks

---

Date Received: \_\_\_\_\_ Date Tested: 1-14-2020

Tested By: DH \_\_\_\_\_

Checked By: JJC \_\_\_\_\_

Title: \_\_\_\_\_

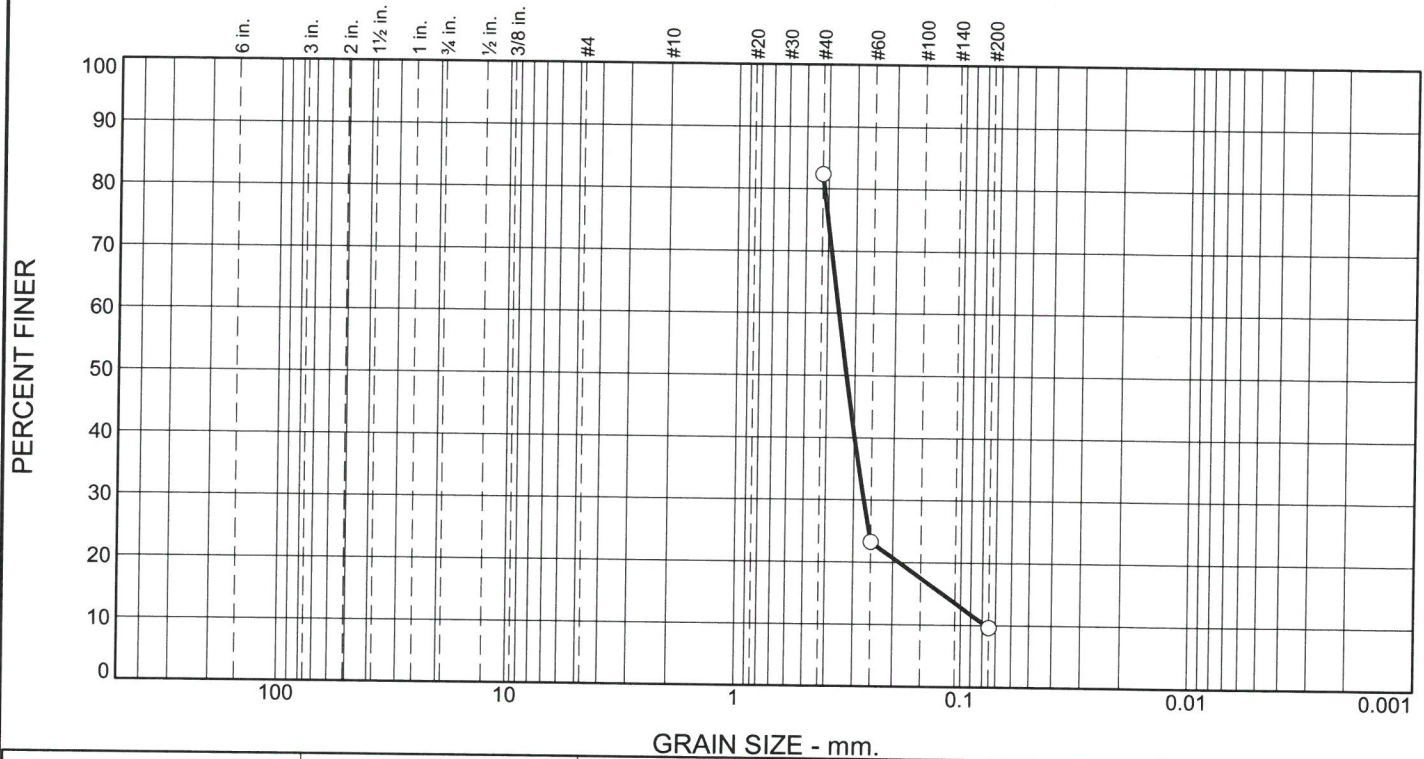
Location: Orange Beach, AL  
Sample Number: C-2

Depth: 4 ft

Date Sampled:

<p style="font-size: 1.2em; font-weight: bold;">GeoCon</p> <p style="font-size: 1.2em; font-weight: bold;">Robertsdale, Alabama</p>	<p><b>Client:</b> City of Orange Beach</p> <p><b>Project:</b> Proposed Adult Fitness Center</p> <p><b>Project No:</b> DL 2024-20</p> <p style="text-align: right;"><b>Figure</b></p>
---	--

# Particle Size Distribution Report



% +3"	% Gravel		% Sand			% Fines	
	Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
					72.8		9.6

TEST RESULTS			
Opening Size	Percent Finer	Spec.* (Percent)	Pass? (X=Fail)
#40	82.4		
#60	23.3		
#200	9.6		

\* (no specification provided)

**Material Description**

Black Sand with Silt

**Atterberg Limits (ASTM D 4318)**

PL= 12                      LL= 12                      PI= 0

**Classification**

USCS (D 2487)= SP-SM      AASHTO (M 145)=

**Coefficients**

D <sub>90</sub> =	D <sub>85</sub> =	D <sub>60</sub> = 0.3553
D <sub>50</sub> = 0.3265	D <sub>30</sub> = 0.2700	D <sub>15</sub> = 0.1205
D <sub>10</sub> = 0.0776	C <sub>u</sub> = 4.58	C <sub>c</sub> = 2.65

Remarks

---

Date Received: \_\_\_\_\_ Date Tested: 1-14-2020

Tested By: DH \_\_\_\_\_

Checked By: JJC \_\_\_\_\_
















Title: \_\_\_\_\_

Location: Orange Beach, AL  
 Sample Number: C-3      Depth: 2 ft

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

<p style="font-size: 1.2em; margin: 0;"><b>GeoCon</b></p> <p style="font-size: 1.2em; margin: 0;"><b>Robertsdale, Alabama</b></p>	<p><b>Client:</b> City of Orange Beach</p> <p><b>Project:</b> Proposed Adult Fitness Center</p> <p><b>Project No:</b> DL 2024-20</p> <p style="text-align: right;"><b>Figure</b></p>
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# UNIFIED SOIL CLASSIFICATION SYSTEM (USCS)

MAJOR DIVISION				TYPICAL NAMES
<b>GRAVELS</b> More than 50% of coarse fraction larger than No. 4 sieve	<b>CLEAN GRAVEL</b> (little or no fines)		GW	Well graded gravels
			GP	Poorly graded gravels
	<b>GRAVELS with fines</b>		GM	Silty gravels
			GC	Clayey gravels
<b>SANDS</b> More than 50% of coarse fraction smaller than No. 4 sieve	<b>CLEAN SAND</b> (little or no fines)		SW	Well graded sands
			SP	Poorly graded sands
	<b>SAND with fines</b>		SM	Silty sands, sand/silt mixtures
			SC	Clayey sands, sand/clay mixtures
<b>SILTS AND CLAYS</b> Liquid Limit is less than 50			ML	Inorganic silts, sandy and clayey silts with slightly plasticity
			CL	Sandy or silty clays of low to medium plasticity
			OL	Organic silts of low plasticity
<b>SILTS AND CLAYS</b> Liquid Limit is greater than 50			MH	Inorganic silts, sandy micaceous or clayey elastic silts
			CH	Inorganic clays of high plasticity, fat clays
			OH	Organic clays of medium to high plasticity
<b>HIGHLY ORGANIC SOILS</b>			PT	Peat and other highly organic soils
<b>MISCELLANEOUS MATERIALS</b>				PWR (Partially Weathered Rock)
				Rock
				Asphalt
				ABC Stone
				Concrete
				Topsoil



# 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 50% of our proposal amount prior to GeoCon mobilizing to the project site and agrees to pay the remaining balance prior to GeoCon issuing our report. 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 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: Section 00 2113 - City of Orange Beach Instructions to Bidders as modified to suit project.
- C. Substitution Request Form (During Procurement): CSI/CSC Form 1.5C - Substitution Request (During the Bidding/Negotiating Stage).
- D. Bid Form: Section 00 4100 - Bid Form.
- E. Procurement Form Supplements:
  - 1. Bid Security Form: Section 00 4313 - City of Orange Beach Alabama Bid Bond.
  - 2. Sales Tax Form: Section 00 4328.13 - Attachment A to Bid Form: Sales Tax
  - 3. Substitution Request Form (for substitutions requested with bid): CSI/CSC Form 1.5C - Substitution Request (During the Bidding/Negotiating Stage).
  - 4. Proposed Schedule of Values Form: AIA G703 with Continuation Sheet.
- F. Representations and Certifications:
  - 1. Bidder's Qualifications: AIA A305.
  - 2. Certificate of Compliance with ACT 2016-312: Section 00 4310 - Attachment C - Certificate of Compliance.
  - 3. City of Orange Beach Alabama Requirements for Contracts and Purchases: Section 00 4310.10 Affidavit of Contractor or Direct Vendor.

**1.03 REFERENCE STANDARDS**

- A. AIA A305 - Contractor's Qualification Statement; 1986.
- B. Instructions to Bidders: Section 00 2113 - City of Orange Beach Instructions to Bidders.
- C. 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**

SECTION 00 4100  
BID FORM

TO: The 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 RECREATIONAL NEW ADULT FITNESS CENTER

\_\_\_\_\_  
in accordance with Drawings and Specifications, dated February 14, 2020, prepared by  
Davis Architects, Inc., 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 (\$ \_\_\_\_\_)

- Attach Section 004102 – Bid Proposal Form Attachment “A” to this Bid Proposal Form.
- Attach Completed AIA – A305, “Contractors Qualification Statement.”

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.

ALTERNATE No. 1: Provide additive alternate for Acoustical Panels:

\$ \_\_\_\_\_.

ALTERNATE No. 2: Provide additive alternate for Plastic Wall Protection Panels:

\$ \_\_\_\_\_.

ALLOWANCE: Include allowances in Base Bid in accord with Section 01 2100 - Allowances

UNIT PRICE: Provide unit prices in accord with Section 01 2200 – Unit Price

Unit Price No. 1: Removal and Replacement of Unsuitable Soils per cubic yard:

\$ \_\_\_\_\_.

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

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.

ORANGE BEACH RECREATIONAL NEW ADULT FITNESS CENTER  
CITY OF ORANGE BEACH  
ORANGE BEACH, ALABAMA

FEBRUARY 14, 2020  
DAI 3891.02

- END OF PROPOSAL FORM -

**SECTION 00 4102**  
**ATTACHMENT 'A' TO BID FORM**  
**Orange Beach Recreation Complex New Adult Fitness Center**  
**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>
Alternate 1 Sales Tax	\$
Alternate 2 Sales Tax	\$

Total: \$ \_\_\_\_\_

**END OF ATTACHMENT A TO BID FORM**



**SECTION 00 4301  
BID FORM SUPPLEMENTS COVER SHEET**

**PARTICULARS**

**TO (OWNER): CITY OF ORANGE BEACH**

**OWNER'S PROJECT NUMBER: Resolution No. - DAI 3891.02**

**PROJECT: Orange Beach Recreation Complex New Adult Fitness Center**

**DATE: \_\_\_\_\_**

**SUBMITTED BY: (BIDDER TO INSERT FULL NAME AND ADDRESS)**

\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

In accordance with Section 00 2113 - Instructions to Bidders and Section 00 4100 - Bid Form - , we include the Supplements To Bid Form listed below. The information provided shall be considered an integral part of the Bid Form.

**SUPPLEMENTS TO BID FORM**

- 00 4102 – Attachment A to Bid Form Sales Tax
- 00 4310 – Statement of Compliance
- 00 4310.10 – Affidavit of Contractor
- 00 4313 - Bid Bond

**SIGNATURE(S)**

**THE CORPORATE SEAL OF**

\_\_\_\_\_  
(Bidder please print the full name of your Proprietorship, Partnership, or Corporation)

**WAS HEREUNTO AFFIXED IN THE PRESENCE OF:**

\_\_\_\_\_  
(Authorized signing officer                      Title)

**(SEAL)**

\_\_\_\_\_  
(Authorized signing officer                      Title)

**(SEAL)**

**END OF BID FORM SUPPLEMENTS COVER SHEET**

ORANGE BEACH RECREATION COMPLEX NEW ADULT FITNESS CENTER  
CITY OF ORANGE BEACH  
ORANGE BEACH, ALABAMA

February 14, 2020  
DAI 3891.02

ATTACHMENT C

CERTIFICATE OF COMPLIANCE WITH ACT 2016-312

DATE: \_\_\_\_\_

Re: Contract/Grant/Incentive (describe by number or subject):

\_\_\_\_\_ by and between \_\_\_\_\_  
(Contractor/Grantee) and \_\_\_\_\_ (State Agency, Department or  
Public Entity).

The undersigned hereby certifies to the State of Alabama as follows:

1. The undersigned holds the position of \_\_\_\_\_ with the Contractor/Grantee named above, and is authorized to provide representations set out in this Certificate as the official and binding act of that entity, and has knowledge of Alabama's Act 2016-312.
2. In compliance with Act 2016-312, the contractor hereby certifies that it is 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.

Certified this \_\_\_\_\_ day of \_\_\_\_\_, 20\_\_\_\_.

\_\_\_\_\_  
Name of Contractor/Grantee/Recipient

By: \_\_\_\_\_

Its: \_\_\_\_\_

The above Certification was signed in my presence by the person whose name appears above on this \_\_\_\_\_ day of \_\_\_\_\_, 20\_\_\_\_.

Witness: \_\_\_\_\_

\_\_\_\_\_  
Printed Name of Witness



**SECTION 004310.10  
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: \_\_\_\_\_

City of  
**Orange Beach**  
A L A B A M A  
*Life is better here*

SECTION 00 4313  
**BID BOND**

KNOW ALL MEN BY THESE PRESENTS:

THAT

\_\_\_\_\_  
(Name of Contractor/Principal)

\_\_\_\_\_, as  
Principal,  
(Address)

and \_\_\_\_\_  
(Name of Surety)

of \_\_\_\_\_, as  
Surety,  
(Address)

are held and firmly bound unto **the City of Orange Beach**, as obligee, in the full and just sum of:  
\_\_\_\_\_  
lawful money of the United States, for the payment of which sum, well and truly to be made, we bind ourselves, our  
heirs, executors, administrators, successors and assigns, jointly and severally, firmly by these presents.

WHEREAS, the said Principal is herewith submitting its bid for:

**Orange Beach Recreation Center - New Adult Fitness Center**

The condition of this obligation is such that, if the aforesaid Principal shall be awarded the Contract, the said Principal will, within the time required, enter into a formal Contract, and give a good and sufficient bond to secure the performance of the terms and conditions of the Contract, then this obligation to be void; otherwise, the Principal and the Surety will pay unto the full amount of said bond. If no other bids are received, the full amount of the proposal guarantee shall be so retained or recovered as liquidated damages for such default.

SIGNED, SEALED AND DELIVERED \_\_\_\_\_  
(Date)

\_\_\_\_\_  
Witness

\_\_\_\_\_  
Witness

\_\_\_\_\_  
Principal (Seal)

\_\_\_\_\_  
Surety (Seal)

\_\_\_\_\_  
Title

\_\_\_\_\_  
Title

Bids will not be considered unless Bid Bond is signed by Principal and Surety,  
or in lieu thereof, a certified check must accompany the bid.



**SECTION 00 4325**

**SUBSTITUTION REQUEST (PRIOR TO BID)**

**SUBSTITUTION REQUEST (PRE-BID): CONSTRUCTION SPECIFICATIONS INSTITUTE DOCUMENT  
1.5C SUBSTITUTION REQUEST WHERE REQUEST IS MADE PRIOR TO BID, DATED JANUARY  
2013 IS BOUND INTO THIS PROJECT MANUAL FOLLOWING THIS PAGE.**

**END OF SECTION**







# 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  \_\_\_\_\_



**SECTION 00 4519.12**

**DISCLOSURE STATEMENT**

**DISCLOSURE STATEMENT: THE STATE OF ALABAMA DOCUMENT DISCLOSURE STATEMENT OF RELATIONSHIP BETWEEN CONTRACTORS AND/OR GUARANTEES AND EMPLOYEES AND/OR OFFICIALS OF THE CITY OF ORANGE BEACH, ALABAMA, DATED JANUARY 2004 IS BOUND INTO THIS PROJECT MANUAL FOLLOWING THIS PAGE.**

**END OF SECTION**





# State of Alabama Disclosure Statement

(Required by Act 2001-955)

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
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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.)

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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.)

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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
----------------------------------	---------

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***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

Act 2001-955 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.

**SECTION 00 5000**  
**CONTRACTING 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 AGREEMENT AND CONDITIONS OF THE CONTRACT**

- A. See Section 00 5200 - Agreement Form for the Agreement form to be executed.
- B. See Section 00 7200 - General Conditions for the General Conditions.
- C. See Section 00 7300 - Supplementary Conditions for the Supplementary Conditions.
- D. The Agreement is based on AIA A101.
- E. The Agreement is based on AIA A132.
- F. The General Conditions are based on AIA A201.

**1.03 FORMS**

- A. Use the following forms for the specified purposes unless otherwise indicated elsewhere in Contract Documents.
- B. Bond Forms:
  - 1. Performance Bond Form: Section 00 6113.13 - City of Orange Beach Performance Bond Form.
  - 2. Payment Bond Form: Section 00 6113.16 - City of Orange Beach Labor and Materials Bond Form.
- C. Post-Award Certificates and Other Forms:
  - 1. Submittal Transmittal Letter Form: AIA G810.
  - 2. Certificate of Insurance Form: Acord 25S with Supplemental Attachment AIA G715. In addition, comply with requirements contained in General and Supplementary Conditions of the Contract.
  - 3. Schedule of Values Form: AIA G703.
  - 4. Application for Payment Forms: AIA G702 with AIA G703 (for Contractors).
  - 5. Consent of Surety to Reduction of Retainage Form: AIA G707A.
  - 6. Health and Safety Requirements: Section 00 7310 - Health and Safety Requirements.
  - 7. Hazard Analysis Form: Section 00 7311 - Activity Hazard Analysis Form.
- D. Clarification and Modification Forms:
  - 1. Request for Interpretation Form: AIA G716.
  - 2. Substitution Request Form: CSI/CSC Form 1.5C (During the Bidding/Negotiating Stage).
  - 3. Substitution Request Form: CSI/CSC Form 13.1A (After the Bidding/Negotiating Stage).
  - 4. Architect's Supplemental Instructions Form: AIA G710.
  - 5. Construction Change Directive Form: AIA G714.
  - 6. Change Order Form: AIA G701.
- E. Closeout Forms:
  - 1. Certificate of Substantial Completion Form: AIA G704.
  - 2. Affidavit of Payment of Debts and Claims Form: AIA G706.
  - 3. Affidavit of Release of Liens Form: Section 00 7200.13 - City of Orange Beach Waiver and Release of Lien.
  - 4. Consent of Surety to Final Payment Form: AIA G707.



#### **1.04 REFERENCE STANDARDS**

- A. AIA A101 - Standard Form of Agreement Between Owner and Contractor where the basis of Payment is a Stipulated Sum; 2007.
- B. AIA A132 - Standard Form of Agreement Between Owner and Contractor, Construction Manager as Adviser Edition; 2009.
- C. AIA A201 - General Conditions of the Contract for Construction; 2007.
- D. AIA G701 - Change Order; 2001.
- E. AIA G701CMA - Change Order, Construction Manager-Adviser Edition; 1992.
- F. AIA G702 - Application and Certificate for Payment; 1992.
- G. AIA G702CMA - Application and Certificate for Payment, Construction Manager-Adviser Edition; 1992.
- H. AIA G703 - Continuation Sheet; 1992.
- I. AIA G704 - Certificate of Substantial Completion; 2000.
- J. AIA G710 - Architect's Supplemental Instructions; 1992.
- K. AIA G714 - Construction Change Directive; 2007.
- L. AIA G732 - Application and Certificate for Payment, Construction Manager as Adviser Edition; 2009.
- M. AIA G810 - Transmittal Letter; 2001.
- N. CSI/CSC Form 1.5C - Substitution Request (During the Bidding/Negotiating Stage); Current Edition.
- O. CSI/CSC Form 13.1A - Substitution Request (After the Bidding/Negotiating Phase); Current Edition.

**PART 2 PRODUCTS - NOT USED**

**PART 3 EXECUTION - NOT USED**

**END OF SECTION**

**SECTION 00 5200**

**AGREEMENT FORM**

**AGREEMENT FORM: THE AIA DOCUMENT A101 2017 FORM OF AGREEMENT BETWEEN OWNER AND CONTRACTOR WHERE THE BASIS OF PAYMENT IS A STIPULATED SUM IS BOUND INTO THIS PROJECT MANUAL FOLLOWING THIS PAGE.**

**END OF SECTION**



 **AIA** Document A101™ – 2017

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

**AGREEMENT** made as of the \_\_\_\_\_ day of \_\_\_\_\_ in the year \_\_\_\_\_  
(In words, indicate day, month and year.)

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

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

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

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

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

The parties should complete A101™–2017, Exhibit A, Insurance and Bonds, contemporaneously with this Agreement.

AIA Document A201™–2017, General Conditions of the Contract for Construction, is adopted in this document by reference. Do not use with other general conditions unless this document is modified.

The Owner and Contractor agree as follows.

Init.

## TABLE OF ARTICLES

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

## EXHIBIT A INSURANCE AND BONDS

### ARTICLE 1 THE CONTRACT DOCUMENTS

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

### ARTICLE 2 THE WORK OF THIS CONTRACT

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

### ARTICLE 3 DATE OF COMMENCEMENT AND SUBSTANTIAL COMPLETION

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

*(Check one of the following boxes.)*

- The date of this Agreement.
- A date set forth in a notice to proceed issued by the Owner.

Established as follows:

*(Insert a date or a means to determine the date of commencement of the Work.)*

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

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

#### § 3.3 Substantial Completion

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

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

Not later than ( ) calendar days from the date of commencement of the Work.

By the following date:

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

Portion of Work	Substantial Completion Date
-----------------	-----------------------------

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

#### ARTICLE 4 CONTRACT SUM

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

#### § 4.2 Alternates

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

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

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

Item	Price	Conditions for Acceptance
------	-------	---------------------------

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

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

#### § 4.4 Unit prices, if any:

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

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

#### § 4.5 Liquidated damages, if any:

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

#### § 4.6 Other:

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

## ARTICLE 5 PAYMENTS

### § 5.1 Progress Payments

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

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

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

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

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

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

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

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

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

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

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

### § 5.1.7 Retainage

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

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

§ 5.1.7.1.1 The following items are not subject to retainage:

*(Insert any items not subject to the withholding of retainage, such as general conditions, insurance, etc.)*

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

*(If the retainage established in Section 5.1.7.1 is to be modified prior to Substantial Completion of the entire Work, including modifications for Substantial Completion of portions of the Work as provided in Section 3.3.2, insert provisions for such modifications.)*

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

*(Insert any other conditions for release of retainage upon Substantial Completion.)*

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

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

## § 5.2 Final Payment

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

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

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

## § 5.3 Interest

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

*(Insert rate of interest agreed upon, if any.)*

\_\_\_\_\_ % \_\_\_\_\_

## ARTICLE 6 DISPUTE RESOLUTION

### § 6.1 Initial Decision Maker

The Architect will serve as the Initial Decision Maker pursuant to Article 15 of AIA Document A201–2017, unless the parties appoint below another individual, not a party to this Agreement, to serve as the Initial Decision Maker.

*(If the parties mutually agree, insert the name, address and other contact information of the Initial Decision Maker, if other than the Architect.)*



## § 6.2 Binding Dispute Resolution

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

*(Check the appropriate box.)*

- Arbitration pursuant to Section 15.4 of AIA Document A201–2017
- Litigation in a court of competent jurisdiction
- Other *(Specify)*

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

## ARTICLE 7 TERMINATION OR SUSPENSION

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

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

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

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

## ARTICLE 8 MISCELLANEOUS PROVISIONS

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

§ 8.2 The Owner’s representative:

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

§ 8.3 The Contractor’s representative:

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

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

**§ 8.5 Insurance and Bonds**

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

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

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

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

**§ 8.7** Other provisions:

**ARTICLE 9 ENUMERATION OF CONTRACT DOCUMENTS**

**§ 9.1** This Agreement is comprised of the following documents:

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

.5 Drawings

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

.6 Specifications

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

.7 Addenda, if any:

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

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

.8 Other Exhibits:

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

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

The Sustainability Plan:

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

Supplementary and other Conditions of the Contract:

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

.9 Other documents, if any, listed below:

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

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

\_\_\_\_\_  
OWNER (Signature)

\_\_\_\_\_  
CONTRACTOR (Signature)

\_\_\_\_\_  
(Printed name and title)

\_\_\_\_\_  
(Printed name and title)

**SECTION 00 5210**

**AGREEMENT FORM EXHIBIT A - BONDS AND INSURANCE**

**AGREEMENT FORM EXHIBIT A - BONDS AND INSURANCE: THE AIA DOCUMENT A101 2017  
EXHIBIT A - BONDS AND INSURANCE IS BOUND INTO THIS PROJECT MANUAL FOLLOWING THIS  
PAGE.**

**END OF SECTION**





# AIA<sup>®</sup> Document A101<sup>™</sup> – 2017 Exhibit A

## Insurance and Bonds

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

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

**THE OWNER:**  
(Name, legal status and address)

**THE CONTRACTOR:**  
(Name, legal status and address)

### TABLE OF ARTICLES

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

#### ARTICLE A.1 GENERAL

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

#### ARTICLE A.2 OWNER'S INSURANCE

##### § A.2.1 General

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

##### § A.2.2 Liability Insurance

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

##### § A.2.3 Required Property Insurance

**§ A.2.3.1** Unless this obligation is placed on the Contractor pursuant to Section A.3.3.2.1, the Owner shall purchase and maintain, from an insurance company or insurance companies lawfully authorized to issue insurance in the jurisdiction where the Project is located, property insurance written on a builder's risk "all-risks" completed value or equivalent policy form and sufficient to cover the total value of the entire Project on a replacement cost basis. The Owner's

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

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

property insurance coverage shall be no less than the amount of the initial Contract Sum, plus the value of subsequent Modifications and labor performed and materials or equipment supplied by others. The property insurance shall be maintained until Substantial Completion and thereafter as provided in Section A.2.3.1.3, unless otherwise provided in the Contract Documents or otherwise agreed in writing by the parties to this Agreement. This insurance shall include the interests of the Owner, Contractor, Subcontractors, and Sub-subcontractors in the Project as insureds. This insurance shall include the interests of mortgagees as loss payees.

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

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

Cause of Loss	Sub-Limit
---------------	-----------

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

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

Coverage	Sub-Limit
----------	-----------

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

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

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

**§ A.2.3.3 Insurance for Existing Structures**

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

**§ A.2.4 Optional Extended Property Insurance.**

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

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

- § A.2.4.1 Loss of Use, Business Interruption, and Delay in Completion Insurance**, to reimburse the Owner for loss of use of the Owner's property, or the inability to conduct normal operations due to a covered cause of loss.
- § A.2.4.2 Ordinance or Law Insurance**, for the reasonable and necessary costs to satisfy the minimum requirements of the enforcement of any law or ordinance regulating the demolition, construction, repair, replacement or use of the Project.
- § A.2.4.3 Expediting Cost Insurance**, for the reasonable and necessary costs for the temporary repair of damage to insured property, and to expedite the permanent repair or replacement of the damaged property.
- § A.2.4.4 Extra Expense Insurance**, to provide reimbursement of the reasonable and necessary excess costs incurred during the period of restoration or repair of the damaged property that are over and above the total costs that would normally have been incurred during the same period of time had no loss or damage occurred.
- § A.2.4.5 Civil Authority Insurance**, for losses or costs arising from an order of a civil authority prohibiting access to the Project, provided such order is the direct result of physical damage covered under the required property insurance.
- § A.2.4.6 Ingress/Egress Insurance**, for loss due to the necessary interruption of the insured's business due to physical prevention of ingress to, or egress from, the Project as a direct result of physical damage.
- § A.2.4.7 Soft Costs Insurance**, to reimburse the Owner for costs due to the delay of completion of the Work, arising out of physical loss or damage covered by the required property insurance: including construction loan fees; leasing and marketing expenses; additional fees, including those of architects, engineers, consultants, attorneys and accountants, needed for the completion of the construction, repairs, or reconstruction; and carrying costs such as property taxes, building permits, additional interest on loans, realty taxes, and insurance premiums over and above normal expenses.

**§ A.2.5 Other Optional Insurance.**

The Owner shall purchase and maintain the insurance selected below.

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

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



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

Coverage

Limits

## ARTICLE A.3 CONTRACTOR'S INSURANCE AND BONDS

### § A.3.1 General

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

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

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

### § A.3.2 Contractor's Required Insurance Coverage

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

### § A.3.2.2 Commercial General Liability

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

- .1 damages because of bodily injury, sickness or disease, including occupational sickness or disease, and death of any person;
- .2 personal injury and advertising injury;
- .3 damages because of physical damage to, or destruction of, tangible property, including the loss of use of such property;
- .4 bodily injury or property damage arising out of completed operations; and
- .5 the Contractor's indemnity obligations under Section 3.18 of the General Conditions.

§ A.3.2.2.2 The Contractor's Commercial General Liability policy under this Section A.3.2.2 shall not contain an exclusion or restriction of coverage for the following:

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

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

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

§ A.3.2.5 Workers' Compensation at statutory limits.

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

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

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

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

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

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

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

**§ A.3.3 Contractor's Other Insurance Coverage**

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

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

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

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

- § A.3.3.2.1** Property insurance of the same type and scope satisfying the requirements identified in Section A.2.3, which, if selected in this section A.3.3.2.1, relieves the Owner of the responsibility to purchase and maintain such insurance except insurance required by Section A.2.3.1.3 and Section A.2.3.3. The Contractor shall comply with all obligations of the Owner under Section A.2.3 except to the extent provided below. The Contractor shall disclose to the Owner the amount of any deductible, and the Owner shall be responsible for losses within the deductible. Upon request, the Contractor shall provide the Owner with a copy of the property insurance policy or policies required. The Owner shall adjust and settle the loss with the insurer and be the trustee of the proceeds of the property insurance in accordance with Article 11 of the General Conditions unless otherwise set forth below.

*(Where the Contractor's obligation to provide property insurance differs from the Owner's obligations as described under Section A.2.3, indicate such differences in the space below.*

*Additionally, if a party other than the Owner will be responsible for adjusting and settling a loss with the insurer and acting as the trustee of the proceeds of property insurance in accordance with Article 11 of the General Conditions, indicate the responsible party below.)*

- § A.3.3.2.2 Railroad Protective Liability Insurance**, with policy limits of not less than \_\_\_\_\_ ( \$\_\_\_ ) per claim and \_\_\_\_\_ ( \$\_\_\_ ) in the aggregate, for Work within fifty (50) feet of railroad property.
- § A.3.3.2.3 Asbestos Abatement Liability Insurance**, with policy limits of not less than \_\_\_\_\_ ( \$\_\_\_ ) per claim and \_\_\_\_\_ ( \$\_\_\_ ) in the aggregate, for liability arising from the encapsulation, removal, handling, storage, transportation, and disposal of asbestos-containing materials.
- § A.3.3.2.4** Insurance for physical damage to property while it is in storage and in transit to the construction site on an "all-risks" completed value form.
- § A.3.3.2.5** Property insurance on an "all-risks" completed value form, covering property owned by the Contractor and used on the Project, including scaffolding and other equipment.
- § A.3.3.2.6 Other Insurance**

*(List below any other insurance coverage to be provided by the Contractor and any applicable limits.)*

Coverage

Limits

**§ A.3.4 Performance Bond and Payment Bond**

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

*(Specify type and penal sum of bonds.)*

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

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

**ARTICLE A.4 SPECIAL TERMS AND CONDITIONS**

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

Sample





**PERFORMANCE BOND (SAMPLE)**

KNOW ALL MEN:

That we \_\_\_\_\_, hereinafter called the Principal,  
(Insert here the name and address or legal title of the Contractor)

\_\_\_\_\_, hereinafter called the Surety,  
(Insert here the name and address or legal title of the Surety)

are held and firmly bound unto the Owner in the sum of \_\_\_\_\_  
(\$\_\_\_\_\_) for the payment whereof the Principal and the Surety bind themselves, their heirs, executors,  
administrators, successors and assigns, jointly and severally, firmly, by these presents.

WHEREAS, the Principal has, by means of a written agreement dated \_\_\_\_\_ entered  
into a Contract with the Owner for \_\_\_\_\_ which agreement is by reference made  
a part hereof.

NOW THEREFORE, the conditions of the obligation are such that if the Principal shall faithfully perform the  
Contract on his part, and satisfy all claims and demands, incurred for the same, and shall fully indemnify and save  
harmless the Owner from all costs and damage which he may suffer by reason of failure to do so, and shall  
reimburse and repay the Owner all outlay and expense which the Owner may incur in making good for any such  
default thence this obligation shall be null and void; otherwise, it shall remain in full force and effect.

PROVIDED, HOWEVER, that no suit, action or proceedings, by reason of any default whatever be brought on his  
bond after twelve months from the day on which the final payment under the Contract falls due.

PROVIDED, further, that said Surety, for value received hereby stipulate and agree that no change, extension of  
time, or addition to the terms of the Contract or to the work to be performed thereunder of the specifications  
thereof shall in any way effect their obligations on this bond, and they do hereby waive notice of any such change,  
extension of time, alteration or addition to the terms of the Contract, or to the work, or to the specifications.



SIGNED, SEALED, AND DELIVERED this \_\_\_\_\_ day of \_\_\_\_\_.

Attest:

\_\_\_\_\_  
\_\_\_\_\_

(Corporate Principal Sign Here)

\_\_\_\_\_  
By: \_\_\_\_\_

Attest:

\_\_\_\_\_  
\_\_\_\_\_

(Surety Sign Here)

\_\_\_\_\_  
By: \_\_\_\_\_

COUNTERSIGNED:

\_\_\_\_\_  
By: \_\_\_\_\_



**LABOR AND MATERIALS BOND (SAMPLE)**

KNOW ALL MEN BY THESE PRESENTS, THAT WE \_\_\_\_\_,  
as Principal, and \_\_\_\_\_, as Surety, are held  
and firmly bound unto said Owner, hereinafter called the Obligee, in the penal sum of  
\_\_\_\_\_ Dollars (\$\_\_\_\_\_)  
lawful money of the United States, for the payment of which sum and truly to be made, we bind ourselves, our  
heirs, personal representatives, successors and assigns, jointly and severally, firmly by these presents.

WHEREAS, the Principal has entered into a certain Contract with said Obligee dated \_\_\_\_\_,  
hereinafter called the Contract, for \_\_\_\_\_ and the specifications for said work  
shall be deemed a part hereof as fully as if set out herein.

NOW THEREFORE, the conditions of the obligation are such that if the Principal and all subcontractors to whom  
any portion of the work in said Contract is sublet and all assignees of said Principal and of such subcontractors  
shall promptly make payments to all persons supplying him or them with labor, materials, or supplies for or in the  
prosecution of the work provided for in such Contract, or any amendment or extension of or addition to said  
Contract, and for the payment of reasonable attorney’s fees incurred by the successful claimant or plaintiffs in suits  
or claims against the Contractor arising out of or in connection with the said Contract, then the above obligation  
shall be void; otherwise to remain in full force and effect.

PROVIDED, HOWEVER, that this bond is subject to the following conditions and limitations.

- (a) Any person, firm or corporation that has furnished labor, materials, or supplies for or in the prosecution of  
the work provided for in said Contract shall have a direct right to action against the Principal and Surety on  
this bond, which right of action shall be asserted in a proceeding, instituted in the County in which the work  
provided for in said Contract is to be performed or in any County in which said Principal or Surety does  
business. Such right of action shall be asserted in a proceeding instituted in the name of the claimant or  
claimants for his or their use and benefit against the Principal and Surety or either of them, but not later  
than one (1) year after the final settlement of said Contract falls due, in which action such claim or claims  
shall be adjusted and judgement rendered thereon.
- (b) The Principal and Surety hereby designate and appoint \_\_\_\_\_, or his  
successor or representative as the agent of each of them to receive and accept services of process or other  
pleading issued, or filed in any proceeding instituted on this bond and hereby consent that such service  
shall be the same as personal service on the Principal and/or Surety.





- (c) The Surety shall not be liable hereunder for any damages or compensation recoverable under Workmen’s Compensation or Employer’s Liability Statute.
- (d) In no event shall the Surety be liable for a greater sum than the penalty of this bond, or subject to any suit, action or proceeding thereon that is instituted later than one (1) year after the final settlement of said Contract.
- (e) This bond is given pursuant to the terms of an Act of the Legislature of the State of Alabama approved February 8, 1935, entitled, “An Act to further provide for Bonds and Contractors on State and other public works and suits thereon.”
- (f) The full name and residence of each individual party to the bond must be inserted in the first paragraph.
- (g) If the Principal is a partnership, the full name of all partners must be inserted in the first paragraph which must recite that they are the partners composing the partnership (to be named) and all partners must execute the bond as individuals.
- (h) The State of Incorporation of each corporate party to bond must be inserted in the first paragraph and the bond must be executed under the Corporate Seal of each party attested by its secretary or other appropriate officer.
- (i) The date of the bond must not be prior to the date of the Contract.

SIGNED, SEALED, AND DELIVERED this \_\_\_\_\_ day of \_\_\_\_\_.

Attest:

(Corporate Principal Sign Here)

\_\_\_\_\_  
\_\_\_\_\_

\_\_\_\_\_  
\_\_\_\_\_

By: \_\_\_\_\_

Attest:

(Surety Sign Here)

\_\_\_\_\_  
\_\_\_\_\_

\_\_\_\_\_  
\_\_\_\_\_

By: \_\_\_\_\_

**SECTION 00 6276**

**APPLICATION AND CERTIFICATE FOR PAYMENT**

**APPLICATION AND CERTIFICATE FOR PAYMENT: THE AIA DOCUMENT G702 1992 -  
APPLICATION AND CERTIFICATE FOR PAYMENT INCLUDING AIA G703 CONTINUATION SHEET IS  
BOUND INTO THIS PROJECT MANUAL FOLLOWING THIS PAGE.**

**END OF SECTION**





# AIA<sup>®</sup> Document G702™ – 1992

## Application and Certificate for Payment

TO OWNER: \_\_\_\_\_ PROJECT: \_\_\_\_\_

APPLICATION NO: \_\_\_\_\_ Distribution to:

PERIOD TO: \_\_\_\_\_ OWNER

CONTRACT FOR: \_\_\_\_\_ ARCHITECT

CONTRACT DATE: \_\_\_\_\_ CONTRACTOR

PROJECT NOS: \_\_\_\_\_ FIELD

OTHER

FROM CONTRACTOR: \_\_\_\_\_ VIA ARCHITECT: \_\_\_\_\_

### CONTRACTOR'S APPLICATION FOR PAYMENT

Application is made for payment, as shown below, in connection with the Contract. AIA Document G703™, Continuation Sheet, is attached.

1. ORIGINAL CONTRACT SUM ..... \$ \_\_\_\_\_

2. NET CHANGE BY CHANGE ORDERS ..... \$ \_\_\_\_\_

3. CONTRACT SUM TO DATE (Line 1 ± 2) ..... \$ \_\_\_\_\_

4. TOTAL COMPLETED & STORED TO DATE (Column G on G703) ..... \$ \_\_\_\_\_

#### 5. RETAINAGE:

a. \_\_\_\_\_ % of Completed Work

(Columns D + E on G703)

b. \_\_\_\_\_ % of Stored Material

(Column F on G703)

\$ \_\_\_\_\_

Total Retainage (Lines 5a + 5b, or Total in Column I of G703) ..... \$ \_\_\_\_\_

6. TOTAL EARNED LESS RETAINAGE ..... \$ \_\_\_\_\_

(Line 4 minus Line 5 Total)

7. LESS PREVIOUS CERTIFICATES FOR PAYMENT ..... \$ \_\_\_\_\_

(Line 6 from prior Certificate)

8. CURRENT PAYMENT DUE ..... \$ \_\_\_\_\_

9. BALANCE TO FINISH, INCLUDING RETAINAGE ..... \$ \_\_\_\_\_

(Line 3 minus Line 6)

CHANGE ORDER SUMMARY	ADDITIONS	DEDUCTIONS
Total changes approved in previous months by Owner	\$ _____	\$ _____
Total approved this month	\$ _____	\$ _____
TOTAL	\$ _____	\$ _____
NET CHANGES by Change Order	\$ _____	

The undersigned Contractor certifies that to the best of the Contractor's knowledge, information and belief the Work covered by this Application for Payment has been completed in accordance with the Contract Documents, that all amounts have been paid by the Contractor for Work for which previous Certificates for Payment were issued and payments received from the Owner, and that current payment shown herein is now due.

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

By: \_\_\_\_\_

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

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

Subscribed and sworn to before

me this \_\_\_\_\_ day of \_\_\_\_\_

Notary Public: \_\_\_\_\_

My commission expires: \_\_\_\_\_

### ARCHITECT'S CERTIFICATE FOR PAYMENT

In accordance with the Contract Documents, based on on-site observations and the data comprising this application, the Architect certifies to the Owner that to the best of the Architect's knowledge, information and belief the Work has progressed as indicated, the quality of the Work is in accordance with the Contract Documents, and the Contractor is entitled to payment of the AMOUNT CERTIFIED.

AMOUNT CERTIFIED ..... \$ \_\_\_\_\_

(Attach explanation if amount certified differs from the amount applied. Initial all figures on this Application and on the Continuation Sheet that are changed to conform with the amount certified.)

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

By: \_\_\_\_\_

This Certificate is not negotiable. The AMOUNT CERTIFIED is payable only to the Contractor named herein. Issuance, payment and acceptance of payment are without prejudice to any rights of the Owner or Contractor under this Contract.

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

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**AIA**

**Document G703™ – 1992**

### Continuation Sheet

AIA Document G702™–1992, Application and Certificate for Payment, or G732™–2009, Application and Certificate for Payment, Construction Manager as Adviser Edition, containing Contractor's signed certification is attached. In tabulations below, amounts are in US dollars. Use Column I on Contracts where variable retainage for line items may apply.

APPLICATION NO:  
APPLICATION DATE:  
PERIOD TO:  
ARCHITECT'S PROJECT NO:

A ITEM NO.	B DESCRIPTION OF WORK	C SCHEDULED VALUE	D WORK COMPLETED		E THIS PERIOD	F MATERIALS PRESENTLY STORED <i>(Not in D or E)</i>	G TOTAL COMPLETED AND STORED TO DATE <i>(D+E+F)</i>	H BALANCE TO FINISH <i>(C - G)</i>	I RETAINAGE <i>(If variable rate)</i>
			FROM PREVIOUS APPLICATION <i>(D + E)</i>						
GRAND TOTAL									

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

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<b>PROGRESS SCHEDULE AND REPORT</b>		<b>CONTRACTOR:</b>		<b>DATE OF REPORT</b>	
<b>PROJECT:</b>				<b>PROCEED DATE</b>	
<b>PROJ#:</b>		<b>ARCHITECT:</b>		<b>PROJECTED COMPLETION DATE</b>	
<b>B.C. No.</b>					

WORK DIVISION	%	AMOUNT																
1. GENERAL REQUIREMENTS		\$ -																
2. SITEWORK		\$ -																
3. CONCRETE		\$ -																
4. MASONRY		\$ -																
5. METALS		\$ -																
6. WOOD and PLASTIC		\$ -																
7. THERMAL and MOISTURE PROTECTION		\$ -																
8. DOORS and WINDOWS		\$ -																
9. FINISHES		\$ -																
10. SPECIALTIES		\$ -																
11. EQUIPMENT		\$ -																
12. FURNISHINGS		\$ -																
13. SPECIAL CONSTRUCTION		\$ -																
14. CONVEYING SYSTEMS		\$ -																
15. MECHANICAL		\$ -																
16. ELECTRICAL		\$ -																
TOTAL ORIGINAL CONTRACT		\$ -																
ANTICIPATED DRAW IN \$1,000		\$ -																
ACTUAL DRAW IN \$1,000		\$ -																

LEGEND  
 ANTICIPATED ACTIVITY  
 ACTUAL ACTIVITY  
 ANTICIPATED CASH FLOW  
 ACTUAL CASH FLOW  
 USE ADDITIONAL SHEETS IF JOB IS SCHEDULED MORE THAN 12 MONTHS

100%  
90%  
80%  
70%  
60%  
50%  
40%  
30%  
20%  
10%



**SECTION 00 6325**

**SUBSTITUTION REQUEST (POST BID)**

**SUBSTITUTION REQUEST (POST BID): CONSTRUCTION SPECIFICATIONS INSTITUTE  
DOCUMENT 13.1A SUBSTITUTION REQUEST AFTER THE BIDDING/NEGOTIATION PHASE.  
DATED JANUARY 2013 IS BOUND INTO THIS PROJECT MANUAL FOLLOWING THIS PAGE.**

**END OF SECTION**





# 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)

---

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: \_\_\_\_\_

---

### 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

**SECTION 00 6516**

**CERTIFICATE OF SUBSTANTIAL COMPLETION**

**CERTIFICATE OF SUBSTANTIAL COMPLETION: THE AMERICAN INSTITUTE OF ARCHITECTS  
DOCUMENT G704 CERTIFICATE OF SUBSTANTIAL COMPLETION, DATED 2017 IS BOUND INTO  
THIS PROJECT MANUAL FOLLOWING THIS PAGE.**



 **AIA** Document G704™ – 2017

**Certificate of Substantial Completion**

**PROJECT:** *(name and address)*

**CONTRACT INFORMATION:**

Contract For:  
Date:

**CERTIFICATE INFORMATION:**

Certificate Number:  
Date:

**OWNER:** *(name and address)*

**ARCHITECT:** *(name and address)*

**CONTRACTOR:** *(name and address)*

The Work identified below has been reviewed and found, to the Architect’s best knowledge, information, and belief, to be substantially complete. Substantial Completion is the stage in the progress of the Work when the Work or designated portion is sufficiently complete in accordance with the Contract Documents so that the Owner can occupy or utilize the Work for its intended use. The date of Substantial Completion of the Project or portion designated below is the date established by this Certificate.

*(Identify the Work, or portion thereof, that is substantially complete.)*

\_\_\_\_\_  
**ARCHITECT** *(Firm Name)*

\_\_\_\_\_  
**SIGNATURE**

\_\_\_\_\_  
**PRINTED NAME AND TITLE**

\_\_\_\_\_  
**DATE OF SUBSTANTIAL COMPLETION**

**WARRANTIES**

The date of Substantial Completion of the Project or portion designated above is also the date of commencement of applicable warranties required by the Contract Documents, except as stated below:

*(Identify warranties that do not commence on the date of Substantial Completion, if any, and indicate their date of commencement.)*

**WORK TO BE COMPLETED OR CORRECTED**

A list of items to be completed or corrected is attached hereto, or transmitted as agreed upon by the parties, and identified as follows:

*(Identify the list of Work to be completed or corrected.)*

The failure to include any items on such list does not alter the responsibility of the Contractor to complete all Work in accordance with the Contract Documents. Unless otherwise agreed to in writing, the date of commencement of warranties for items on the attached list will be the date of issuance of the final Certificate of Payment or the date of final payment, whichever occurs first. The Contractor will complete or correct the Work on the list of items attached hereto within ( ) days from the above date of Substantial Completion.

Cost estimate of Work to be completed or corrected: \$

The responsibilities of the Owner and Contractor for security, maintenance, heat, utilities, damage to the Work, insurance, and other items identified below shall be as follows:

*(Note: Owner’s and Contractor’s legal and insurance counsel should review insurance requirements and coverage.)*

The Owner and Contractor hereby accept the responsibilities assigned to them in this Certificate of Substantial Completion:

\_\_\_\_\_  
**CONTRACTOR** *(Firm Name)*

\_\_\_\_\_  
**SIGNATURE**

\_\_\_\_\_  
**PRINTED NAME AND TITLE**

\_\_\_\_\_  
**DATE**

\_\_\_\_\_  
**OWNER** *(Firm Name)*

\_\_\_\_\_  
**SIGNATURE**

\_\_\_\_\_  
**PRINTED NAME AND TITLE**

\_\_\_\_\_  
**DATE**





**SECTION 00 6536.13**

**GENERAL CONTRACTOR'S ROOFING GUARANTEE**

**GENERAL CONTRACTOR'S ROOFING GUARANTEE: THE ALABAMA BUILDING COMMISSION DOCUMENT C-9 GENERAL CONTRACTOR'S ROOFING GUARANTEE DATED AUGUST 2001 IS BOUND INTO THIS PROJECT MANUAL FOLLOWING THIS PAGE.**

**END OF SECTION**



# GENERAL CONTRACTOR'S ROOFING GUARANTEE

B. C. Project No. _____ _____
----------------------------------

Project Name & Address	Project Owner(s) & Address
------------------------	----------------------------

General Contractor's 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 \_\_\_\_\_, 20 \_\_\_\_\_.

---

General Contractor's Authorized Signature

---

Typed Name and Title

## FORM OF ADVERTISEMENT FOR COMPLETION

### LEGAL NOTICE

In accordance with Chapter 1, Title 39, Code of Alabama, 1975, notice is hereby given  
that \_\_\_\_\_,

*(Contractor)*

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)*

\_\_\_\_\_  
*(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 less than \$50,000.00, run one time only.  
Proof of publication is required.

**SECTION 00 7200**

**GENERAL CONDITIONS OF THE CONTRACT**

**GENERAL CONDITIONS OF THE CONTRACT: AIA DOCUMENT A201 2017, GENERAL CONDITIONS OF THE CONTRACT FOR CONSTRUCTION IS BOUND INTO THIS PROJECT MANUAL FOLLOWING THIS PAGE.**

**END OF SECTION**





# AIA<sup>®</sup> Document A201<sup>™</sup> – 2017

## General Conditions of the Contract for Construction

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

**THE OWNER:**  
*(Name, legal status and address)*

**THE ARCHITECT:**  
*(Name, legal status and address)*

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

For guidance in modifying this document to include supplementary conditions, see AIA Document A503<sup>™</sup>, Guide for Supplementary Conditions.

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## **ARTICLE 1 GENERAL PROVISIONS**

### **§ 1.1 Basic Definitions**

#### **§ 1.1.1 The Contract Documents**

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

#### **§ 1.1.2 The Contract**

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

#### **§ 1.1.3 The Work**

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

#### **§ 1.1.4 The Project**

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

#### **§ 1.1.5 The Drawings**

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

#### **§ 1.1.6 The Specifications**

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

#### **§ 1.1.7 Instruments of Service**

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

#### **§ 1.1.8 Initial Decision Maker**

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

### **§ 1.2 Correlation and Intent of the Contract Documents**

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

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



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

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

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

### **§ 1.3 Capitalization**

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

### **§ 1.4 Interpretation**

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

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

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

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

### **§ 1.6 Notice**

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

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

### **§ 1.7 Digital Data Use and Transmission**

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

### **§ 1.8 Building Information Models Use and Reliance**

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

information model, and each of their agents and employees.

## **ARTICLE 2 OWNER**

### **§ 2.1 General**

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

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

### **§ 2.2 Evidence of the Owner's Financial Arrangements**

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

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

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

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

### **§ 2.3 Information and Services Required of the Owner**

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

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

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

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

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

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

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

#### **§ 2.4 Owner's Right to Stop the Work**

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

#### **§ 2.5 Owner's Right to Carry Out the Work**

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

### **ARTICLE 3 CONTRACTOR**

#### **§ 3.1 General**

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

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

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

#### **§ 3.2 Review of Contract Documents and Field Conditions by Contractor**

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

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

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

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

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

### **§ 3.3 Supervision and Construction Procedures**

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

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

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

### **§ 3.4 Labor and Materials**

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

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

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

### **§ 3.5 Warranty**

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

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

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

### **§ 3.6 Taxes**

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

### **§ 3.7 Permits, Fees, Notices and Compliance with Laws**

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

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

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

### **§ 3.7.4 Concealed or Unknown Conditions**

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

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

### **§ 3.8 Allowances**

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

**§ 3.8.2** Unless otherwise provided in the Contract Documents,

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

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

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

### § 3.9 Superintendent

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

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

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

### § 3.10 Contractor's Construction and Submittal Schedules

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

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

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

### § 3.11 Documents and Samples at the Site

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

### § 3.12 Shop Drawings, Product Data and Samples

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

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

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

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

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

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

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

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

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

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

**§ 3.12.10.1** If professional design services or certifications by a design professional related to systems, materials, or equipment are specifically required of the Contractor by the Contract Documents, the Owner and the Architect will specify all performance and design criteria that such services must satisfy. The Contractor shall be entitled to rely upon the adequacy and accuracy of the performance and design criteria provided in the Contract Documents. The Contractor shall cause such services or certifications to be provided by an appropriately licensed design professional, whose signature and seal shall appear on all drawings, calculations, specifications, certifications, Shop Drawings, and other submittals prepared by such professional. Shop Drawings, and other submittals related to the Work, designed or certified by such professional, if prepared by others, shall bear such professional's written approval when submitted to the Architect. The Owner and the Architect shall be entitled to rely upon the adequacy and accuracy of the services, certifications, and approvals performed or provided by such design professionals, provided the Owner and Architect have specified to the Contractor the performance and design criteria that such services must satisfy. Pursuant to this Section 3.12.10, the Architect will review and approve or take other appropriate action on submittals only for the limited purpose of checking for conformance with information given and the design concept expressed in the Contract Documents.

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

time and in the form specified by the Architect.

### **§ 3.13 Use of Site**

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

### **§ 3.14 Cutting and Patching**

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

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

### **§ 3.15 Cleaning Up**

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

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

### **§ 3.16 Access to Work**

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

### **§ 3.17 Royalties, Patents and Copyrights**

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

### **§ 3.18 Indemnification**

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

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



## ARTICLE 4 ARCHITECT

### § 4.1 General

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

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

### § 4.2 Administration of the Contract

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

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

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

### § 4.2.4 Communications

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

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

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

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

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

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

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

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

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

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

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

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

## **ARTICLE 5 SUBCONTRACTORS**

### **§ 5.1 Definitions**

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

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

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

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

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

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

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

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

### **§ 5.3 Subcontractual Relations**

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

### **§ 5.4 Contingent Assignment of Subcontracts**

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

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

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

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

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

## **ARTICLE 6 CONSTRUCTION BY OWNER OR BY SEPARATE CONTRACTORS**

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

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

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

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

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

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

### **§ 6.2 Mutual Responsibility**

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

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

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

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

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

### **§ 6.3 Owner's Right to Clean Up**

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

## **ARTICLE 7 CHANGES IN THE WORK**

### **§ 7.1 General**

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

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

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

### **§ 7.2 Change Orders**

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

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

### § 7.3 Construction Change Directives

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

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

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

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

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

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

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

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

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

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

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

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

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

#### § 7.4 Minor Changes in the Work

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

### ARTICLE 8 TIME

#### § 8.1 Definitions

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

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

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

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

#### § 8.2 Progress and Completion

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

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

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

#### § 8.3 Delays and Extensions of Time

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

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

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

### ARTICLE 9 PAYMENTS AND COMPLETION

#### § 9.1 Contract Sum

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

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

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

### **§ 9.2 Schedule of Values**

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

### **§ 9.3 Applications for Payment**

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

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

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

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

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

### **§ 9.4 Certificates for Payment**

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

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

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

### **§ 9.5 Decisions to Withhold Certification**

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

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

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

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

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

### **§ 9.6 Progress Payments**

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

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

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

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



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

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

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

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

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

#### **§ 9.7 Failure of Payment**

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

#### **§ 9.8 Substantial Completion**

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

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

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

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

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

#### **§ 9.9 Partial Occupancy or Use**

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

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

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

#### **§ 9.10 Final Completion and Final Payment**

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

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

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

constitute a waiver of Claims.

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

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

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

## **ARTICLE 10 PROTECTION OF PERSONS AND PROPERTY**

### **§ 10.1 Safety Precautions and Programs**

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

### **§ 10.2 Safety of Persons and Property**

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

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

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

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

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

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

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

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

### **§ 10.2.8 Injury or Damage to Person or Property**

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

### **§ 10.3 Hazardous Materials and Substances**

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

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

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

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

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

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

### **§ 10.4 Emergencies**

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

## **ARTICLE 11 INSURANCE AND BONDS**

### **§ 11.1 Contractor's Insurance and Bonds**

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

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

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

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

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

## **§ 11.2 Owner's Insurance**

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

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

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

## **§ 11.3 Waivers of Subrogation**

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

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

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

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

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

#### **§ 11.5 Adjustment and Settlement of Insured Loss**

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

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

### **ARTICLE 12 UNCOVERING AND CORRECTION OF WORK**

#### **§ 12.1 Uncovering of Work**

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

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

#### **§ 12.2 Correction of Work**

##### **§ 12.2.1 Before Substantial Completion**

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

Contractor's expense.

### **§ 12.2.2 After Substantial Completion**

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

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

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

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

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

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

### **§ 12.3 Acceptance of Nonconforming Work**

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

## **ARTICLE 13 MISCELLANEOUS PROVISIONS**

### **§ 13.1 Governing Law**

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

### **§ 13.2 Successors and Assigns**

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

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

### § 13.3 Rights and Remedies

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

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

### § 13.4 Tests and Inspections

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

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

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

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

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

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

### § 13.5 Interest

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

## ARTICLE 14 TERMINATION OR SUSPENSION OF THE CONTRACT

### § 14.1 Termination by the Contractor

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

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



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

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

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

#### § 14.2 Termination by the Owner for Cause

§ 14.2.1 The Owner may terminate the Contract if the Contractor

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

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

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

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

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

#### § 14.3 Suspension by the Owner for Convenience

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

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

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

#### **§ 14.4 Termination by the Owner for Convenience**

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

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

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

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

### **ARTICLE 15 CLAIMS AND DISPUTES**

#### **§ 15.1 Claims**

##### **§ 15.1.1 Definition**

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

##### **§ 15.1.2 Time Limits on Claims**

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

##### **§ 15.1.3 Notice of Claims**

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

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

##### **§ 15.1.4 Continuing Contract Performance**

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

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

##### **§ 15.1.5 Claims for Additional Cost**

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

##### **§ 15.1.6 Claims for Additional Time**

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

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

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

#### **§ 15.1.7 Waiver of Claims for Consequential Damages**

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

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

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

#### **§ 15.2 Initial Decision**

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

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

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

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

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

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

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

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

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

### § 15.3 Mediation

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

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

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

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

### § 15.4 Arbitration

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

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

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

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

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

**§ 15.4.4 Consolidation or Joinder**

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

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

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

Sample



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

FROM:

TO: City of Orange Beach, Alabama (Owner)

PROJECT: **Orange Beach Recreation Complex** New Adult Fitness Center

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**

**1.01 SUMMARY**

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

**1.02 RELATED SECTIONS**

- A. Section 00 5000 - Contracting Forms and Supplements.

**1.03 REFERENCE STANDARDS**

**1.04 MODIFICATIONS TO GENERAL CONDITIONS**

A. 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.
- B. Add the following to §2.3.6 to read as follows: 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:
    - Orange Beach City Hall
    - 4099 Orange Beach Boulevard
    - Orange Beach, AL 36561
    - Or downloaded from the City's website: [www.orangebeachal.gov](http://www.orangebeachal.gov).
  - C. Add §3.2.5: The Owner is entitled to reimbursement from the Contractor for amounts paid to the Architect for evaluating and responding to the Contractor's requests for information that are not prepared in accordance with the Contract Documents or where the requested information is available to the Contractor from a careful study and comparison of the Contract Documents, field conditions, other Owner-provided information, Contractor-prepared coordination drawings, or prior Project correspondence or documentation.
  - D. Add §3.4.2.1: After the Contract has been executed, the Owner, and Architect will consider requests for the substitution of products in place of those specified only under the conditions set forth in the General Requirements (Division 1 of the Specifications). By making requests for substitutions, the Contractor:

1. represents that it has personally investigated the proposed substitute product and determined that it is equal or superior in all respects to that specified;
  2. represents that it will provide the same warranty for the substitution as it would have provided for the product specified;
  3. certifies that the cost data presented is complete and includes all related costs for the substituted product and for Work that must be changed as a result of the substitution, except for the Architect's redesign costs, and waives all claims for additional costs related to the substitution that subsequently become apparent; and shall coordinate the installation of the accepted substitute, making such changes as may be required for the Work to be complete in all respects.
- E. Add §3.4.2.2 The Owner shall be entitled to reimbursement from the Contractor for amounts paid to the Architect for reviewing the Contractor's proposed substitutions and making agreed-upon changes in the Drawings and Specifications resulting from such substitutions.
- F. Add §3.4.4 All manufactured articles, materials and equipment must be supplied, installed, connected, erected, used, cleansed and conditioned in accordance with the manufacturer's specifications, directions and appropriate industry standards unless otherwise specified.
- G. Add §3.4.5 The Contractor shall comply with all applicable State and Federal statutes regarding minimum wages to be paid. The Contract sum will not be increased because of subsequent increases in wage rates.
- H. Replace §3.6 in its entirety with the following: Materials purchased for incorporation into the facility shall be exempt from taxes in accordance with Alabama Department of Revenue Rule 810-6-3-.69.02. The contractor shall not include the cost of sales tax on such materials in their bid price or contract amount. See Section 01 2976.13 for specific requirements and procedures.
- I. Modify §3.7.4: replace "14 days after first observance of conditions" with "seven (7) days after first observance of conditions".
- J. Add §4.2.3.1 The Owner is entitled to reimbursement from the Contractor for amounts paid to the Architect for site visits made necessary by the fault of the Contractor or by defects and deficiencies in the Work.
- K. Delete Section 4.2.4 and substitute the following: § 4.2.4 The Owner and Contractor shall communicate with each other through the Architect about matters arising out of or relating to the Project. Communications by and with the Architect's consultants shall be through the Architect. Communications by and with Subcontractors and suppliers shall be through the Contractor. Communications by and with Separate Contractors shall be through the Owner. The Contract Documents may specify other communication protocols.
- L. Add §5.2.5 Not later than (20) 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 01 of the Specifications) and, where applicable, the name of the installing Subcontractor(s).
- M. Add §7.1.4 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% of the cost of the work.
  2. For the Contractor, for work performed by the Contractor's Subcontractors, 10% of the cost of the Work.
  3. For each Subcontractor involved, for Work performed by that Subcontractor's own forces, 10% of the cost of the Work
  4. For each subcontractor involved for Work performed by the Subcontractor's subcontractors, 10% of the cost of the Work.
  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.
- N. Add §8.4 CONSTRUCTION DURATION.
1. 8.4.1 The Contactor shall achieve substantial completion of Work, or portion of the Work, per the Time Allotted for Completion included in Paragraph 1.02 B of Section 01 1000 - Summary.
  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.
- O. Add §9.3.1.3: Until Substantial Completion, the Owner shall pay 90 percent of the amount due the Contractor on account of progress payments.
- P. Add §9.3.1.4 Until all work is satisfactorily completed in accordance with this agreement and all closeout requirements have been provided, full payment shall be paid less five percent (5%) of the amount of such pay request which is to be retained by the Owner until all outstanding items have been fully completed.
- Q. Add §9.11 Liquidated Damages: The Contractor and the Contractor's surety, if any, shall be liable for and shall pay the Owner the sums hereinafter stipulated as liquidated damages, and not as a penalty, for each calendar day of delay after the date established for Substantial Completion of the Work, or portion of the Work, as defined in the Contract Documents until the Work is substantially complete: Six hundred dollars (\$600.00).
1. 9.11.1: It is mutually understood and agreed between the contracting parties and contractor's surety that such amount is a reasonable measure of liquidated damages.
- R. § 10.2.4.1 When use or storage of explosives, or other hazardous materials, substances or equipment, or unusual methods, are necessary for execution of the Work, the Contractor shall give the Owner reasonable advance notice.
- S. Add §11.1.1.1 The limits for Worker's Compensation insurance shall meet statutory limits mandated by State and Federal Laws. If (1) limits in excess of those required by statute are to be provided, (2) the employer is not statutorily bound to obtain such insurance coverage, or (3) additional coverages are required, additional coverages and limits for such insurance shall be as follows:
- T. Add §11.1.1.2 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, Subcontractor, or anyone directly or indirectly employed by the Contractor or Subcontractor or anyone for whose acts they may be liable, regardless of who may be the owner of the property.
- U. Add §11.1.1.3 Each of the insurance coverage's required 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 selfinsured's or group

self-insured's, 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.

- V. Add §11.1.1.4 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 (30) 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.
- W. Add §11.1.1.5 The Contractor shall procure the insurance coverage's identified below, or as otherwise required in the Contract Documents, at the Contractor's own expense, and to evidence that such insurance coverage's are in effect. The Contractor shall furnish all named insureds 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:
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 (30) day notice of cancellation / non-renewal / change
- X. Add §11.1.1.6 Additional Insureds: All Contractor's insurance policies shall name the Owner and Architect as additional insureds.
- Y. Add §11.1.1.7 Certificate of Insurance.
1. 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.
  2. The Contractor agrees the Certificate(s) of Insurance shall:
    - a. Clearly indicate the City has been endorsed on the Commercial Umbrella/Excess Liability and Commercial General Liability policy as an Additional Insured.
    - b. Clearly indicate the project name and project number.
    - c. Clearly indicated Certificate Holder(s) as follows and forward originals to:  
City of Orange Beach  
Attn: City Clerk  
P.O. Box 458  
Orange Beach, AL 36561

Fax (251) 981-1442

- Z. Add §11.1.1.8 Insurance Coverages.
- AA. 11.1.1.8.1: Worker's Compensation and Employer's Liability Coverage
- AB. 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 that the Contractor qualifies to pay its own workers' compensation claims.
- AC. Employer's Liability Insurance limits shall be at least:
1. Bodily Injury by Accident -\$1,000,000.00 each accident
  2. Bodily Injury by Disease -\$1,000,000.00 each employee
- AD. 11.1.1.8.2 Commercial General Liability Insurance
1. Commercial General Liability Insurance ("CGL"), written on an ISO Occurrence Form (current edition of ISO CG 00 01 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:
    - a. Coverage Limit
    - b. General Aggregate \$ 2,000,000.00 per Project.
    - c. Products, Completed Operations
    - d. Aggregate \$ 2,000,000.00 per Project
    - e. Personal and Advertising Injury \$1,000,000.00 per Occurrence
    - f. Each Occurrence \$ 1,000,000.00
  2. Additional Requirements for Commercial General Liability Insurance:
    - a. The policy shall name the Owner, City of Orange Beach, Architect and their agents, consultants and employees as additional insureds (the "Indemnitees"), and state that this coverage shall be primary insurance for the additional insureds. Evidence that Contractor's insurance is primary with respect to any coverages available to the Indemnitees shall be provided in the form of an endorsement to the Contractor's CGL policy. Evidence that the Indemnitees have been named as additional insureds shall be provided by endorsements equivalent to ISO CG 2010 or CG 2033 and CG 2037.
    - b. The policy must include separate per project aggregate limits.
- AE. 11.1.1.8.3 Commercial Business Automobile Liability Insurance
1. Commercial Business Automobile Liability Insurance 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 \$1,000,000.00 Combined Single Limits for each occurrence.
  2. The policy shall name the Owner, City of Orange Beach, Architect and their agents, consultants and employees as additional insured's
- AF. 11.1.1.8.4 Commercial Umbrella Liability Insurance
1. Umbrella Liability Insurance shall provide coverage limits excess of the Commercial General Liability, Commercial Business Automobile Liability and the Employers' Liability coverage limits, on a follow-form basis, to satisfy the minimum limits set forth herein.
  2. Minimum Combined Primary Commercial General Liability and Commercial/Excess Umbrella Limits of:
    - a. \$ 1,000,000.00 over primary insurance.
- AG. 11.1.1.8.5 Builder's Risk Insurance
1. The Builder's Risk Policy shall cover the interests of the Owner, Contractor and Subcontractors in the Work. The policy amount shall be equal to 100% of the Contract Sum, plus the value of subsequent Change Orders and cost of materials supplied or

installed by others, comprising total value for the Work at the site on a replacement cost basis without optional deductibles. The policy shall be maintained until final payment has been made as provided in Article 9.10 of the General Conditions or until no person or entity other than the Owner has an insurable interest in the property All deductibles shall be the sole responsibility of the Contractor

AH. 11.1.1.8.6 Subcontractor's Insurance

1. Worker's Compensation and Employer's Liability Insurance. The Contractor shall require each Subcontractor to obtain and maintain statutory Workers' Compensation Insurance and adequate Employer's Liability Insurance covering all employees working on the jobsite.
2. Liability Insurance. The Contractor shall require each Subcontractor to obtain and maintain adequate Commercial General Liability and Automobile Liability Insurance coverages equal to those of the Prime Contractor. Such coverages 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.

AI. Add §11.1.1.8.7 The Contractor shall, at the Contractor's own expense provide insurance coverage for materials stored off the site after written approval of the Owner at the value established in the approval, and also for portions of the Work in transit until such materials are permanently attached to the Work.

1. The insurance required by Section 11.1.1.6.7 is not intended to cover machinery, tools or equipment owned or rented by the Contractor that are utilized in the performance of the Work but not incorporated into the permanent improvements. The Contractor shall, at the Contractor's own expense, provide insurance coverage for owned or rented machinery, tools or equipment, which shall be subject to the provisions of Property Insurance requirements.

AJ. 11.1.1.8.8 Termination of Obligation to Insure

1. Unless otherwise expressly provided in the Contract Documents, the obligation to insure as provided herein shall continue as follows:
2. Products and Completed Operations. The obligation to carry Products and Completed Operations coverages specified for Commercial General Liability shall remain in effect for at least the time period established by applicable state law for bringing actions based on defective construction or design claims.
3. All Other Insurance. The obligation to carry other insurance coverages specified above 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.

AK. Add §11.1.2.1 The Contractor shall furnish bonds covering faithful performance of the Contract and payment of obligations arising thereunder. Bonds may be obtained through the Contractor's usual source and the cost thereof shall be included in the Contract Sum. The amount of each bond shall be equal to (100%) of the Contract Sum. Payment and Performance Bond shall be issued by an entity that i) has a Rating of A- or better; ii) is in a "Financial Size Category" of at least VII (\$50 to \$100 million); and iii) has an "Outlook" of either "Positive" or "Stable."

AL. Add §11.1.2.2 The Contractor shall deliver the required bonds to the Owner not later than fourteen (14) days following the date the Agreement is entered into, or if the Work is to be commenced prior thereto in response to a letter of intent, the Contractor shall, prior to the commencement of the Work, submit evidence satisfactory to the Owner that such bonds will be furnished.

- AM. Add §11.1.2.3 The Contractor shall require the attorney-in-fact, who executes the required bonds on behalf of the surety to affix thereto a certified and current copy of the power of attorney.
- AN. Add §12.2.2.4 Prior to the expiration of one year from the date of Substantial Completion (correction period), the Architect and Owner will conduct and the Contractor shall attend a meeting with the Owner to review the facility operations and performance and inspect the construction.
- AO. Add §13.2 E-Verify: The City of Orange Beach, Alabama is defined as a “State-Funded Entity” for purposes of title 31, Chapter 13 of the Code of Alabama 1975 (the “Code”), making this Contract subject to Section 31-13-9 of the Code. Accordingly, as a condition of the award of this Contract, Contractor certifies that:
1. 1. It shall provide documentation establishing that it is enrolled in the E-Verify program, and
  2. 2. During the performance of the Contract, it shall participate in the E-Verify program and shall verify every employee that is required to be verified according to the applicable federal rules and regulations, and
  3. 3. It shall not knowingly employ, hire for employment, or continue to employ an unauthorized alien within the State of Alabama, and
  4. 4. It shall not hire or continue to employ any direct subcontractor if it knows or should have known that the subcontractor has knowingly employed, hired for employment, or continued to employ an unauthorized alien within the State of Alabama, or has not enrolled in the E-Verify program, or is not participating in the E-Verify program and verifying every employee that is required to be verified according to the applicable federal rules and regulations.
- AP. Add: §15.1.6.2.1 Calculation of rain days shall be determined as follows:
1. Obtain precipitation data from the National Oceanic and Atmospheric Administration (N.O.A.A.) for Orange Beach, Alabama.
  2. A rain day is considered to be any day with a measured precipitation of more than 0.1 inch.
  3. Determine the average number of days per month with a measured precipitation of more than 0.1 inch for the five-year period preceding the start of the project in question.
  4. Compare the number of rain days during each month of the project contact time period to the monthly five-year average. The Contractor may be granted an extension for rain days during the contract period which exceeded the five year average. The number of days granted will vary for different types of projects, depending upon the amount of inside or outside work. Refer to the following table for various time extensions pertinent to typical project types. No time will be deducted from the contract period for months when rain days are less than the five-year average.

CLASS	TYPE OF PROJECT	NUMBE OF RAIN DAYS GRANTED PER EACH RAIN DAY BEYOND THE FIVE YEAR AVERAGE
I	Low slope (1:12 or less) roof replacement on existing building.	2 each
II	Sitework, paving, underground utilities.	3 each
III	New building, building demolition and steep roof replacement (greater than 1:12.)	1 each.
IV	Renovation of existing building with some outside work.	5 each.
V	Renovation of existing building with no outside work.	0

If time extensions are granted, they shall be included in the next subsequent change order.

Rain Day classification will be Class III unless otherwise modified by Contract Documents.

Reporting of rain days shall be included in each monthly schedule update.

- AQ. Add §15.1.6.2 Claims for increase in the Contract Time shall set forth in detail the circumstances that form the basis for the Claim, the date upon which each cause of delay began to affect the progress of the Work, the date upon which each cause of delay ceased to affect the progress of the Work and the number of days' increase in the Contract Time claimed as a consequence of each such cause of delay. The Contractor shall provide such supporting documentation as the Architect may require including, where appropriate, a revised construction schedule indicating all the activities affected by the circumstances forming the basis of the Claim.
- AR. Add §15.1.6.3 The Contractor shall not be entitled to a separate increase in the Contract Time for each one of the number of causes of delay which may have concurrent or interrelated effects on the progress of the Work, or for concurrent delays due to the fault of the Contractor.
- AS. Add §15.1.6.4 Inclement or adverse weather shall not be a prima facie reason for the granting of an extension of time, and the Contractor shall make every effort to continue work under prevailing conditions. The Owner may grant an extension of time if an unavoidable delay occurs as a result of inclement/severe/adverse weather and such shall then be classified as a "Delay Day". Any and all delay days/rain days granted by the Owner are and shall be non-compensable in any manner or form. The Contractor shall comply with the notice requirements concerning instances of inclement/severe/adverse weather before the Owner shall consider a time extension. Each day of inclement/severe/adverse weather shall be considered a separate instance or event and as such, shall be subject to the notice requirement of Section 15.1.2.
- AT. Add the following at the beginning of the first sentence in Paragraph 15.3.1:  
15.3.1 With the mutual agreement of the parties to the claim or dispute,
- AU. Delete Article 15.4 - Arbitration 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 SECTION**

**SECTION 00 7320.02**

**APPLICATION FOR SALES AND USE TAX CERTIFICATE OF EXEMPTION**

**APPLICATION FOR SALES AND USE TAX CERTIFICATE OF EXEMPTION: THE ALABAMA DEPARTMENT OF REVENUE DOCUMENT APPLICATION FOR SALES AND USE TAX CERTIFICATE OF EXEMPTION, FORM ST EXG-01, DATED 8/16 IS BOUND INTO THIS PROJECT MANUAL FOLLOWING THIS PAGE.**

**END OF SECTION**







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 01 1000**  
**SUMMARY**

**PART 1 GENERAL**

**1.01 PROJECT**

- A. Project Name: Orange Beach Recreation Complex New Adult Fitness Center, City of Orange Beach, Orange Beach, Alabama.
- B. Owner's Name: City of Orange Beach, Alabama.  
4099 Orange Beach Blvd. Telephone: 251 981-6979  
Orange Beach, Alabama 36561.  
Ken Grimes, Jr., City Administrator.  
Web Site: [www.orangebeachal.gov](http://www.orangebeachal.gov).  
Owner's Representative: Ken Grimes, Jr., City Administrator.  
Telephone: 251-981-6806.  
E-Mail: [kgrimes@orangebeachal.gov](mailto:kgrimes@orangebeachal.gov) / [reberly@orangebeachal.gov](mailto:reberly@orangebeachal.gov).
- C. Architect's Name: Davis Architects Inc.  
Architect's Address: 120 23rd Street South, Birmingham, Alabama 35233.  
Telephone: 205-322-7482.
- D. Additional Project contact information is specified in Section - 00 0103 - Project Directory.
- E. The Project consists of the construction of a new adult fitness center and related site development to the Orange Beach Recreation Complex. Construction will include a single storey 17500 square foot building..

**1.02 CONTRACT DESCRIPTION**

- A. Contract Type: A single prime contract based on a Stipulated Price as described in Document 00 5000 - Contracting Forms and Supplements.
- B. Time Allotted for Completion:
  - 1. Based on a Bid Opening of March 26, 2020, it is anticipated that Contract will be awarded no later than April 7, 2020[. Notice to Proceed will be issued on or about April 17, 2020. Mobilization and construction shall begin shortly thereafter.
  - 2. The entire Work shall be Substantially Complete no later than March 6, 2021 by 5:00 PM on that day.
  - 3. See General Conditions and Supplementary Conditions for Liquidated Damage provisions.
- C. Drawings and Specifications: Drawings and Specifications are complementary, divisions and sections are arranged according to materials and functions and are not intended to be "trade" sections. These Specifications establish construction and material standards and techniques and do not necessarily cover all specific items of materials shown on the Drawings.
- D. Inspection of Job Site: Contractor acknowledges that he has visited the job site and examined the conditions for purposes of determining amount of work to be done.
  - 1. The contractor is expected to verify all dimensions and quantities necessary to complete project. The Contractor must contact the Architect to schedule site visit.
  - 2. All questions, clarifications, etc. should be addressed to Davis Architects, Attention Jeff Menasco, Project Manager or at e-mail address [jmenasco@dadot.com](mailto:jmenasco@dadot.com).
- E. Submittals: All submittals shall be addressed to Davis Architects, Inc., 120 Twenty-Third Street South, Birmingham Alabama 35233, Attention Jeff Menasco or at e-mail address [jmenasco@dadot.com](mailto:jmenasco@dadot.com).

**1.03 SALES TAX AGREEMENT**

- A. Owner is a tax-exempt entity and does not pay sales or use tax. See Document 01 2976.13 - Sales and Use Tax Savings Requirements. Obtain Certificate of Exemption from Alabama Department of Revenue (ADOR).

#### **1.04 DESCRIPTION OF ALTERATIONS WORK**

- A. Scope of demolition and removal work is indicated on drawings and specified in Section 02 4100.
- B. Scope of alterations work is indicated on drawings.

#### **1.05 WORK BY OWNER**

- A. Items noted NIC (Not in Contract) will be supplied and installed by Owner after Substantial Completion.

#### **1.06 OWNER OCCUPANCY**

- A. Time is of the essence of the Contract. In the event the Contractor shall, for any reason, fall behind schedule, he shall promptly put double shifts of labor on the Work and/or take such other steps as may be required to expedite the work to ensure that the Work shall be fully completed within the stated time and at no extra cost to the Owner.
- B. See Document 00 7300 - Supplemental General Conditions for Liquidated Damages provisions.
- C. Owner intends to occupy existing facilities surrounding the work area for the entire construction period. Adjacent areas outside construction site will be in use by the public.
- D. Owner intends to occupy the Project upon Substantial Completion.
- E. Cooperate with Owner to minimize conflict and to facilitate Owner's operations.
- F. Schedule the Work to accommodate Owner occupancy.
  - 1. Notify Owner not less than 72 hours in advance of activities that will affect Owner's operations.

#### **1.07 CONTRACTOR USE OF SITE AND PREMISES**

- A. Examination of the Premises:
  - 1. The Contractor acknowledges that he has examined the premises and satisfied himself as to the existing conditions under which he will be obliged to operate in performing his part of the Work and that will in any way affect the Work under this Contract. No allowance will be made subsequently in this connection on behalf of the Contractor for any error or negligence on his part.
  - 2. Contractor acknowledges that he has examined all surfaces on which, or against which, work is to be applied and shall notify the Architect in writing of any defects that he may discover which, in his opinion, would be detrimental to the proper installation or operation of the Work. Commencing of work by Contractor denotes acceptance by Contractor of all conditions affecting the Work.
- B. Construction Operations: Limited to areas noted on Drawings.
  - 1. Locate and conduct construction activities in ways that will limit disturbance to site.
  - 2. On-Site Work Hours: Work shall be generally performed during normal business working hours of 7:00 a.m. to 6:00 p.m., Monday through Friday.
- C. Access and Protection:
  - 1. Access, General: Utilize approved route to and from site as required by Owner.
  - 2. Truck and equipment access: Provide adequate protection for curbs and sidewalks over which trucks and equipment pass to reach the job site. Comply with all regulations and requirements of governmental authorities having jurisdiction.
  - 3. Protection of existing site features to remain: Provide adequate protection for existing site features to remain.
  - 4. Maintain surrounding roads in a clean and safe condition. Clean all mud and debris from public streets and walks.
  - 5. Provide security fence around site of the work.
  - 6. Provide lockable fenced area for storage of materials and equipment.
- D. Alabama 811 - Call before you dig.

1. To utilize AL 811 services and comply with Alabama Law excavators shall call Alabama 811 at least 2 full days beginning next business day, 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: call811.com.
  3. Locate request will be valid for 20 days.
- E. Arrange use of site and premises to allow:
1. Owner occupancy.
  2. Work by Others.
  3. Work by Owner.
  4. Use of site and premises by the public.
- F. Provide access to and from site as required by law and by Owner:
1. Emergency Building Exits During Construction: Keep all exits required by code open during construction period; provide temporary exit signs if exit routes are temporarily altered.
  2. Do not obstruct roadways, sidewalks, or other public ways without permit.
- G. Existing building spaces may not be used for storage.
- H. Utility Outages and Shutdown:
1. Do not disrupt or shut down life safety systems, including but not limited to fire sprinklers and fire alarm system, without 7 days notice to Owner and authorities having jurisdiction.
  2. Existing Utility Interruptions: Do not interrupt utilities serving facilities occupied by Owner or others unless permitted under the following conditions and then only after providing temporary utility services according to requirements indicated:
  3. Notify Architect not less than two days in advance of proposed utility interruptions.
  4. Obtain Owner's written permission before proceeding with utility interruptions.
  5. Prevent accidental disruption of utility services to other facilities.

#### **1.08 DRESS, CONDUCT AND DECORUM**

- A. Shirts and other proper clothing are required on the job.
- B. Clothing, stickers, bumper stickers, license tags and any other device which contains obscene works, symbols or messages which are offensive are expressly prohibited.
- C. Cursing, vulgar, obscene, flirtatious language, gestures manners, etc. will not be tolerated.
- D. It is desired to eliminate unnecessary shouting and any other unnecessary noise which may disturb the activities of the Church or its neighbors.
- E. No smoking shall be allowed within buildings or within 25 feet of a building entrances, operable windows or outside air intakes.
- F. Use and presence of alcoholic beverages, illegal substances, and firearms are not permitted on site.
- G. It is the responsibility of the General Contractor to provide a drug free work place.
- H. The General Contractor will be asked to remove any worker from the site whose behavior is unacceptable.
- I. Each project worker is to remain in the area of his assignment. Areas which are not associated with the construction, renovation or maintenance contracts or agreements are not to be entered without permission.
- J. All Contractor's personnel shall wear hard hats for the duration of the project. Each employee must wear ID badges that bear the company name, employee name and employee photo.

### **1.09 WORK SEQUENCE**

- A. As soon as practicable after grading activities have progressed and areas not to be used for further construction are complete, stabilize and seed banks and cuts and seed flat graded areas to maximize growth of ground cover during continuing construction activities.
- B. Coordinate construction schedule and operations with Architect.

### **1.10 CONSERVATION AND SALVAGE**

- A. Carry out construction operations with the maximum possible consideration given to conservation of energy, water, and materials. Wherever possible, salvage materials and equipment involved in the performance of the Work, but not incorporated therein.

### **1.11 GOVERNING REGULATIONS, AUTHORITIES AND LABOR CONDITIONS**

- A. Contact governing authorities having relation to Contractor's responsibilities for performing the Work for necessary information and decisions having a bearing on the Work of this Contract.
- B. Obtain all necessary permits and approvals from authorities having jurisdiction and pay all necessary permit fees.
  - 1. The City of Homewood will NOT require a building permit fee for this project. NOTE THAT A BUILDING PERMIT MUST BE OBTAINED.
- C. Comply fully with all applicable rules and regulations governing health and safety of employees and the general public, including Occupational Safety and Health Administration regulations and Department of Labor, Bureau of Labor Standards "Safety and Health Regulations for Construction" as may be applicable to this project.
- D. Sediment and drainage control: Comply fully with City requirements for control of runoff water and sediment from the site and construction operations. Maintain sediment barriers at all times until stabilization of the site, including cleaning of all vehicles leaving the site.

### **1.12 SPECIFICATIONS AND DRAWING CONVENTIONS**

- A. Specification Content: The Specifications use certain conventions for the style of language and the intended meaning of certain terms, words, and phrases when used in particular situations. These conventions are as follows:
  - 1. Imperative mood and streamlined language are generally used in the Specifications. The words "shall," "shall be," or "shall comply with," depending on the context, are implied where a colon (:) is used within a sentence or phrase.
  - 2. Specification requirements are to be performed by Contractor unless specifically stated otherwise.
- B. Division 01 General Requirements: Requirements of Sections in Division 01 apply to the Work of all Sections in the Specifications.
- C. Drawing Coordination: Requirements for materials and products identified on Drawings are described in detail in the Specifications. One or more of the following are used on Drawings to identify materials and products:
  - 1. Terminology: Materials and products are identified by the typical generic terms used in the individual Specifications Sections.
  - 2. Abbreviations: Materials and products are identified by abbreviations published as part of the U.S. National CAD Standard and scheduled on Drawing.

### **PART 2 PRODUCTS - NOT USED**

### **PART 3 EXECUTION - NOT USED**

**END OF SECTION**



**SECTION 01 2000**  
**PRICE AND PAYMENT PROCEDURES**

**PART 1 GENERAL**

**1.01 SECTION INCLUDES**

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

**1.02 RELATED REQUIREMENTS**

- A. Section 00 5000 - Contracting Forms and Supplements: Forms to be used.
- B. Section 00 7200 - General Conditions: Additional requirements for progress payments, final payment, changes in the Work.
- C. Section 00 7300 - Supplementary Conditions: Percentage allowances for Contractor's overhead and profit.
- D. Section 01 2100 - Allowances: Payment procedures relating to allowances.

**1.03 SCHEDULE OF VALUES**

- A. Use Schedule of Values Form: AIA G703, edition stipulated in the Agreement.
- B. Electronic media printout including equivalent information will be considered in lieu of standard form specified; submit draft to Architect for approval.
- C. Forms filled out by hand will not be accepted.
- D. Submit Schedule of Values in duplicate within 15 days after date of Owner-Contractor Agreement.
- E. Format: Utilize the Table of Contents of this Project Manual. Identify each line item with number and title of the specification section. Identify site mobilization.
- F. Include separately from each line item, a direct proportional amount of Contractor's overhead and profit.
- G. Revise schedule to list approved Change Orders, with each Application For Payment.

**1.04 APPLICATIONS FOR PROGRESS PAYMENTS**

- A. Payment Period: Submit at intervals stipulated in the Agreement.
- B. Use Form AIA G702 and Form AIA G703, edition stipulated in the Agreement.
- C. Electronic media printout including equivalent information will be considered in lieu of standard form specified; submit sample to Architect for approval.
- D. Forms filled out by hand will not be accepted.
- E. For each item, provide a column for listing each of the following:
  - 1. Item Number.
  - 2. Description of work.
  - 3. Scheduled Values.
  - 4. Previous Applications.
  - 5. Work in Place and Stored Materials under this Application.
  - 6. Authorized Change Orders.
  - 7. Total Completed and Stored to Date of Application.
  - 8. Percentage of Completion.
  - 9. Balance to Finish.
  - 10. Retainage.

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

### **1.05 MODIFICATION PROCEDURES**

- A. Submit name of the individual authorized to receive change documents and who will be responsible for informing others in Contractor's employ or subcontractors of changes to Contract Documents.
- B. For minor changes not involving an adjustment to the Contract Price or Contract Time, Architect will issue instructions directly to Contractor.
- C. For other required changes, Architect will issue a document signed by Owner instructing Contractor to proceed with the change, for subsequent inclusion in a Change Order.
  - 1. The document will describe the required changes and will designate method of determining any change in Contract Price or Contract Time.
  - 2. Promptly execute the change.
- D. For changes for which advance pricing is desired, Architect will issue a document that includes a detailed description of a proposed change with supplementary or revised drawings and specifications, a change in Contract Time for executing the change with a stipulation of any overtime work required and the period of time during which the requested price will be considered valid. Contractor shall prepare and submit a fixed price quotation within \_\_\_\_ days.
- E. Computation of Change in Contract Amount: As specified in the Agreement and Conditions of the Contract.
  - 1. For change requested by Architect for work falling under a fixed price contract, the amount will be based on Contractor's price quotation.
  - 2. For change requested by Contractor, the amount will be based on the Contractor's request for a Change Order as approved by Architect.
  - 3. For change ordered by Architect without a quotation from Contractor, the amount will be determined by Architect based on the Contractor's substantiation of costs as specified for Time and Material work.
- F. Substantiation of Costs: Provide full information required for evaluation.
  - 1. On request, provide the following data:
    - a. Quantities of products, labor, and equipment.
    - b. Taxes, insurance, and bonds.
    - c. Overhead and profit.
    - d. Justification for any change in Contract Time.
    - e. Credit for deletions from Contract, similarly documented.
  - 2. Support each claim for additional costs with additional information:
    - a. Origin and date of claim.
    - b. Dates and times work was performed, and by whom.
    - c. Time records and wage rates paid.

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

**1.06 APPLICATION FOR FINAL PAYMENT**

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

**PART 2 PRODUCTS - NOT USED**

**PART 3 EXECUTION - NOT USED**

**END OF SECTION**

**SECTION 01 2100  
ALLOWANCES**

**PART 1 GENERAL**

**1.01 SECTION INCLUDES**

- A. Cash allowances.
- B. Contingency allowance.
- C. Materials and labor allowance.
- D. Payment and modification procedures relating to allowances.

**1.02 RELATED REQUIREMENTS**

- A. Section 01 2000 - Price and Payment Procedures: Additional payment and modification procedures.

**1.03 CASH ALLOWANCES**

- A. Costs Included in Cash Allowances: Cost of product to Contractor or subcontractor, less applicable trade discounts. Comply with Article 43 of General Conditions.
- B. Contractor's costs for receiving and handling at project site, labor, installation, overhead and profit, and similar costs related to allowance shall be included in Contract Sum and not part of allowance.
  - 1. Contractor overhead and profit is included in Base Bid and will be excluded on Change Orders associated with allowance.
- C. Excess Materials: Return unused materials purchased under an allowance to manufacturer or supplier for credit to Owner, after installation has been completed and accepted.
  - 1. If requested by Architect, retain and prepare unused material for storage by Owner. Deliver unused material to Owner's storage space as directed.
- D. Actual quantities shall be computed by field measurement. Allowance amounts shall be adjusted by actual amounts of work. Adjustments for more work or less work will be made by Change Order, prepared by Architect.
- E. Take all measurements and compute quantities. Measurements and quantities will be verified by Architect.
- F. Provide total of each allowance amount on space provided on Proposal Form.
- G. Include all allowance amounts in Base Bid.
- H. Architect Responsibilities:
  - 1. Consult with Contractor for consideration and selection of products, suppliers, and installers.
  - 2. Select products in consultation with Owner and transmit decision to Contractor.
  - 3. Prepare Change Order.
- I. Contractor Responsibilities:
  - 1. Assist Architect in selection of products, suppliers, and installers.
  - 2. Obtain proposals from suppliers and installers and offer recommendations.
  - 3. On notification of which products have been selected, execute purchase agreement with designated supplier and installer.
  - 4. Arrange for and process shop drawings, product data, and samples. Arrange for delivery.
  - 5. Promptly inspect products upon delivery for completeness, damage, and defects. Submit claims for transportation damage.
- J. Differences in costs will be adjusted by Change Order.

#### **1.04 CONTINGENCY ALLOWANCE**

- A. Contractor's costs for products, delivery, installation, labor, insurance, payroll, taxes, bonding, and equipment rental shall be included in Change Orders authorizing expenditure of funds from this Contingency Allowance.
  - 1. Overhead and profit shall be included in Base Bid.
- B. Funds will be drawn from the Contingency Allowance only by Change Order.
- C. At closeout of Contract, funds remaining in Contingency Allowance will be credited to Owner by Change Order.

#### **1.05 MATERIALS AND LABOR ALLOWANCES**

- A. Allowances to be in accord with provisions of Attachment A to Proposal Form.
- B. Costs Included in Materials and Labor Allowances to be included in Base Bid: Installed cost of product to Contractor, less applicable trade discounts.
- C. Actual costs shall be computed by field measurement. Allowance amounts shall be adjusted by actual amounts of work. Adjustments for more work or less work will be made by Change Order, prepared by Architect.
- D. Take all measurements and compute quantities. Measurements and quantities will be verified by Architect.
- E. Measurement;
  - 1. Measurement by Area: Measured by square dimension using mean length and width or radius.
  - 2. Linear Measurement: Measured by linear dimension, at the item centerline or mean chord.
  - 3. Perform surveys required to determine quantities, including control surveys to establish measurement reference lines. Notify Architect prior to starting work.
  - 4. Contractor's Engineer Responsibilities: Sign surveyor's field notes or keep duplicate field notes, calculate and certify quantities for payment purposes.

#### **1.06 ADJUSTMENT OF ALLOWANCES**

- A. Allowance Adjustment: To adjust allowance amounts, prepare a Change Order proposal based on the difference between purchase amount and the allowance, multiplied by the final measurement of work-in-place where applicable. If applicable, include reasonable allowances for cutting losses, tolerances, mixing wastes, normal product imperfections and similar margins.
  - 1. Include installation costs in purchase amount only where indicated as part of the allowance.
  - 2. If requested, prepare explanation and documentation to substantiate distribution of overhead costs and other margins claimed.
  - 3. Owner reserves the right to establish the quantity of work-in-place by independent quantity survey, measure or count.

#### **1.07 ALLOWANCES SCHEDULE**

- A. Allowance No. One: Contingency Allowance: Include the stipulated sum/price of \$94,000.00 for use upon Owner's instructions.
- B. Allowance No. Two - Section 31 2000 - Earth Moving: Removal and Replacement of Unsuitable Soils: Include in Base Bid quantity allowance including removal of 155 cubic yards of unsuitable soils and replacement with suitable material.
  - 1. Remove unsuitable soil from below the established cut line, properly dispose of removed soils off-site, and replace with off-site material conforming to project specifications and placed and compacted to specified requirements.

Orange Beach Recreational Complex New Adult Fitness Center  
City of Orange Beach  
Orange Beach, Alabama

February 14, 2020  
DAI 3891.02

**PART 2 PRODUCTS - NOT USED**

**PART 3 EXECUTION - NOT USED**

**END OF SECTION**

**SECTION 01 2200**  
**UNIT PRICES**

**PART 1 GENERAL**

**1.01 SECTION INCLUDES**

- A. List of unit prices, for use in preparing Bids.
- B. Measurement and payment criteria applicable to Work performed under a unit price payment method.
- C. Defect assessment and non-payment for rejected work.

**1.02 RELATED REQUIREMENTS**

- A. Document 00 2113 - Instructions to Bidders: Instructions for preparation of pricing for Unit Prices.
- B. Section 01 2000 - Price and Payment Procedures: Additional payment and modification procedures.
- C. Section 01 2100 - Allowances.

**1.03 COSTS INCLUDED**

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

**1.04 UNIT QUANTITIES SPECIFIED**

- A. Quantities indicated in the Bid Form and attachments are for bidding and contract purposes only. Quantities and measurements of actual Work will determine the payment amount.

**1.05 MEASUREMENT OF QUANTITIES**

- A. Measurement methods delineated in the individual specification sections complement the criteria of this section. In the event of conflict, the requirements of the individual specification section govern.
- B. Take all measurements and compute quantities. Measurements and quantities will be verified by Architect.
- C. Assist by providing necessary equipment, workers, and survey personnel as required.
- D. Perform surveys required to determine quantities, including control surveys to establish measurement reference lines. Notify Architect prior to starting work.

**1.06 PAYMENT**

- A. Payment for Work governed by unit prices will be made on the basis of the actual measurements and quantities of Work that is incorporated in or made necessary by the Work and accepted by the Architect, multiplied by the unit price.
- B. Payment will not be made for any of the following:
  - 1. Products wasted or disposed of in a manner that is not acceptable.
  - 2. Products determined as unacceptable before or after placement.
  - 3. Products not completely unloaded from the transporting vehicle.
  - 4. Products placed beyond the lines and levels of the required Work.
  - 5. Products remaining on hand after completion of the Work.
  - 6. Loading, hauling, and disposing of rejected Products.

**1.07 DEFECT ASSESSMENT**

- A. Replace Work, or portions of the Work, not complying with specified requirements.
- B. If, in the opinion of Architect, it is not practical to remove and replace the Work, Architect will direct one of the following remedies:

1. The defective Work may remain, but the unit price will be adjusted to a new unit price at the discretion of Architect.
  2. The defective Work will be partially repaired to the instructions of the Architect, and the unit price will be adjusted to a new unit price at the discretion of Architect.
- C. The individual specification sections may modify these options or may identify a specific formula or percentage price reduction.
- D. The authority of Architect to assess the defect and identify payment adjustment is final.

**1.08 SCHEDULE OF UNIT PRICES**

- A. Unit Price No. One: Removal and Replacement of Unsuitable Soils: Provide unit price per cubic yard for removal, proper disposal and proper replacement of unsuitable soils with approved soils from off-site.

**PART 2 PRODUCTS - NOT USED**

**PART 3 EXECUTION - NOT USED**

**END OF SECTION**



**SECTION 01 2300  
ALTERNATES**

**PART 1 GENERAL**

**1.01 SECTION INCLUDES**

- A. Description of Alternates.

**1.02 RELATED REQUIREMENTS**

- A. Document 00 2113 - Instructions to Bidders: Instructions for preparation of pricing for Alternates.

**1.03 ACCEPTANCE OF ALTERNATES**

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

**1.04 SCHEDULE OF ALTERNATES**

- A. Alternate No. ONE - Acoustical Panels.
  - 1. Base Bid Item: Acoustical Panels will not be required.
  - 2. Alternate Item: Provide acoustical panels in accord with Section 09 8430 Sound-Absorbing Wall and Ceiling Units in custom color. Provide along west wall of Weight Room.
- B. Alternate TWO: Plastic Wall Protection Panels:
  - 1. Base Bid Item: No wall protection panels will be required.
  - 2. Alternate Item: Provide wall protection panels in accord with Section 10 2601 - Wall and Corner Guards. Provide along north, east and west walls of Weight Room. Panel locations, texture, colors and accessories shall be in accord with Drawings and Specifications.

**PART 2 PRODUCTS - NOT USED**

**PART 3 EXECUTION - NOT USED**

**END OF SECTION**

**SECTION 01 2500**  
**SUBSTITUTION PROCEDURES**

**PART 1 - GENERAL**

**1.01 SUMMARY**

- A. Section includes administrative and procedural requirements for substitutions after contract award.
- B. Related Requirements:
  - 1. Instructions to Bidders for substitution requests prior to bidding.
  - 2. Section 016000 "Product Requirements" for requirements for submitting comparable product submittals for products by listed manufacturers.
  - 3. Section 017100 "Sequence of Finish Installation" for requirements for submitting substitutions of finish materials not specified.

**1.02 DEFINITIONS**

- A. Substitutions: Changes in products, materials, equipment, and methods of construction from those required by the Contract Documents and proposed by Contractor.
  - 1. Substitutions for Cause: Changes proposed by Contractor that are required due to changed Project conditions, such as unavailability of product, regulatory changes, or unavailability of required warranty terms.
  - 2. Substitutions for Convenience: Changes proposed by Contractor or Owner that are not required in order to meet other Project requirements but may offer advantage to Contractor or Owner.
  - 3. Approval of an unnamed manufacturer offering products equal to the specified products is not considered a substitution.

**1.03 ACTION SUBMITTALS**

- A. Substitution Requests: Submit three copies of each request for consideration. Identify product or fabrication or installation method to be replaced. Include Specification Section number and title and Drawing numbers and titles.
- B. Product substitutions will only be considered in the event of the following:
  - 1. Specified product is no longer available
  - 2. The specified product is not appropriate for use, in the opinion of the Contractor.
    - a. Upon evaluation, the Architect will determine whether a product substitution is required.
  - 3. Substitution Request Form: Use CSI Form 13.1A (after contract execution) or other form approved by Project Manager or Architect.
  - 4. Documentation: Show compliance with requirements for substitutions and the following, as applicable:
    - a. Statement indicating why specified product or fabrication or installation cannot be provided, if applicable.
    - b. Coordination information, including a list of changes or revisions needed to other parts of the Work and to construction performed by Owner and separate contractors that will be necessary to accommodate proposed substitution.
    - c. Detailed comparison of significant qualities of proposed substitution with those of the Work specified. Include annotated copy of applicable Specification Section. Significant qualities may include attributes such as performance, weight, size, durability, visual effect, sustainable design characteristics, warranties, and specific features and requirements indicated. Indicate deviations, if any, from the Work specified.
    - d. Product Data, including drawings and descriptions of products and fabrication and installation procedures.
    - e. Samples, where applicable or requested.
    - f. Certificates and qualification data, where applicable or requested.

- g. List of similar installations for completed projects with project names and addresses and names and addresses of architects and owners.
  - h. Material test reports from a qualified testing agency indicating and interpreting test results for compliance with requirements indicated.
  - i. Research reports evidencing compliance with building code in effect for Project, from ICC-ES.
  - j. Detailed comparison of Contractor's construction schedule using proposed substitution with products specified for the Work, including effect on the overall Contract Time. If specified product or method of construction cannot be provided within the Contract Time, include letter from manufacturer, on manufacturer's letterhead, stating date of receipt of purchase order, lack of availability, or delays in delivery.
  - k. Cost information, including a proposal of change, if any, in the Contract Sum.
  - l. Contractor's certification that proposed substitution complies with requirements in the Contract Documents except as indicated in substitution request, is compatible with related materials, and is appropriate for applications indicated.
  - m. Contractor's waiver of rights to additional payment or time that may subsequently become necessary because of failure of proposed substitution to produce indicated results.
5. Architect's Action: If necessary, Architect will request additional information or documentation for evaluation within seven days of receipt of a request for substitution. Architect will notify Contractor of acceptance or rejection of proposed substitution within 15 days of receipt of request, or seven days of receipt of additional information or documentation, whichever is later.
- a. Forms of Acceptance: Change Order, Construction Change Directive, or Architect's Supplemental Instructions for minor changes in the Work.
  - b. Use product specified if Architect does not issue a decision on use of a proposed substitution within time allocated.

#### **1.04 QUALITY ASSURANCE**

- A. Compatibility of Substitutions: Investigate and document compatibility of proposed substitution with related products and materials. Engage a qualified testing agency to perform compatibility tests recommended by manufacturers.

#### **1.05 PROCEDURES**

- A. Coordination: Revise or adjust affected work as necessary to integrate work of the approved substitutions.

### **PART 2 - PRODUCTS**

#### **2.01 SUBSTITUTIONS**

- A. Substitutions for Cause: Submit requests for substitution immediately on discovery of need for change, but not later than 15 days prior to time required for preparation and review of related submittals.
  - 1. Conditions: Architect will consider Contractor's request for substitution when the following conditions are satisfied:
    - a. Requested substitution is consistent with the Contract Documents and will produce indicated results.
    - b. Requested substitution provides sustainable design characteristics that specified product provided.
    - c. Requested substitution will not adversely affect Contractor's construction schedule.
    - d. Requested substitution has received necessary approvals of authorities having jurisdiction.
    - e. Requested substitution is compatible with other portions of the Work.
    - f. Requested substitution has been coordinated with other portions of the Work.
    - g. Requested substitution provides specified warranty.

- h. If requested substitution involves more than one contractor, requested substitution has been coordinated with other portions of the Work, is uniform and consistent, is compatible with other products, and is acceptable to all contractors involved.

- B. Substitutions for Convenience: Not allowed unless otherwise indicated.

**PART 3 - EXECUTION (NOT USED)**

**END OF SECTION**

**SECTION 01 2600**  
**CONTRACT MODIFICATION PROCEDURES**

**PART 1 - GENERAL**

**1.01 SUMMARY**

- A. Section includes administrative and procedural requirements for handling and processing Contract modifications.

**1.02 MINOR CHANGES IN THE WORK**

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

**1.03 PROPOSAL REQUESTS**

- A. Owner-Initiated Proposal Requests: Architect will issue a detailed description of proposed changes in the Work that may require adjustment to the Contract Sum or the Contract Time. If necessary, the description will include supplemental or revised Drawings and Specifications.
  - 1. Work Change Proposal Requests issued by Architect are not instructions either to stop work in progress or to execute the proposed change.
  - 2. Within time specified in Proposal Request, submit a quotation estimating cost adjustments to the Contract Sum and the Contract Time necessary to execute the change.
    - a. Include a list of quantities of products required or eliminated and unit costs, with total amount of purchases and credits to be made. If requested, furnish survey data to substantiate quantities.
    - b. Indicate applicable taxes, delivery charges, equipment rental, and amounts of trade discounts.
    - c. Include costs of labor and supervision directly attributable to the change.
    - d. Include an updated Contractor's construction schedule that indicates the effect of the change, including, but not limited to, changes in activity duration, start and finish times, and activity relationship.
- B. Contractor-Initiated Work Change Proposals: If latent or changed conditions require modifications to the Contract, Contractor may initiate a claim by submitting a request for a change to Architect.
  - 1. Include a statement outlining reasons for the change and the effect of the change on the Work. Provide a complete description of the proposed change. Indicate the effect of the proposed change on the Contract Sum and the Contract Time.
  - 2. Include a list of quantities of products required or eliminated and unit costs, with total amount of purchases and credits to be made. If requested, furnish survey data to substantiate quantities.
  - 3. Indicate applicable taxes, delivery charges, equipment rental, and amounts of trade discounts.
  - 4. Include costs of labor and supervision directly attributable to the change.
  - 5. Include an updated Contractor's construction schedule that indicates the effect of the change, including, but not limited to, changes in activity duration, start and finish times, and activity relationship.
  - 6. Work Change Proposal Request Form: Use form acceptable to Architect.

**1.04 ADMINISTRATIVE CHANGE ORDERS**

- A. Allowance Adjustment: See Section 012100 "Allowances" for administrative procedures for preparation of Change Order Proposal for adjusting the Contract Sum to reflect actual costs of allowances.
- B. Unit-Price Adjustment: See Section 012200 "Unit Prices" for administrative procedures for preparation of Change Order Proposal for adjusting the Contract Sum to reflect measured scope of unit-price work.

**1.05 CHANGE ORDER PROCEDURES**

- A. On Owner's approval of a Work Changes Proposal Request, Architect will issue a Change Order for signatures of Owner and Contractor on form approved by the Architect.

**1.06 CONSTRUCTION CHANGE DIRECTIVE**

- A. Construction Change Directive: Architect may issue a Construction Change Directive on AIA Document G714/CMA. Construction Change Directive instructs Contractor to proceed with a change in the Work, for subsequent inclusion in a Change Order.
  - 1. Construction Change Directive contains a complete description of change in the Work. It also designates method to be followed to determine change in the Contract Sum or the Contract Time.
- B. Documentation: Maintain detailed records on a time and material basis of work required by the Construction Change Directive.
  - 1. After completion of change, submit an itemized account and supporting data necessary to substantiate cost and time adjustments to the Contract.

**PART 2 - PRODUCTS (NOT USED)**

**PART 3 - EXECUTION (NOT USED)**

**END OF SECTION**

**SECTION 01 2900**  
**PAYMENT PROCEDURES**

**PART 1 - GENERAL**

**1.01 SUMMARY**

- A. Section includes administrative and procedural requirements necessary to prepare and process Applications for Payment.

**1.02 RELATED REQUIREMENTS**

- A. Section 00 5000 - Contracting Forms and Supplements: Forms to be used.
- B. Document 00 5200 - Agreement Form: Contract Sum, retainages, payment period, monetary values of unit prices.
- C. Document 00 7200 - General Conditions and Document 00 7300 - Supplementary Conditions: Additional requirements for progress payments, final payment, changes in the Work.
- D. Document 00 7300 - Supplementary Conditions: Percentage allowances for Contractor's overhead and profit.
- E. Section 01 2600 - Contract Modification Procedures.

**1.03 SCHEDULE OF VALUES**

- A. Coordination: Coordinate preparation of the schedule of values with preparation of Contractor's construction schedule.
  - 1. Coordinate line items in the schedule of values with other required administrative forms
  - 2. and schedules, including the following:
  - 3. Application for Payment forms with continuation sheets.
  - 4. Submit the schedule of values to Architect at earliest possible date but no later than seven days before the date scheduled for submittal of initial Applications for Payment.
- B. Format and Content: Use Project Manual table of contents as a guide to establish line items for the schedule of values. Provide at least one line item for each Specification Section, or as required by the Architect. Provide the following as a minimum:
  - 1. Mobilization.
  - 2. Temporary facilities.
  - 3. Hazardous materials abatement activities.
  - 4. Demolition.
  - 5. Rough grading.
  - 6. Closeout.
- C. Project Identification:
  - 1. Identification: Include the following Project identification on the schedule of values:
    - a. Project name and location.
    - b. Name of Architect.
    - c. Architect's project number.
    - d. Contractor's name and address.
    - e. Date of submittal.
      - 1) Arrange schedule of values consistent with format of AIA Document G703.
      - 2) Provide a breakdown of the Contract Sum in enough detail to facilitate continued evaluation of Applications for Payment and progress reports. Coordinate with Project Manual table of contents. Provide multiple line items for principal subcontract amounts in excess of five percent of the Contract Sum.
      - 3) Round amounts to nearest whole dollar; total shall equal the Contract Sum.
      - 4) Provide a separate line item in the schedule of values for each part of the Work where Applications for Payment may include materials or equipment purchased or fabricated and stored, but not yet installed.

- 5) Provide separate line items in the schedule of values for initial cost of materials, for each subsequent stage of completion, and for total installed value of that part of the Work.
- 6) Allowances: Provide a separate line item in the schedule of values for each allowance.
- 7) Each item in the schedule of values and Applications for Payment shall be complete. Include total cost and proportionate share of general overhead and profit for each item.
  - (a) Temporary facilities and other major cost items that are not direct cost of actual work-in-place may be shown either as separate line items in the schedule of values or distributed as general overhead expense, at Contractor's option.
- 8) Schedule Updating: Update and resubmit the schedule of values before the next Applications for Payment when Change Orders or Construction Change Directives result in a change in the Contract Sum.

#### **1.04 APPLICATIONS FOR PAYMENT**

- A. Each Application for Payment shall be consistent with previous applications and payments as certified by Architect and paid for by Owner.
  1. Initial Application for Payment, Application for Payment at time of Substantial Completion, and final Application for Payment involve additional requirements.
- B. Payment Application Times: The date for each progress payment is indicated in the Agreement between Owner and Contractor. The period of construction work covered by each Application for Payment is the period indicated in the Agreement.
- C. Application for Payment Forms: Use AIA Document G702/CMA and AIA Document G703 as form for Applications for Payment.
- D. Application Preparation: Complete every entry on form. Notarize and execute by a person authorized to sign legal documents on behalf of Contractor. Architect will return incomplete applications without action.
  1. Entries shall match data on the schedule of values and Contractor's construction schedule. Use updated schedules if revisions were made.
  2. Include amounts of Change Orders and Construction Change Directives issued before last day of construction period covered by application.
- E. Transmittal: Submit three signed and notarized original copies of each Application for Payment to Architect by a method ensuring receipt within 24 hours. One copy shall include waivers of lien and similar attachments if required.
  1. Transmit each copy with a transmittal form listing attachments and recording appropriate information about application.
- F. Waivers of Mechanic's Lien: With each Application for Payment, submit waivers of mechanic's lien from entities lawfully entitled to file a mechanic's lien arising out of the Contract and related to the Work covered by the payment.
  1. Submit partial waivers on each item for amount requested in previous application, after deduction for retainage, on each item.
  2. When an application shows completion of an item, submit conditional final or full waivers.
  3. Owner reserves the right to designate which entities involved in the Work must submit waivers.
  4. Waiver Forms: Submit executed waivers of lien on forms acceptable to Owner.
- G. Initial Application for Payment: Administrative actions and submittals that must precede or coincide with submittal of first Application for Payment include the following:
  1. Schedule of values.
  2. Contractor's construction schedule.
  3. Schedule of unit prices.
  4. List of Contractor's staff assignments.



5. Copies of authorizations and licenses from authorities having jurisdiction for performance of the Work.
  6. Initial progress report.
  7. Certificates of insurance and insurance policies.
- H. Application for Payment at Substantial Completion: After Architect issues the Certificate of Substantial Completion, submit an Application for Payment showing 100 percent completion for portion of the Work claimed as substantially complete.
1. Include documentation supporting claim that the Work is substantially complete and a statement showing an accounting of changes to the Contract Sum.
- I. Final Payment Application: After completing Project closeout requirements, submit final Application for Payment with releases and supporting documentation not previously submitted and accepted, including, but not limited, to the following:
1. Evidence of completion of Project closeout requirements.
  2. Updated final statement, accounting for final changes to the Contract Sum.
  3. AIA Document G706-1994, "Contractor's Affidavit of Payment of Debts and Claims."
  4. AIA Document G706A-1994, "Contractor's Affidavit of Release of Liens."
  5. AIA Document G707-1994, "Consent of Surety to Final Payment."
  6. Evidence that claims have been settled.

**PART 2 - PRODUCTS (NOT USED)**

**PART 3 - EXECUTION (NOT USED)**

**END OF SECTION**

**SECTION 01 2976.13**  
**SALES AND USE TAX SAVINGS**

**PART 1 - GENERAL**

**1.01 GENERAL DESCRIPTION**

- A. **PURPOSE:** The Owner, Homewood Public Library Board of the City of Homewood, Alabama, is a Tax Exempt Instrumentality of the State of Alabama. The Contractor shall purchase materials for the project tax free under a tax exempt certificate.
- B. **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 required taxes, including sales and use taxes. All sales and use taxes will be indicated on Document 00 4322.13 - Accounting of Sales Tax (Mandatory Attachment to Proposal Form).

**1.02 RELATED REQUIREMENTS**

- A. Section 00 4100 - Proposal Form.
- B. Section 00 4322.13 - Accounting of Sales Tax
- C. Section 00 6276 - Application and Certificate for Payment C-10ST
- D. Section 00 7323 - Allpication for Sales and Use Tax Exemption (ADOR ST: EXC-01).

**1.03 GENERAL PROVISIONS**

- A. **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.
- B. **BID PROPOSALS:** The Contractor shall submit its proposal for Base Bid and proposals for each Alternate Bid, if any, with the exclusion of all required taxes including sales and use taxes. The sales and use tax savings will be indicated on Section 00 4322.13 - Accounting of Sales Tax, which shall be attached to the Proposal Form.
- C. **ADMINISTRATION:**
  - 1. Alabama Department of Revenue (ADOR) will issue certificates of exemption from sales and use tax to governmental entities, contractors and sub-contractors for each tax exempt project. Governmental entity, Contractor and sub-contractor shall apply for Certificates of Exemption using ADOR Form ST:EXC-01 in accord with attached directions. See Section 00 7323.
  - 2. Certificates shall only be issued to contractors licensed by the State Licensing Board for General Contractors or any subcontractor working under the same contract.
  - 3. Items eligible for exemption from sales and use tax are building materials, constuction materials and supplies and other tangible personal property that becomes a part of the structure per the written construction contract.
  - 4. ADOR will handle the administration of certificates of exemption and the accounting of exempt pruchases. 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.
- D. **CONTRACTOR' ADMINISTRATIVE COSTS:**
  - 1. 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 Owner.
- E. **EFFECT OF PAYMENTS:**
  - 1. In preparing monthly requests for payment, the Contractor shall determine the value of stored materials in accordance with the procedures and the 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 the completed work plus the value of stored materials.

F. SUBCONTRACTORS AND SUPPLIERS:

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

G. FAILURE TO ADMINISTER:

1. 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 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.

H. DISCOUNTS:

1. 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 the Owner.

I. RESPONSIBILITY FOR MATERIALS:

1. 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.

J. WARRANTIES:

1. 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 Owner of the condition prior to purchasing the item so that the Owner may evaluate its option to waive these procedures for that purchase. If materials purchased pursuant to this Section fail to meet the requirements of the plans and specifications, the Contractor, as agent of the Owner or its assigns, will be responsible to enforce and pursue, at Contractor's cost and expense, including attorneys fees, all warranty actions against vendors or others responsible for the furnishing of such defective or non-complying materials to Owner.

**1.04 TAX EXEMPT CERTIFICATE**

- A. Contractor and sub-contractor shall apply for Certificates of Exemption using ADOR Form ST:EXC-01 in accord with attached directions, complying with ADOR requirements and paying all related fees as part of the Base Bid. See Section 00 7323.

**PART 2 PRODUCTS - NOT USED**

**PART 3 EXECUTION - NOT USED**

**END OF SECTION**

**SECTION 01 3000**  
**ADMINISTRATIVE REQUIREMENTS**

**PART 1 GENERAL**

**1.01 SECTION INCLUDES**

- A. Preconstruction meeting.
- B. Site mobilization meeting.
- C. Progress meetings.
- D. Coordination drawings.
- E. Submittals for review, information, and project closeout.
- F. Number of copies of submittals.
- G. Submittal procedures.

**1.02 RELATED REQUIREMENTS**

- A. Section 00 7200 - General Conditions: Dates for applications for payment.
- B. Section 01 3216 - Construction Progress Schedule: Form, content, and administration of schedules.
- C. Section 01 7000 - Execution and Closeout Requirements: Additional coordination requirements.
- D. Section 01 7800 - Closeout Submittals: Project record documents.

**1.03 REFERENCE STANDARDS**

- A. AIA G810 - Transmittal Letter; 2001.

**PART 2 PRODUCTS - NOT USED**

**PART 3 EXECUTION**

**3.01 PRECONSTRUCTION MEETING**

- A. Architect will schedule a meeting after Notice of Award.
- B. Attendance Required:
  - 1. Owner.
  - 2. Architect.
  - 3. Contractor.
  - 4. Geotechnical engineer.
  - 5. Special inspections personnel.
  - 6. Key subcontractors.
- C. Agenda:
  - 1. Submission of executed bonds and insurance certificates.
  - 2. Distribution of Contract Documents.
  - 3. Submission of list of Subcontractors, list of Products, schedule of values, and progress schedule.
  - 4. Designation of personnel representing the parties to Contract, major subcontractors and Architect.
  - 5. Designation of personnel representing the parties to Contract, special inspections personnel and Architect.
    - a. Staff Names: Within 15 days of starting construction operations, submit a list of principal staff assignments, including superintendent and other personnel in attendance at Project site. Identify individuals and their duties and responsibilities; list addresses and telephone numbers, including home and office telephone numbers. Provide names, addresses, and telephone numbers of individuals assigned as standbys in the absence of individuals assigned to Project.

- 1) Post copies of list in Project meeting room, in temporary field office, and by each temporary telephone.
  6. Procedures and processing of field decisions, submittals, substitutions, applications for payments, proposal request, Change Orders, and Contract closeout procedures.
  7. Scheduling and critical work sequencing.
  8. Scheduling activities of special inspections consultants.
  9. Preparation of record documents.
  10. Use of the premises:
    - a. Responsibility for temporary facilities and controls.
    - b. Parking availability.
    - c. Office, work, and storage areas.
    - d. Equipment deliveries and priorities.
  11. First Aid.
  12. Progress Cleaning.
  13. Working Hours.
- D. Record minutes and distribute copies within two days after meeting to participants, with two copies to Architect, Owner, participants, and those affected by decisions made.

### **3.02 SITE MOBILIZATION MEETING**

- A. Architect will schedule meeting at the Project site prior to Contractor occupancy.
- B. Attendance Required:
  1. Contractor.
  2. Owner.
  3. Architect.
  4. Special Consultants.
  5. Contractor's Superintendent.
  6. Major Subcontractors.
- C. Agenda:
  1. Use of premises by Owner and Contractor.
  2. Owner's requirements and occupancy prior to completion.
  3. Construction facilities and controls provided by Owner.
  4. Temporary utilities provided by Owner.
  5. Survey and building layout.
  6. Security and housekeeping procedures.
  7. Schedules.
  8. Application for payment procedures.
  9. Procedures for testing.
  10. Procedures for maintaining record documents.
  11. Requirements for start-up of equipment.
  12. Inspection and acceptance of equipment put into service during construction period.
- D. Record minutes and distribute copies within two days after meeting to participants, with two copies to Architect, Owner, participants, and those affected by decisions made.

### **3.03 PROGRESS MEETINGS**

- A. Make arrangements for meetings, prepare agenda with copies for participants, preside at meetings.
- B. Attendance Required:
  1. Contractor.
  2. Owner.
  3. Architect.
  4. Contractor's Superintendent.
  5. Major Subcontractors.

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

### **3.04 CONSTRUCTION PROGRESS SCHEDULE - SEE SECTION 01 3216**

### **3.05 PROGRESS PHOTOGRAPHS**

- A. Submit photographs with each application for payment, taken not more than 3 days prior to submission of application for payment.
- B. Maintain one set of all photographs at project site for reference; same copies as submitted, identified as such.
- C. Photography Type: Digital; electronic files.
- D. Provide photographs of construction throughout progress of Work produced by an experienced photographer, acceptable to Architect.
- E. In addition to periodic, recurring views, take photographs of each of the following events:
1. Completion of site clearing.
  2. Excavations in progress.
  3. Foundations in progress and upon completion.
  4. Structural framing in progress and upon completion.
  5. Enclosure of building, upon completion.
  6. Final completion, minimum of ten (10) photos.
- F. Views:
1. Provide non-aerial photographs from four cardinal views at each specified time, until Date of Substantial Completion.
  2. Consult with Architect for instructions on views required.
  3. Provide factual presentation.
  4. Provide correct exposure and focus, high resolution and sharpness, maximum depth of field, and minimum distortion.
  5. Point of View Sketch: Provide sketch identifying point of view of each photograph.
- G. Digital Photographs: 24 bit color, minimum resolution of 1024 by 768, in JPG format; provide files unaltered by photo editing software.
1. Delivery Medium: Via email.
  2. File Naming: Include project identification, date and time of view, and view identification.
  3. Point of View Sketch: Include digital copy of point of view sketch with each electronic submittal; include point of view identification in each photo file name.
  4. PDF File: Assemble all photos into printable pages in PDF format, with 2 to 3 photos per page, each photo labeled with file name; one PDF file per submittal.
  5. Hard Copy: Printed hardcopy (grayscale) of PDF file and point of view sketch.

### **3.06 COORDINATION DRAWINGS**

- A. Review drawings prior to submission to Architect.
- B. Prepare Coordination Drawings to ensure maximum utilization of space for efficient installation of different components and where coordination is required for installation of products and materials fabricated by separate entities.
  1. Indicate relationship of components shown on separate Shop Drawings.
  2. Indicate required installation sequences.
  3. Refer to Division 15 Section "Basic Mechanical Materials and Methods" and Division 16 Section "Basic Electrical Materials and Methods" for specific Coordination Drawing requirements for mechanical and electrical installations.
- C. Prior to start of construction, provide coordination shop drawings (one set of mylar or vellums), drawn to a scale not smaller than  $\frac{1}{4}'' = 1'-0''$ , for the entire building. Indicate elevations of all ductwork, piping, fixtures and equipment.
- D. Start drawings as HVAC shop drawings indicating all ductwork, piping, piping equipment, and location of mechanical floor drains, and electrical connections to motors. Draw sections as required to clarify congested situations.
- E. Next, the Plumbing Subcontractor shall add all piping and plumbing to the drawings.
- F. Next, the Fire Protection Subcontractor shall add all sprinkler heads and fire protection piping.
- G. Next, the Electrical Subcontractor shall add all electrical fixtures, conduit and equipment.
- H. Next, the drawings shall be submitted to the General Contractor for final coordination.
- I. Finally, after the General Contractor has approved drawings, they shall be submitted to the Architect for approval.

### **3.07 SUBMITTALS FOR REVIEW**

- A. When the following are specified in individual sections, submit them for review:
  1. Product data.
  2. Shop drawings.
  3. Samples for selection.
  4. Samples for verification.
- B. Submit to Architect for review for the limited purpose of checking for conformance with information given and the design concept expressed in the contract documents.
- C. Samples will be reviewed only for aesthetic, color, or finish selection.
- D. After review, provide copies and distribute in accordance with SUBMITTAL PROCEDURES article below and for record documents purposes described in Section 01 7800 - Closeout Submittals.

### **3.08 SUBMITTALS FOR INFORMATION**

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

### **3.09 SUBMITTALS FOR PROJECT CLOSEOUT**

- A. Submit Correction Punch List for Substantial Completion.

- B. Submit Final Correction Punch List for Substantial Completion.
- C. When the following are specified in individual sections, submit them at project closeout:
  - 1. Project record documents.
  - 2. Operation and maintenance data.
  - 3. Warranties.
  - 4. Other types as indicated.
- D. Submit for Owner's benefit during and after project completion.

### **3.10 NUMBER OF COPIES OF SUBMITTALS**

- A. Electronic Documents: Submit one electronic copy in PDF format; an electronically-marked up file will be returned. Create PDFs at native size and right-side up; illegible files will be rejected.
- B. Documents for Project Closeout: Make one reproduction of submittal originally reviewed. Submit one extra of submittals for information.
- C. Samples: Submit the number specified in individual specification sections; one of which will be retained by Architect.
  - 1. After review, produce duplicates.
  - 2. Retained samples will not be returned to Contractor unless specifically so stated.
- D. Record Documents: Retain 1 approved copy for record documents.

### **3.11 SUBMITTAL PROCEDURES**

- A. Shop Drawing Procedures:
  - 1. Prepare accurate, drawn-to-scale, original shop drawing documentation by interpreting the Contract Documents and coordinating related Work.
  - 2. Generic, non-project specific information submitted as shop drawings do not meet the requirements for shop drawings.
- B. Transmittal Form: AIA G810.
- C. Transmit each submittal with a copy of approved submittal form.
- D. Sequentially number the transmittal form. Revise submittals with original number and a sequential alphabetic suffix.
- E. Identify Project, Contractor, Subcontractor or supplier; pertinent drawing and detail number, and specification section number, as appropriate on each copy.
- F. Apply Contractor's stamp, signed or initialed certifying that review, approval, verification of Products required, field dimensions, adjacent construction Work, and coordination of information is in accordance with the requirements of the Work and Contract Documents.
- G. Deliver submittals to Architect at business address.
- H. Schedule submittals to expedite the Project, and coordinate submission of related items.
- I. For each submittal for review, allow 30 days excluding delivery time to and from the Contractor.
  - 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.
- J. Identify variations from Contract Documents and Product or system limitations that may be detrimental to successful performance of the completed Work.
- K. Provide space for Contractor and Architect review stamps.
- L. When revised for resubmission, identify all changes made since previous submission.
- M. Distribute reviewed submittals as appropriate. Instruct parties to promptly report any inability to comply with requirements.
- N. Submittals not requested will not be recognized or processed.

**END OF SECTION**



**SECTION 01 3100**  
**PROJECT MANAGEMENT AND COORDINATION**

**PART 1 - GENERAL**

**1.01 SUMMARY**

- A. Section includes administrative provisions for coordinating construction operations on Project
- B. including, but not limited to, the following:
  - 1. General coordination procedures.
  - 2. Requests for Information (RFIs).
  - 3. Project meetings.
- C. Each contractor shall participate in coordination requirements. Certain areas of responsibility are assigned to a specific contractor.

**1.02 DEFINITIONS**

- A. RFI: Request from Owner, Construction Manager, Architect, or Contractor seeking information required by or clarifications of the Contract Documents.

**1.03 GENERAL COORDINATION PROCEDURES**

- A. Prepare memoranda for distribution to each party involved, outlining special procedures required for coordination. Include such items as required notices, reports, and list of attendees at meetings.
- B. Administrative Procedures: Coordinate scheduling and timing of required administrative procedures with other construction activities to avoid conflicts and to ensure orderly progress of the Work. Such administrative activities include, but are not limited to, the following:
  - 1. Preparation of Contractor's construction schedule.
  - 2. Preparation of the schedule of values.
  - 3. Installation and removal of temporary facilities and controls.
  - 4. Progress meetings.
  - 5. Project closeout activities.

**1.04 REQUESTS FOR INFORMATION (RFIS)**

- A. General: Immediately on discovery of the need for additional information or interpretation of the Contract Documents, Contractor shall prepare and submit an RFI in the form specified.
- B. Content of the RFI: Include a detailed, legible description of item needing information or interpretation and the following:
  - 1. Project name.
  - 2. Project number.
  - 3. Date.
  - 4. Name of Contractor.
  - 5. Name of Architect.
  - 6. RFI number, numbered sequentially.
  - 7. RFI subject.
  - 8. Drawing number and detail references, as appropriate.
  - 9. Contractor's suggested resolution. If Contractor's solution(s) impacts the Contract Time or the Contract Sum, Contractor shall state impact in the RFI.
  - 10. Contractor's signature.
- C. RFI Forms: Form provided by Architect.
- D. Architect's and Construction Manager's Action: Architect will review each RFI, determine action required, and respond. Allow seven working days for Architect's response for each RFI. RFIs received by Architect or Construction Manager after 1:00 p.m. will be considered as received the following working day.
  - 1. Architect's action may include a request for additional information, in which case Architect's time for response will date from time of receipt of additional information.

2. Architect's action on RFIs that may result in a change to the Contract Time or the Contract Sum may be eligible for Contractor to submit Change Proposal according to Section 012600 "Contract Modification Procedures."
  - a. If Contractor believes the RFI response warrants change in the Contract Time or the Contract Sum, notify Architect in writing within 10 days of receipt of the RFI response.
- E. RFI Log: Prepare, maintain, and submit a tabular log of RFIs organized by the RFI number. Submit log at each project meeting. Include the following:
  1. Project name.
  2. Name and address of Contractor.
  3. Name and address of Architect.
  4. RFI number including RFIs that were dropped and not submitted.
  5. RFI description.
  6. Date the RFI was submitted.
  7. Date Architect's response was received.
- F. On receipt of Architect's action, update the RFI log and immediately distribute the RFI response to affected parties. Review response and notify Architect within seven days if Contractor disagrees with response.
  1. Identification of related Minor Change in the Work, Construction Change Directive, and Proposal Request, as appropriate.
  2. Identification of related Field Order, Work Change Directive, and Proposal Request, as appropriate.

#### **1.05 PROJECT MEETINGS**

- A. General: Architect will schedule and conduct meetings and conferences at Project site unless otherwise indicated.
  1. Attendees: Inform participants and others involved, and individuals whose presence is required, of date and time of each meeting. Notify Owner and Architect of scheduled meeting dates and times.
  2. Minutes: Entity responsible for conducting meeting will record significant discussions and agreements achieved. Distribute the meeting minutes to everyone concerned, including Owner and Architect, within three days of the meeting.
- B. Preconstruction Waste Management Conference: Architect will schedule a preconstruction waste management conference separately from other preconstruction conferences, at a time convenient to Architect and Contractor, but no later than 15 days after execution of the Agreement.
  1. Attendees: Owner, Architect, Contractor and its superintendent; major subcontractors; manufacturers; and other concerned parties shall attend the conference. All participants at the conference shall be familiar with Project and authorized to conclude matters relating to the Work.
  2. Review waste management goals for the Project and waste management plan.
- C. Preconstruction Conference: Architect will schedule and conduct a predemolition conference before starting demolition, at a time convenient to Owner and Architect, but no later than 15 days after execution of the Agreement.
  1. Attendees: Authorized representatives of Owner, Architect, and their consultants; Contractor and its superintendent; major subcontractors; and other concerned parties shall attend the conference. Participants at the conference shall be familiar with Project and authorized to conclude matters relating to the Work.
  2. Agenda: Discuss items of significance that could affect progress, including the following:
    - a. Tentative construction schedule.
    - b. Designation of key personnel and their duties.
    - c. Lines of communications.
    - d. Procedures for processing field decisions and Change Orders.
    - e. Procedures for RFIs.

- f. Procedures for processing Applications for Payment.
  - g. Distribution of the Contract Documents.
  - h. Preparation of record documents.
  - i. Work restrictions.
  - j. Working hours.
  - k. Responsibility for temporary facilities and controls.
  - l. Procedures for disruptions and shutdowns.
  - m. Parking availability.
  - n. Office, work, and storage areas.
  - o. First aid.
  - p. Minutes: Entity responsible for conducting meeting will record and distribute meeting minutes.
  - q. minutes.
- D. Project Closeout Conference: Architect will schedule and conduct a Project closeout conference, at a time convenient to Owner and Architect, but no later than 90 days prior to the scheduled date of Substantial Completion.
- 1. Conduct the conference to review requirements and responsibilities related to Project closeout.
  - 2. Attendees: Authorized representatives of Owner, Architect, and their consultants; Contractor and its superintendent; major subcontractors; and other concerned parties shall attend the meeting. Participants at the meeting shall be familiar with Project and authorized to conclude matters relating to the Work.
  - 3. Agenda: Discuss items of significance that could affect or delay Project closeout, including the following:
    - a. Preparation of record documents.
    - b. Requirements for preparing LEED documentation where applicable.
    - c. Procedures for processing Applications for Payment at Substantial Completion and for final payment.
    - d. Responsibility for removing temporary facilities and controls.
  - 4. Minutes: Entity conducting meeting will record and distribute meeting minutes.

**PART 2 - PRODUCTS (NOT USED)**

**PART 3 - EXECUTION (NOT USED)**

**END OF SECTION**

**SECTION 01 3200**  
**CONSTRUCTION PROGRESS DOCUMENTATION**

**PART 1 - GENERAL**

**1.01 SUMMARY**

- A. Section includes administrative and procedural requirements for documenting the progress of
- B. construction during performance of the Work, including the following:
  - 1. Contractor's construction schedule.
  - 2. Daily construction reports.
  - 3. Site condition reports.

**1.02 INFORMATIONAL SUBMITTALS**

- A. Format for Submittals: Submit required submittals in the following format:
  - 1. Six paper copies.
- B. Contractor's Construction Schedule: Initial schedule, of size required to display entire schedule for entire construction period.
- C. Daily Construction Reports: Submit at weekly intervals.
- D. Site Condition Reports: Submit at time of discovery of differing conditions.

**1.03 COORDINATION**

- A. Coordinate Contractor's construction schedule with the schedule of values, progress reports, payment requests, and other required schedules and reports.

**PART 2 - PRODUCTS**

**2.01 CONTRACTOR'S CONSTRUCTION SCHEDULE, GENERAL**

- A. Time Frame: Extend schedule from date established for the Notice to Proceed to date of final completion.

**2.02 CONTRACTOR'S CONSTRUCTION SCHEDULE (GANTT CHART)**

- A. Gantt-Chart Schedule: Submit a comprehensive, fully developed, horizontal Gantt-chart-type, Contractor's Construction Schedule within 7 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.
  - 1. For construction activities that require two months or longer to complete, indicate an estimated completion percentage in 10 percent increments within time bar.

**2.03 REPORTS**

- A. Daily Construction Reports: Prepare a daily construction report recording the following information concerning events at Project site:
  - 1. List of subcontractors at Project site.
  - 2. List of separate contractors at Project site.
  - 3. Approximate count of personnel at Project site.
  - 4. Equipment at Project site.
  - 5. Accidents.
  - 6. Meetings and significant decisions.
  - 7. Unusual events.
  - 8. Orders and requests of authorities having jurisdiction.
  - 9. Change Orders received and implemented.
  - 10. Construction Change Directives received and implemented.
  - 11. Services connected and disconnected.
- B. Site Condition Reports: Immediately on discovery of a difference between site conditions and the Contract Documents, prepare and submit a detailed report. Submit with a Request for

Information. Include a detailed description of the differing conditions, together with recommendations for changing the Contract Documents.

**PART 3 - EXECUTION**

**3.01 CONTRACTOR'S CONSTRUCTION SCHEDULE**

- A. Distribution: Distribute copies of approved schedule to Architect, Owner, separate contractors, and other parties identified by Contractor with a need-to-know schedule responsibility.

**END OF SECTION**

**SECTION 01 3233**  
**PHOTOGRAPHIC DOCUMENTATION**

**PART 1 - GENERAL**

**1.01 SUMMARY**

- A. Section includes administrative and procedural requirements for the following:
  - 1. Predemolition photographs.
- B. Related Requirements:
  - 1. Section 017700 "Closeout Procedures" for submitting photographic documentation as Project Record Documents at Project closeout.
  - 2. Section 024116 "Structure Demolition" for photographic documentation before building demolition operations commence.

**1.02 INFORMATIONAL SUBMITTALS**

- A. Key Plan: Submit key plan of Project site and building with notation of vantage points marked for location and direction of each photograph.
- B. Digital Photographs: Submit unaltered, original, full-size image files within three days of taking photographs.
  - 1. Digital Camera: Minimum sensor resolution of 8 megapixels.
  - 2. Identification: Provide the following information with each image description in file metadata tag:
    - a. Name of Project.
    - b. Name and contact information for photographer.
    - c. Date photograph was taken.
    - d. Description of vantage point, indicating location, direction (by compass point), and elevation or story of construction.
- C. Photographs: Submit two prints of each photographic view within seven days of taking photographs.
  - 1. Format: 8-by-10-inch smooth-surface matte prints on single-weight, commercial-grade photographic paper; enclosed back to back in clear plastic sleeves that are punched for standard three-ring binder.
  - 2. Identification: On back of each print, provide an applied label or rubber-stamped impression with the following information:
    - a. Name of Project.
    - b. Name of Architect.
    - c. Name of Contractor.
    - d. Date photograph was taken if not date stamped by camera.

**PART 2 - PRODUCTS**

**2.01 PHOTOGRAPHIC MEDIA**

- A. Digital Images: Provide images in JPG format, with minimum size of 8 megapixels.

**PART 3 - EXECUTION**

**3.01 CONSTRUCTION PHOTOGRAPHS**

- A. Photographer: Engage a qualified photographer to take construction photographs.
- B. General: Take photographs using the maximum range of depth of field, and that are in focus, to clearly show the Work. Photographs with blurry or out-of-focus areas will not be accepted.
  - 1. Maintain key plan with each set of construction photographs that identifies each photographic location.
- C. Digital Images: Submit digital images exactly as originally recorded in the digital camera, without alteration, manipulation, editing, or modifications using image-editing software.
  - 1. Date and Time: Include date and time in file name for each image.

- D. Preconstruction Photographs: Before commencement of demolition, take photographs of Project site and surrounding properties, including existing items to remain during construction, from different vantage points, as directed by Architect.
1. Flag construction limits before taking construction photographs.
  2. Take 12 photographs to show existing conditions adjacent to property before starting the Work.
  3. Take 12 photographs of existing buildings either on or adjoining property to accurately record physical conditions at start of construction.
  4. Take additional photographs as required to record settlement or cracking of adjacent structures, pavements, and improvements.

**END OF SECTION**

**SECTION 01 3300**  
**SUBMITTAL PROCEDURES**

**PART 1 - GENERAL**

**1.01 SUMMARY**

- A. Section includes administrative and procedural requirements for submitting Applications for Payment, schedules, and reports.

**1.02 SUBMITTAL ADMINISTRATIVE REQUIREMENTS**

- A. Coordination: Coordinate preparation and processing of submittals with performance of construction activities.

**PART 2 - PRODUCTS**

**2.01 SUBMITTAL PROCEDURES**

- A. General Submittal Procedure Requirements: Prepare and submit submittals required by individual Specification Sections.
  - 1. Informational Submittals: Submit one paper copy of each submittal unless otherwise indicated. Architect will not return copies.
- B. Contractor's Construction Schedule: Comply with requirements specified in Section 013200 - Construction Progress Documentation.
- C. Application for Payment and Schedule of Values: Comply with requirements specified in Section 012900 "Payment Procedures."
- D. Closeout Submittals: Comply with requirements specified in Section 017700 "Closeout Procedures."
- E. Qualification Data: Prepare written information that demonstrates capabilities and experience of firm or person. Include lists of completed projects with project names and addresses, contact information of architects and owners, and other information specified.
- F. Insurance Certificates and Bonds: Prepare written information indicating current status of insurance or bonding coverage. Include name of entity covered by insurance or bond, limits of coverage, amounts of deductibles, if any, and term of the coverage.

**PART 3 - EXECUTION**

**3.01 CONTRACTOR'S REVIEW**

- A. Project Closeout Submittals: See requirements in Section 017700 "Closeout Procedures."

**3.02 ARCHITECT'S AND CONSTRUCTION MANAGER'S ACTION**

- A. Informational Submittals: Architect and Construction Manager will review each submittal and will not return it, or will return it if it does not comply with requirements. Architect and Construction Manager will forward each submittal to appropriate party.
- B. Submittals not required by the Contract Documents may be returned by the Architect without action.

**END OF SECTION**



**SECTION 01 4000**  
**QUALITY REQUIREMENTS**

**PART 1 GENERAL**

**1.01 SECTION INCLUDES**

- A. Submittals.
- B. Quality assurance.
- C. Testing and inspection agencies and services.
- D. Contractor's design-related professional design services.
- E. Control of installation.
- F. Mock-ups.
- G. Special inspections required by code.
- H. Defect Assessment.

**1.02 RELATED REQUIREMENTS**

- A. Document 00 3100 - Available Project Information: Soil investigation data.
- B. Document 00 7200 - General Conditions: Inspections and approvals required by public authorities.
- C. Section 01 3000 - Administrative Requirements: Submittal procedures.
- D. Section 01 4538 - Structural Tests and Special Inspections.
- E. Section 01 6000 - Product Requirements: Requirements for material and product quality.

**1.03 REFERENCE STANDARDS**

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

**1.04 CONTRACTOR'S DESIGN-RELATED PROFESSIONAL DESIGN SERVICES**

- A. Coordination: Contractor's professional design services are subject to requirements of project's Conditions for Construction Contract.
- B. Base design on performance and/or design criteria indicated in individual specification sections.
  - 1. Submit a Request for Interpretation to Architect if the criteria indicated are not sufficient to perform required design services.
- C. Scope of Contractor's Professional Design Services: Provide for the following items of work:
  - 1. Structural Design of Railings: As described in Section 05 5213 - Pipe and Tube Railings.

2. Structural Design: Include physical characteristics, engineering calculations, and resulting dimensional limitations as described in Section 08 4113.16 - Hurricane Resistant Aluminum-Framed Storefronts.
3. Structural Design: Include physical characteristics, engineering calculations, and resulting dimensional limitations as described in Section 08 4313 - Aluminum-Framed Storefronts.
4. Structural Design of Canopy: As described in Section 10 7316.13 - Metal Canopies.
5. Design of Structural Components: Include development of shop drawings, and performing shop and site work, as described in Section 13 3419 - Metal Building Systems.

#### 1.05 SUBMITTALS

- A. See Section 01 3000 - Administrative Requirements, for submittal procedures.
- B. Designer's Qualification Statement: Submit for Architect's knowledge as contract administrator, or for Owner's information.
  1. Include information for each individual professional responsible for producing, or supervising production of, design-related professional services provided by Contractor.
    - a. Full name.
    - b. Professional licensure information.
    - c. Statement addressing extent and depth of experience specifically relevant to design of items assigned to Contractor.
- C. Design Data: Submit for Architect's knowledge as contract administrator for the limited purpose of assessing compliance with information given and the design concept expressed in the Contract Documents, or for Owner's information.
  1. Include a statement or certification attesting that design data complies with criteria indicated, such as building codes, loads, functional, and similar engineering requirements.
  2. Include signature and seal of design professional responsible for allocated design services on calculations and drawings.
- D. Test Reports: After each test/inspection, promptly submit two copies of report to Architect and to Contractor.
  1. Include:
    - a. Date issued.
    - b. Project title and number.
    - c. Name of inspector.
    - d. Date and time of sampling or inspection.
    - e. Identification of product and specifications section.
    - f. Location in the Project.
    - g. Type of test/inspection.
    - h. Date of test/inspection.
    - i. Results of test/inspection.
    - j. Compliance with Contract Documents.
    - k. When requested by Architect, provide interpretation of results.
  2. Test report submittals are for Architect's knowledge as contract administrator for the limited purpose of assessing compliance with information given and the design concept expressed in the Contract Documents, or for Owner's information.
- E. Certificates: When specified in individual specification sections, submit certification by the manufacturer and Contractor or installation/application subcontractor to Architect, in quantities specified for Product Data.
  1. Indicate material or product complies with or exceeds specified requirements. Submit supporting reference data, affidavits, and certifications as appropriate.
  2. Certificates may be recent or previous test results on material or product, but must be acceptable to Architect.
- F. Manufacturer's Instructions: When specified in individual specification sections, submit printed instructions for delivery, storage, assembly, installation, start-up, adjusting, and finishing, for the

Owner's information. Indicate special procedures, perimeter conditions requiring special attention, and special environmental criteria required for application or installation.

- G. Manufacturer's Field Reports: Submit reports for Architect's benefit as contract administrator or for Owner.
  - 1. Submit for information for the limited purpose of assessing compliance with information given and the design concept expressed in the Contract Documents.
- H. Erection Drawings: Submit drawings for Architect's benefit as contract administrator or for Owner.
  - 1. Submit for information for the limited purpose of assessing compliance with information given and the design concept expressed in the Contract Documents.
  - 2. Data indicating inappropriate or unacceptable Work may be subject to action by Architect or Owner.

#### **1.06 QUALITY ASSURANCE**

- A. Testing Agency Qualifications:
  - 1. Prior to start of work, submit agency name, address, and telephone number, and names of full time registered Engineer and responsible officer.
  - 2. Submit copy of report of laboratory facilities inspection made by NIST Construction Materials Reference Laboratory during most recent inspection, with memorandum of remedies of any deficiencies reported by the inspection.
  - 3. Qualification Statement: Provide documentation showing testing laboratory is accredited under IAS AC89.
- B. Designer Qualifications: Where professional engineering design services and design data submittals are specifically required of Contractor by Contract Documents, provide services of a Professional Engineer experienced in design of this type of work and licensed in the State in which the Project is located.

#### **1.07 REFERENCES AND STANDARDS**

- A. For products and workmanship specified by reference to a document or documents not included in the Project Manual, also referred to as reference standards, comply with requirements of the standard, except when more rigid requirements are specified or are required by applicable codes.
- B. Comply with reference standard of date of issue current on date of Contract Documents, except where a specific date is established by applicable code.
- C. Obtain copies of standards where required by product specification sections.
- D. Maintain copy at project site during submittals, planning, and progress of the specific work, until Substantial Completion.
- E. Neither the contractual relationships, duties, or responsibilities of the parties in Contract nor those of Architect shall be altered from Contract Documents by mention or inference otherwise in any reference document.

#### **1.08 TESTING AND INSPECTION AGENCIES AND SERVICES**

- A. Owner will employ and pay for services of an independent testing agency to perform specified testing.
- B. As indicated in individual specification sections, Owner or Contractor shall employ and pay for services of an independent testing agency to perform other specified testing.
- C. Employment of agency in no way relieves Contractor of obligation to perform Work in accordance with requirements of Contract Documents.
- D. Contractor Employed Agency:
  - 1. Testing agency: Comply with requirements of ASTM E329, ASTM E543, ASTM E699, ASTM C1021, ASTM C1077, ASTM C1093, ASTM D3740, and \_\_\_\_\_.
  - 2. Inspection agency: Comply with requirements of ASTM D3740 and ASTM E329.

3. Laboratory Qualifications: Accredited by IAS according to IAS AC89.
  4. Laboratory: Authorized to operate in the State in which the Project is located.
  5. Laboratory Staff: Maintain a full time registered Engineer on staff to review services.
  6. Testing Equipment: Calibrated at reasonable intervals either by NIST or using an NIST established Measurement Assurance Program, under a laboratory measurement quality assurance program.
- E. Inspection and Testing Agency Approval: Inspection and Testing Agency shall be approved in writing by Authority Having Jurisdiction as to compliance with applicable requirements.

## **PART 2 PRODUCTS - NOT USED**

## **PART 3 EXECUTION**

### **3.01 CONTROL OF INSTALLATION**

- A. Monitor quality control over suppliers, manufacturers, products, services, site conditions, and workmanship, to produce work of specified quality.
- B. Comply with specified standards as minimum quality for the work except where more stringent tolerances, codes, or specified requirements indicate higher standards or more precise workmanship.
- C. Have work performed by persons qualified to produce required and specified quality.

### **3.02 TESTING AND INSPECTION**

- A. See individual specification sections for testing required.
- B. Testing Agency Duties:
  1. Test samples of mixes submitted by Contractor.
  2. Provide qualified personnel at site. Cooperate with Architect and Contractor in performance of services.
  3. Perform specified sampling and testing of products in accordance with specified standards.
  4. Ascertain compliance of materials and mixes with requirements of Contract Documents.
  5. Promptly notify Architect and Contractor of observed irregularities or non-compliance of Work or products.
  6. Perform additional tests and inspections required by Architect.
  7. Attend preconstruction meetings and progress meetings.
  8. Submit reports of all tests/inspections specified.
- C. Limits on Testing/Inspection Agency Authority:
  1. Agency may not release, revoke, alter, or enlarge on requirements of Contract Documents.
  2. Agency may not approve or accept any portion of the Work.
  3. Agency may not assume any duties of Contractor.
  4. Agency has no authority to stop the Work.
- D. Contractor Responsibilities:
  1. Deliver to agency at designated location, adequate samples of materials proposed to be used that require testing, along with proposed mix designs.
  2. Cooperate with laboratory personnel, and provide access to the Work and to manufacturers' facilities.
  3. Provide incidental labor and facilities:
    - a. To provide access to Work to be tested/inspected.
    - b. To obtain and handle samples at the site or at source of Products to be tested/inspected.
    - c. To facilitate tests/inspections.
    - d. To provide storage and curing of test samples.
  4. Notify Architect and laboratory 24 hours prior to expected time for operations requiring testing/inspection services.

5. Employ services of an independent qualified testing laboratory and pay for additional samples, tests, and inspections required by Contractor beyond specified requirements.
  6. Arrange with Owner's agency and pay for additional samples, tests, and inspections required by Contractor beyond specified requirements.
- E. Re-testing required because of non-compliance with specified requirements shall be performed by the same agency on instructions by Architect.
- F. Re-testing required because of non-compliance with specified requirements shall be paid for by Contractor.

**3.03 SPECIAL INSPECTIONS - SEE SECTION 01 4538 - STRUCTURAL TESTS AND SPECIAL INSPECTIONS**

**3.04 DEFECT ASSESSMENT**

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

**END OF SECTION**

## SECTION 01 4538

### STRUCTURAL TESTS AND SPECIAL INSPECTIONS

#### PART 1 GENERAL

##### 1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

##### 1.2 SUMMARY

- A. This Section includes administrative and procedural requirements required for compliance with the International Building Code, Chapter 17, Structural Tests and Special Inspections.
- B. Structural testing and special inspections services are required to verify compliance with requirements specified or indicated. These services do not relieve contractor of responsibility for compliance with other construction document requirements.
  - 1. Specific quality-assurance and control requirements for individual construction activities are specified in the Sections that specify those activities. Requirements in those Sections may also cover production of standard products.
  - 2. Specified tests, inspections, and related actions do not limit Contractor's other quality-assurance and control procedures that facilitate compliance with the construction document requirements.
  - 3. Requirements for contractor to provide quality-assurance and control services required by architect, owner, or authorities having jurisdiction are not limited by provisions of this section.
- C. The owner will engage one or more qualified special inspectors and/or testing agencies to conduct structural tests and special inspections specified in this section and related sections and as maybe specified in other divisions of these specifications.
- D. Related Sections include but are not limited to the following:
  - 1. 02 3000 EARTHWORK
  - 2. 03 3000 CAST-IN-PLACE CONCRETE
  - 3. 04 8100 UNIT MASONRY ASSEMBLIES
  - 4. 05 1200 STRUCTURAL STEEL
  - 5. 05 2100 STEEL JOISTS
  - 6. 05 3100 STEEL DECK

### 1.3 DEFINITIONS

- A. Approved Agency: An established and recognized agency regularly engaged in conducting tests or furnishing inspections services, when such agency has been approved by the building official.
- B. Construction Documents: Written, graphic and pictorial documents prepared or assembled for describing the design, location and physical characteristics of the elements of a project necessary for obtaining a building permit. Construction documents include all supplemental instructions, sketches, addenda, and revisions to the drawings and specifications issued by the registered design professional beyond those issued for a building permit.
- C. Shop Drawings/Submittal Data: Written, graphic and pictorial documents prepared and/or assembled by the contractor based on the Construction Documents.
- D. Structural Observation: Visual observation of the structural system by a representative of the registered design professional's office for general conformance to the approved construction documents. Structural observations are not considered part of the structural tests and special inspections and do not replace inspections and testing by the testing agency or special inspector.
- E. Special Inspector: A qualified person who demonstrating competence, to the satisfaction of the code enforcement official and registered design professional in responsible charge, for inspection of the particular type of construction or operation requiring special inspection. The special inspector shall be a licensed professional engineer or engineering intern or a qualified representative from the testing agency.
- F. Special Inspection, Continuous: The full-time observation of work requiring special inspection by an approved special inspector who is present in the area where the work is being performed.
- G. Special Inspection, Periodic: The part-time or intermittent observation of work requiring special inspection by an approved special inspector who is present in the area where the work has been or is being performed and at the completion of the work.
- H. Testing Agency: A qualified materials testing laboratory under the responsible charge of a licensed professional engineer, approved by the code enforcement official and the registered design professional in responsible charge, to measure, examine, test, calibrate, or otherwise determine the characteristics or performance of construction materials and verify confirmation with construction documents.

### 1.4 QUALITY ASSURANCE

- A. Testing Agency Qualifications:
  - 1. Minimum qualifications of inspection and testing agencies and their personnel shall comply with ASTM E329-03 Standard Specification for Agencies in the Testing and/or Inspection of Materials Used in Construction.
  - a. Inspectors and individuals performing tests shall be certified for the work being performed as outlined in the appendix of the ASTM E329. Certification by organizations

other than those listed must be submitted to the building official for consideration before proceeding with work.

2. In addition to these requirements, local jurisdiction may have additional requirements. It is the responsibility of the testing and inspection agencies to meet local requirements and comply with local procedures.

#### 1.5 CONFLICTING REQUIREMENTS, REPORTS, AND TEST RESULTS

- A. General: If compliance with two or more standards is specified and the standards establish different or conflicting requirements for minimum quantities or quality levels, comply with the most stringent requirement. Refer uncertainties and requirements that are different, but apparently equal, to the registered design professional in responsible charge for a decision before proceeding.
- B. Minimum Quantity of Quality Levels: The quantity or quality level shown on specified shall be the minimum provided or performed. The actual installation may comply exactly with the minimum quantity or quality specified, or it may exceed the minimum within reasonable limits. To comply with these requirements, indicated numeric values are minimum or maximum, as appropriate, for the contest of requirements. Refer uncertainties to the registered design professional in responsible charge for a decision before proceeding.
- C. The special inspector's reports and testing agency's results shall have precedence over reports and test results provided by the contractor.
- D. Where a conflict exists between the construction documents and approved shop drawings/submittal data, the construction documents shall govern unless the shop drawings/submittal data are more restrictive. All conflicts shall be brought to the attention of the registered design professional in responsible charge.

#### 1.6 SUBMITALLS BY SPECIAL INSPECTOR AND/OR TESTING AGENCY

- A. Special inspectors shall keep and distribute records of inspections. The special inspector shall furnish inspection reports to the building official, and to the registered design professional in responsible charge, contractor, architect, and owner. Reports shall indicate that work inspected was done in conformance to approved construction documents. Discrepancies shall be brought to the immediate attention of the contractor for correction. If the discrepancies are not corrected, the discrepancies shall be brought to the attention of the building official and to the registered design professional in responsible charge prior to the completion of that phase of the work. A final report documenting required special inspections and correction of any discrepancies noted in the inspections shall be submitted at a point in time agreed upon by the permit applicant and the building official prior to the start of work.
  1. Special inspection reports and test results shall include, but not be limited to, the following:
    - a. Date of inspection
    - b. Description of inspections or tests performed including location (reference grid lines, floors, elevations, etc.)



- c. Statement noting that the work, material, and/or product conforms or does not conform to the construction document requirements.
    - 1) Name and signature of contractor's representative who was notified of work, material, and/or products that do not meet the construction document requirements.
  - d. Name and signature of special inspector and/or testing agency representative performing the work.
- B. Schedule of Non-Compliant Work: Each agent shall maintain a log of work that does not meet the requirements of the construction documents. Include reference to original inspection/test reports and subsequent dates of re-inspection/retesting.
- C. Reports and tests shall be submitted within 1 week of inspection of test. Schedule of Non-Compliant Work shall be updated daily and submitted at monthly intervals.
- D. Final Report of Special Inspections: Submitted by each agent listed in the schedule of Structural Testing and Special Inspections.

## PART 2 PRODUCTS (not used)

## PART 3 EXECUTION

### 3.1 CONTRACTOR'S RESPONSIBILITY

- A. The contractor shall coordinate the inspection and testing services with the progress of the work. The contractor shall provide sufficient notice to allow proper scheduling of all personnel. The contractor shall provide safe access for performing inspection and on site testing.
- B. The contractor shall submit schedules to the owner, registered design professionals and testing and inspecting agencies. Schedules will note milestones and durations of time for materials requiring structural tests and special inspections.
- C. Each contractor responsible for the construction of a seismic-force-resisting system, designated seismic system, or component listed in the quality assurance plan shall submit a written contractor's statement of responsibility to the building official and to the owner prior to the commencement of work in the system or component. The contractor's statement of responsibility shall contain the following:
  - 1. Acknowledgment of awareness of the special requirements contained in the quality assurance plan.
  - 2. Acknowledgment that control will be exercised to obtain conformance with the construction documents approved by the building official.
  - 3. Procedures for exercising control within the contractor's organization, the method and frequency of reporting and the distribution of the reports.

4. Identification and qualifications of the person(s) exercising such control and their position(s) in the organization.
- D. Each contractor responsible for the construction of the main wind-force-resisting system or a wind-resisting component listed in the quality assurance plan shall submit a written statement of responsibility to the building official and the owner prior to the commencement of work on the system or component. The contractor's statement of responsibility shall contain the following:
1. Acknowledgment of awareness of the special requirements contained in the quality assurance plan.
  2. Acknowledgment that control will be exercised to obtain conformance with the construction documents approved by the building official.
  3. Procedures for exercising control within the contractor's organization, the method and frequency of reporting and the distribution of the reports.
  4. Identification and qualifications of the person(s) exercising such control and their position(s) in the organization.
- E. The contractor shall repair and/or replace work that does not meet the requirements of the construction documents.
1. Contractor shall engage an engineer/architect to prepare repair and/or replacement procedures.
  2. Engineer/architect shall be registered in the state in which the project is located. Engineer shall be acceptable to the registered design professional in responsible charge, code enforcement official, and owner.
  3. Procedures shall be submitted for review and acceptance by the registered design professional in responsible charge, code enforcement official, and owner before proceeding with corrective action.
- F. The contractor shall be responsible for costs of:
1. Re-testing and re-inspection of materials, work and/or products that do not meet the requirements of the construction documents and shop drawings/submittal data.
  2. Review of proposed repair and/or replacement procedures by the registered design professional in responsible charge and the inspectors and testing agencies.
  3. Repair or replacement of work that does not meet the requirements of the construction documents.

### 3.2 STRUCTURAL OBSERVATIONS

- A. Structural observations may be made periodically as determined by the registered design professional in responsible charge.

### 3.3 TESTING AND INSPECTION

- A. Testing and inspection shall be in accordance with the attached Schedule of Special Inspections.

- B. Reference related specifications for the minimum level of inspections and testing. Provide additional inspections and testing as necessary to determine compliance with the construction drawings.

PART 4 – SCHEDULES AND FORMS (ATTACHED)

- 4.01 STATEMENT OF SPECIAL INSPECTIONS.
- 4.02 SCHEDULE OF SPECIAL INSPECTIONS.
- 4.03 FINAL REPORT OF SPECIAL INSPECTIONS.

END OF SECTION 014538



# STATEMENT OF SPECIAL INSPECTIONS

Project: Orange Beach New Adult Fitness Center

Project Address: 4849 S. Wilson Street - Orange Beach, Al 36561

Permit Applicant:

Applicant Address:

Owner: City of Orange Beach

Owner Address: PO Box 458 - Orange Beach, Al36561

## Registered Design Professionals (RDP):

Architect: Davis Architects

Geotechnical Engineer: GeoCon Engineering

Structural Engineer: MBA Engineers

Mechanical Engineer: Gulf States Engineering

Electrical Engineer: Gulf States Engineering

This statement of special inspections is submitted as a condition for permit issuance in accordance with Chapter 17 of the International Building Code. It includes a *Schedule of Special Inspections* applicable to the above referenced project as well as the identity of the individuals, agencies, or firms intended to be retained for conducting these inspections.

The Special Inspector(s) shall keep records of all inspections and shall furnish interim inspection reports to the building official and to the registered design professional in responsible charge at a frequency agreed upon by the permit applicant and building official prior to the start of work. Discrepancies shall be brought to the immediate attention of the contractor for correction. If the discrepancies are not corrected, the discrepancies shall be brought to the attention of the building official and the registered design professional in responsible charge prior to completion of that phase of work. A *Final Report of Special Inspections* documenting required special inspections and correction of any discrepancies noted in the inspections shall be submitted by each agent at the completion of that phase of work.

Maximum frequency of interim report submittals shall not be less than once per week.

The Special Inspection program does not relieve the contractor of the responsibility to comply with the Contract Documents. Jobsite safety and means and methods of construction are solely the responsibility of the Contractor.

Owner's Acknowledgement:

Signature

Date

RDP in Responsible Charge

Building Official's Acceptance:

Signature Landon K. Smith, CBO,CFM

Date

Permit No.

Frequency of interim report submittals to building official:

Monthly

Bi-Monthly

Upon Completion

Per Attached Schedule



**Project Name:** Orange Beach Recreation Complex New Adult Fitness Center  
**Project Address:** 4849 S. Wilson Street – Orange Beach, Al 36561

During construction of the referenced project, it is intended that special inspection as outlined in Chapter 17 of the 2018 International Building Code be provided for by the owner. The following areas of work will require special inspection:

MATERIAL / ACTIVITY	FREQUENCY OF INSPECTION	INSPECTOR
<b>A. Inspection of Steel Fabrication Process per 1704.2.5.1</b> (Not required if fabricator is registered and approved per Section 1704.2.5.1)	Periodic	Testing Agent
<b>B. Inspection of Steel per 1705.2 (in accordance with quality assurance inspection requirements of AISC 360 &amp; SDI QA/QC documentation).</b>		
1. Inspection of welding:		
a. Prior to welding:		
1. Welding procedure specifications available	Continuous	Testing Agent
2. Manufacturer certifications for welding consumables available	Continuous	Testing Agent
3. Material identification (type/grade)	Periodic	Testing Agent
4. Welder identification system	Periodic	Testing Agent
5. Fit-up of groove welds (including joint geometry)	Periodic	Testing Agent
6. Configuration and finish of access holes	Periodic	Testing Agent
7. Fit-up of fillet welds	Periodic	Testing Agent
b. During welding:		
1. Use of qualified welders	Periodic	Testing Agent
2. Control and handling of welding consumables	Periodic	Testing Agent
3. No welding over cracked welds	Periodic	Testing Agent
4. Environmental conditions	Periodic	Testing Agent
5. Welding specification procedure followed	Periodic	Testing Agent
6. Welding Techniques	Periodic	Testing Agent
c. After welding:		
1. Welds cleaned	Periodic	Testing Agent
2. Size, length, and location of welds	Continuous	Testing Agent
3. Welds meet visual acceptance criteria	Continuous	Testing Agent
4. Arc strikes	Continuous	Testing Agent
5. K-area	Continuous	Testing Agent
6. Backing removed and weld tabs removed	Continuous	Testing Agent
7. Repair activities	Continuous	Testing Agent
8. Document acceptance or rejection of welded joint or member	Continuous	Testing Agent
2. Inspection of high-strength bolting:		
a. Prior to bolting:		
1. Manufacturer's certifications available	Continuous	Testing Agent
2. Fasteners marked in accordance with ASTM requirements	Periodic	Testing Agent
3. Proper fasteners selected for the joint detail	Periodic	Testing Agent
4. Proper bolting procedure for the joint detail	Periodic	Testing Agent
5. Connecting elements meet applicable requirements	Periodic	Testing Agent



6. Pre-installation verification testing by installation personnel observed and documented for fastener assemblies and methods used	Periodic	Testing Agent
7. Proper storage provided for bolts, nuts, washers, and other fastener components	Periodic	Testing Agent
b. During bolting:		
1. Fastener assemblies placed in all holes and washers (if required) are positioned as required	Periodic	Testing Agent
2. Joint brought to the snug-tight condition prior to the pretensioning operation	Periodic	Testing Agent
3. Fastener component not turned by the wrench prevented from rotating	Periodic	Testing Agent
4. Fasteners are pretensioned in accordance with the RCSC specification progressing systematically from the most rigid point toward the free edges	Periodic	Testing Agent
c. After bolting:		
1. Document acceptance or rejection of bolted connections	Continuous	Testing Agent
3. Cold-formed steel deck:		
a. Prior to deck placement:		
1. Verify compliance of materials (deck and all deck accessories) with construction documents, including profiles, material properties, and base metal thickness	Periodic	Testing Agent
2. Document acceptance or rejection of deck and deck accessories	Periodic	Testing Agent
b. After deck placement:		
1. Verify compliance of deck and all deck accessories installation with construction documents	Periodic	Testing Agent
2. Verify deck materials are represented by the mill certifications that comply with the construction documents	Periodic	Testing Agent
3. Document acceptance or rejection of installation of deck and deck accessories	Periodic	Testing Agent
c. Prior to welding:		
1. Welding procedure specifications (WPS) available	Periodic	Testing Agent
2. Manufacturer certifications for welding consumables available	Periodic	Testing Agent
3. Material identification (type/grade)	Periodic	Testing Agent
4. Check welding equipment	Periodic	Testing Agent
d. During welding:		
1. Use of qualified welders	Periodic	Testing Agent
2. Control and handling of welding consumables	Periodic	Testing Agent
3. Environmental conditions (wind speed, moisture, temperature)	Periodic	Testing Agent
4. WPS followed	Periodic	Testing Agent
e. After welding:		
1. Verify size and location of welds, including support, sidelap, and perimeter welds.	Periodic	Testing Agent
2. Welds meet visual acceptance criteria	Periodic	Testing Agent
3. Verify repair activities	Periodic	Testing Agent
4. Document acceptance or rejection of welds	Periodic	Testing Agent
f. Prior to mechanical fastening:		
1. Manufacturer installation instructions available for mechanical fasteners	Periodic	Testing Agent
2. Proper tools available for fastener installation	Periodic	Testing Agent
3. Proper storage for mechanical fasteners	Periodic	Testing Agent



g. During mechanical fastening:		
1. Fasteners are positioned as required	Periodic	Testing Agent
2. Fasteners are installed in accordance with manufacturer's instructions	Periodic	Testing Agent
h. After mechanical fastening:		
1. Check spacing, type, and installation of support fasteners	Periodic	Testing Agent
2. Check spacing, type, and installation of sidelap fasteners	Periodic	Testing Agent
3. Check spacing, type, and installation of perimeter fasteners	Periodic	Testing Agent
4. Verify repair activities	Periodic	Testing Agent
5. Document acceptance or rejection of mechanical fasteners	Periodic	Testing Agent
4. Installation of open-web steel joists and joist girders per IBC Table 1705.2.3:		
a. End connections – welding or bolted	Periodic	Testing Agent
b. Bridging – horizontal or diagonal:		
1. Standard bridging	Periodic	Testing Agent
2. Bridging that differs from the SJI specifications listed in Section 2207.1	Periodic	Testing Agent
5. Cold-formed steel trusses spanning 60 feet or greater per IBC 1705.2.4:		
a. Temporary installation restraint/bracing and the permanent individual truss member restraint/bracing are installed in accordance with the approved truss submittal package	Periodic	Testing Agent
1. Verify repair activities	Periodic	Testing Agent
2. Document acceptance or rejection of mechanical fasteners	Periodic	Testing Agent

MATERIAL / ACTIVITY	FREQUENCY OF INSPECTION	INSPECTOR
<b>C. Inspection of Concrete per 1705.3</b>		
1. Inspect reinforcement, including prestressing tendons, and verify placement.	Periodic	Testing Agent
2. Reinforcing bar welding:		
a. Verify weldability of reinforcing bars other than ASTM A706.	Periodic	Testing Agent
b. Inspect single-pass fillet welds, maximum 5/16".	Periodic	Testing Agent
c. Inspect all other welds.	Continuous	Testing Agent
3. Inspect anchors cast in concrete.	Periodic	Testing Agent
4. Inspect anchors post-installed in hardened concrete members.		
a. Adhesive anchors installed in horizontally or upwardly inclined orientations to resist sustained tension loads.	Continuous	Testing Agent
b. Mechanical anchors and adhesive anchors not defined in 4.a.	Periodic	Testing Agent
5. Verify use of required design mix.	Periodic	Testing Agent
6. Prior to concrete placement, fabricate specimens for strength tests, perform slump and air content tests, and determine the temperature of the concrete.	Continuous	Testing Agent
7. Inspect concrete and shotcrete placement for proper application techniques.	Continuous	Testing Agent
8. Verify maintenance of specified curing temperature and techniques.	Periodic	Testing Agent
9. Inspect erection of precast concrete members.	Periodic	Testing Agent
10. Verify in-situ concrete strength, prior to stressing of tendons in post-tensioned concrete and prior to removal of shores and forms from beams and structural slabs.	Periodic	Testing Agent
11. Inspect formwork for shape, location, and dimensions of the concrete member being formed.	Periodic	Testing Agent



MATERIAL / ACTIVITY	FREQUENCY OF INSPECTION	INSPECTOR
<b>D. Inspection of Masonry per 1705.4 (Level “2” in accordance with TMS 402 and TMS 602 quality assurance program requirements)</b>		
1. Verify compliance with approved submittals	Periodic	Testing Agent
2. Verification of $f'_m$ and $f'_{aac}$ prior to construction except where specifically exempted by code.	Periodic	Testing Agent
3. Verification of slump flow and visual stability index (VSI) as delivered to the project site in accordance with specification article 1.5 B.1.b.3 for self-consolidating grout.	Continuous	Testing Agent
4. As masonry construction begins, verify that the following are in compliance:		
a. Proportions of site-prepared mortar.	Periodic	Testing Agent
b. Construction of mortar joints.	Periodic	Testing Agent
c. Location of reinforcement, connectors, and prestressing tendons and anchorages.	Periodic	Testing Agent
5. Prior to grouting, verify that the following are in compliance:		
a. Grout space.	Periodic	Testing Agent
b. Placement of reinforcement and connectors and prestressing tendons and anchorages.	Periodic	Testing Agent
c. Proportion of site-prepared grout and prestressing grout for bonded tendons.	Periodic	Testing Agent
d. Construction of mortar joints.	Periodic	Testing Agent
6. Verify during construction:		
a. Materials and procedures with the approved submittals	Periodic	Testing Agent
b. Placement of masonry units and mortar joint construction	Periodic	Testing Agent
c. Size and location of structural elements.	Periodic	Testing Agent
d. Type, size and location of anchors, including other details of anchorage of masonry to structural members, frames, or other construction.	Periodic	Testing Agent
e. Welding of reinforcement.	Continuous	Testing Agent
f. Preparation, construction, and protection of masonry during cold weather (temperature below 40°F) or hot weather (temperature above 90°F).	Periodic	Testing Agent
g. Placement of grout and prestressing grout for bonded tendons is in compliance.	Continuous	Testing Agent
h. Placement of AAC masonry units and construction of thin-bed mortar joints.	Continuous	Testing Agent
7. Observe preparation of grout specimens, mortar specimens, and/or prisms.	Periodic	Testing Agent





<b>MATERIAL / ACTIVITY</b>	<b>FREQUENCY OF INSPECTION</b>	<b>INSPECTOR</b>
<b>E. Inspection of Soil Conditions per 1705.6</b>		
1. Verify materials below shallow foundations are adequate to achieve the design bearing capacity.	Periodic	Testing Agent
2. Verify excavations are extended to proper depth and have reached proper material.	Periodic	Testing Agent
3. Perform classification and testing of compacted fill materials.	Periodic	Testing Agent
4. Verify use of proper materials, densities and lift thicknesses during placement and compaction of compacted fill.	Continuous	Testing Agent
5. Prior to placement of compacted fill, observe subgrade and verify that site has been prepared properly.	Periodic	Testing Agent
<b>F. Inspection for Wind Resistance per 1705.11</b>	-----	Testing Agent

**SECTION 01 5000**  
**TEMPORARY FACILITIES AND CONTROLS**

**PART 1 GENERAL**

**1.01 SECTION INCLUDES**

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

**1.02 REFERENCE STANDARDS**

**1.03 INFORMATIONAL SUBMITTALS**

- A. Site Plan: Show temporary facilities, utility hookups, staging areas, and parking areas for construction personnel.
- B. Erosion- and Sedimentation-Control Plan: Show compliance with requirements of EPA Construction General Permit or authorities having jurisdiction, whichever is more stringent.

**1.04 TEMPORARY UTILITIES**

- A. Provide and pay for all electrical power, lighting, water, heating and cooling, and ventilation required for construction purposes.
- B. Existing facilities may not be used.
- C. New permanent facilities may not be used.
- D. Use trigger-operated nozzles for water hoses, to avoid waste of water.

**1.05 TEMPORARY SANITARY FACILITIES**

- A. Provide and maintain required facilities and enclosures. Provide at time of project mobilization.
- B. Maintain daily in clean and sanitary condition.
- C. At end of construction, return facilities to same or better condition as originally found.

**1.06 BARRIERS**

- A. Provide barriers to prevent unauthorized entry to construction areas, to prevent access to areas that could be hazardous to workers or the public, to allow for owner's use of site and to protect existing facilities and adjacent properties from damage from construction operations and demolition.
- B. Provide barricades and covered walkways required by governing authorities for public rights-of-way and for public access to existing building.
- C. Protect non-owned vehicular traffic, stored materials, site, and structures from damage.

**1.07 FENCING**

- A. Construction: Commercial grade chain link fence.
- B. Provide 6 foot high fence around construction site; equip with vehicular and pedestrian gates with locks.

**1.08 SECURITY**

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

### **1.09 SECURITY AND PROTECTION - FACILITIES INSTALLATION**

- A. Protection of Existing Facilities: Protect existing vegetation, equipment, structures, utilities, and other improvements at Project site and on adjacent properties, except those indicated to be removed or altered. Repair damage to existing facilities.
- B. Environmental Protection: Provide protection, operate temporary facilities, and conduct construction as required to comply with environmental regulations and that minimize possible air, waterway, and subsoil contamination or pollution or other undesirable effects.
  - 1. Comply with work restrictions specified in Section 011000 "Summary."
  - 2. Temporary Erosion and Sedimentation Control: Provide measures to prevent soil erosion and discharge of soil-bearing water runoff and airborne dust to undisturbed areas and to adjacent properties and walkways, according to erosion- and sedimentation-control Drawings.
  - 3. Verify that flows of water redirected from construction areas or generated by construction activity do not enter or cross tree- or plant- protection zones.
  - 4. Inspect, repair, and maintain erosion- and sedimentation-control measures during construction until permanent vegetation has been established.
  - 5. Clean, repair, and restore adjoining properties and roads affected by erosion and
  - 6. sedimentation from Project site during the course of Project.
- C. Stormwater Control: Comply with requirements of authorities having jurisdiction. Provide barriers in and around excavations and subgrade construction to prevent flooding by runoff of stormwater from heavy rains.
- D. Site Enclosure Fence: Contractor shall secure all separate work areas with chain link fencing as follows: Before construction operations begin, furnish and install chain-link site enclosure fence in a manner that will prevent people and animals from easily entering site except by entrance gates.
  - 1. Extent of Fence: As required to enclose entire Project site or portion determined sufficient to accommodate construction operations.
  - 2. Maintain security by limiting number of keys and restricting distribution to authorized personnel. Furnish one set of keys to Owner.
  - 3. Maintain temporary site enclosure fence in place until completion of demolition contract, at which time the fence will become Owner's property for use during the building contract.
    - a. Barricades, Warning Signs, and Lights: Comply with requirements of authorities having jurisdiction for erecting structurally adequate barricades, including warning signs and lighting.
    - b. Temporary Egress: Maintain temporary egress from existing occupied facilities as indicated and as required by authorities having jurisdiction.
- E.

### **1.10 VEHICULAR ACCESS AND PARKING**

- A. Comply with regulations relating to use of streets and sidewalks, access to emergency facilities, and access for emergency vehicles.
- B. Coordinate access and haul routes with governing authorities and Owner.
- C. Provide and maintain access to fire hydrants, free of obstructions.
- D. Provide means of removing mud from vehicle wheels before entering streets.
- E. Provide temporary parking areas to accommodate construction personnel. When site space is not adequate, provide additional off-site parking.

### **1.11 WASTE REMOVAL**

- A. Provide waste removal facilities and services as required to maintain the site in clean and orderly condition.
- B. Provide containers with lids. Remove trash from site at least weekly.

- C. If materials to be recycled or re-used on the project must be stored on-site, provide suitable non-combustible containers; locate containers holding flammable material outside the structure unless otherwise approved by the authorities having jurisdiction.

**1.12 REMOVAL OF UTILITIES, FACILITIES, AND CONTROLS**

- A. Remove temporary utilities, equipment, facilities, materials, prior to Date of Substantial Completion inspection.
- B. Remove underground installations to a minimum depth of 2 feet. Grade site as indicated.
- C. Clean and repair damage caused by installation or use of temporary work.
- D. Restore existing facilities used during construction to original condition.
- E. Restore new permanent facilities used during construction to specified condition.

**PART 2 PRODUCTS - NOT USED**

**PART 3 EXECUTION - NOT USED**

**END OF SECTION**

**SECTION 01 5813**  
**TEMPORARY PROJECT SIGNAGE**

**PART 1 GENERAL**

**1.01 SECTION INCLUDES**

- A. Project identification sign.

**1.02 RELATED REQUIREMENTS**

- A. Section 01 1000 - Summary: Responsibility to provide signs.

**1.03 QUALITY ASSURANCE**

- A. Design sign and structure to withstand 50 miles/hr wind velocity.
- B. Sign Painter: Experienced as a professional sign painter for minimum three years.
- C. Finishes, Painting: Adequate to withstand weathering, fading, and chipping for duration of construction.

**1.04 SUBMITTALS**

- A. See Section 01 3000 - Administrative Requirements for submittal procedures.
- B. Shop Drawing: Show content, layout, lettering, color, foundation, structure, sizes and grades of members.

**PART 2 PRODUCTS**

**2.01 SIGN MATERIALS**

- A. Structure and Framing: New, wood, structurally adequate.
- B. Sign Surfaces: Exterior grade plywood with medium density overlay, minimum 3/4 inch thick, standard large sizes to minimize joints.
- C. Rough Hardware: Galvanized.
- D. Paint and Primers: Exterior quality, two coats; sign background of color as selected.
- E. Lettering: Exterior quality paint, colors as selected.

**2.02 PROJECT IDENTIFICATION SIGN**

- A. One painted sign of construction, design, and content indicated on drawings, location designated.
  - 1. Size: 48 inches high by 72 inches wide. Top of sign set at 6 feet above grade.
- B. Content:
  - 1. Orange Beach City logo.
  - 2. Project Identification.
  - 3. Orange Beach Mayor, City Council and City Administrator - 7 names total.
  - 4. Large color project rendering.
  - 5. Davis Architects logo.
  - 6. McCollough Architecture Logo.
- C. Graphic Design, Colors, Style of Lettering: Designated by Architect. Electronic files will be provided.

**PART 3 EXECUTION**

**3.01 INSTALLATION**

- A. Install project identification sign within 30 days after date fixed by Notice to Proceed.
- B. Erect at designated location.
- C. Erect supports and framing on secure foundation, rigidly braced and framed to resist wind loadings.
- D. Install sign surface plumb and level, with butt joints. Anchor securely.

- E. Paint exposed surfaces of sign, supports, and framing.

**3.02 MAINTENANCE**

- A. Maintain signs and supports clean, repair deterioration and damage.

**3.03 REMOVAL**

- A. Remove signs, framing, supports, and foundations at completion of Project and restore the area.

**END OF SECTION**

**SECTION 01 6000**  
**PRODUCT REQUIREMENTS**

**PART 1 GENERAL**

**1.01 SECTION INCLUDES**

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

**1.02 RELATED REQUIREMENTS**

- A. Section 01 1000 - Summary: Identification of Owner-supplied products.
- B. Section 01 2500 - Substitution Procedures: Substitutions made during procurement and/or construction phases.
- C. Section 01 4000 - Quality Requirements: Product quality monitoring.
- D. Section 01 7419 - Construction Waste Management and Disposal: Waste disposal requirements potentially affecting product selection, packaging and substitutions.

**1.03 REFERENCE STANDARDS**

- A. NEMA MG 1 - Motors and Generators; 2016.
- B. NFPA 70 - National Electrical Code; Most Recent Edition Adopted by Authority Having Jurisdiction, Including All Applicable Amendments and Supplements.

**1.04 SUBMITTALS**

- A. Proposed Products List: Submit list of major products proposed for use, with name of manufacturer, trade name, and model number of each product.
  - 1. Submit within 15 days after date of Agreement.
  - 2. For products specified only by reference standards, list applicable reference standards.
- B. Product Data Submittals: Submit manufacturer's standard published data. Mark each copy to identify applicable products, models, options, and other data. Supplement manufacturers' standard data to provide information specific to this Project.
- C. Shop Drawing Submittals: Prepared specifically for this Project; indicate utility and electrical characteristics, utility connection requirements, and location of utility outlets for service for functional equipment and appliances.
- D. Sample Submittals: Illustrate functional and aesthetic characteristics of the product, with integral parts and attachment devices. Coordinate sample submittals for interfacing work.
  - 1. For selection from standard finishes, submit samples of the full range of the manufacturer's standard colors, textures, and patterns.

**PART 2 PRODUCTS**

**2.01 EXISTING PRODUCTS**

- A. Do not use materials and equipment removed from existing premises unless specifically required or permitted by Contract Documents.
- B. Unforeseen historic items encountered remain the property of the Owner; notify Owner promptly upon discovery; protect, remove, handle, and store as directed by Owner.

- C. Existing materials and equipment indicated to be removed, but not to be re-used, relocated, reinstalled, delivered to the Owner, or otherwise indicated as to remain the property of the Owner, become the property of the Contractor; remove from site.

## **2.02 NEW PRODUCTS**

- A. Provide new products unless specifically required or permitted by Contract Documents.
- B. Use of products having any of the following characteristics is not permitted:
  - 1. Containing lead, cadmium, or asbestos.
- C. Where other criteria are met, Contractor shall give preference to products that:
  - 1. Are extracted, harvested, and/or manufactured closer to the location of the project.
  - 2. Have longer documented life span under normal use.
  - 3. Result in less construction waste. See Section 01 7419
- D. Provide interchangeable components of the same manufacture for components being replaced.
- E. Motors: Refer to Section 22 0513 - Common Motor Requirements for Plumbing Equipment, NEMA MG 1 Type. Specific motor type is specified in individual specification sections.
- F. Motors: Refer to Section 23 0513 - Common Motor Requirements for HVAC Equipment, NEMA MG 1 Type. Specific motor type is specified in individual specification sections.
- G. Wiring Terminations: Provide terminal lugs to match branch circuit conductor quantities, sizes, and materials indicated. Size terminal lugs to NFPA 70, include lugs for terminal box.
- H. Cord and Plug: Provide minimum 6 foot cord and plug including grounding connector for connection to electric wiring system. Cord of longer length is specified in individual specification sections.

## **2.03 PRODUCT OPTIONS**

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

## **2.04 MAINTENANCE MATERIALS**

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

## **PART 3 EXECUTION**

### **3.01 SUBSTITUTION LIMITATIONS - SEE SECTION 01 2500 - SUBSTITUTION PROCEDURES**

- A. Instructions to Bidders specifies time restrictions for submitting requests for substitutions during the bidding period and the documents required. Comply with requirements specified in Section 00 2113.
- B. Submit substitution requests by completing the form in Section 00 5000 - Contracting Forms and Supplements; see this section for additional information and instructions. Use only this form; other forms of submission are unacceptable.

### **3.02 OWNER-SUPPLIED PRODUCTS**

- A. See Section 01 1000 - Summary for identification of Owner-supplied products.
- B. Owner's Responsibilities:
  - 1. Arrange for and deliver Owner reviewed shop drawings, product data, and samples, to Contractor.
  - 2. Arrange and pay for product delivery to site.



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

### **3.03 TRANSPORTATION AND HANDLING**

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

### **3.04 STORAGE AND PROTECTION**

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

- M. Provide equipment and personnel to store products by methods to prevent soiling, disfigurement, or damage.
- N. Arrange storage of products to permit access for inspection. Periodically inspect to verify products are undamaged and are maintained in acceptable condition.

**END OF SECTION**

**SECTION 01 7000**  
**EXECUTION AND CLOSEOUT REQUIREMENTS**

**PART 1 GENERAL**

**1.01 SECTION INCLUDES**

- A. Examination, preparation, and general installation procedures.
- B. Pre-installation meetings.
- C. Surveying for laying out the work.
- D. Cleaning and protection.

**1.02 RELATED REQUIREMENTS**

- A. Section 01 1000 - Summary: Limitations on working in existing building; continued occupancy; work sequence; identification of salvaged and relocated materials.
- B. Section 01 3000 - Administrative Requirements: Submittals procedures; coordination drawings.
- C. Section 01 7329 - Cutting and Patching.
- D. Section 01 7700 - Closeout Procedures: Substantial and Final Completion, Final cleaning.
- E. Section 01 7800 - Closeout Submittals: Project record documents, operation and maintenance data, warranties, and bonds.
- F. Section 02 4100 - Demolition: Demolition of whole structures and parts thereof; site utility demolition.
- G. Section 07 8400 - Firestopping.

**1.03 REFERENCE STANDARDS**

- A. NFPA 241 - Standard for Safeguarding Construction, Alteration, and Demolition Operations; 2013.

**1.04 SUBMITTALS**

- A. See Section 01 3000 - Administrative Requirements, for submittal procedures.
- B. Survey work: Submit name, address, and telephone number of Surveyor before starting survey work.
  - 1. On request, submit documentation verifying accuracy of survey work.
  - 2. Submit a copy of site drawing signed by the Land Surveyor, that the elevations and locations of the work are in conformance with Contract Documents.
  - 3. Submit surveys and survey logs for the project record.
- C. Demolition Plan: Submit demolition plan as specified by OSHA and local authorities.
  - 1. Indicate extent of demolition, removal sequence, bracing and shoring, and location and construction of barricades and fences. Include design drawings and calculations for bracing and shoring.
  - 2. Identify demolition firm and submit qualifications.
  - 3. Include a summary of safety procedures.
- D. Cutting and Patching: Submit written request in advance of cutting or alteration that affects:
  - 1. Structural integrity of any element of Project.
  - 2. Integrity of weather exposed or moisture resistant element.
  - 3. Efficiency, maintenance, or safety of any operational element.
  - 4. Visual qualities of sight exposed elements.
  - 5. Work of Owner or separate Contractor.
  - 6. Include in request:
    - a. Identification of Project.
    - b. Location and description of affected work.
    - c. Necessity for cutting or alteration.
    - d. Description of proposed work and products to be used.

- e. Alternatives to cutting and patching.
- f. Effect on work of Owner or separate Contractor.
- g. Written permission of affected separate Contractor.
- h. Date and time work will be executed.

E. Project Record Documents: Accurately record actual locations of capped and active utilities.

#### **1.05 QUALIFICATIONS**

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

#### **1.06 PROJECT CONDITIONS**

- A. Use of explosives is not permitted.
- B. Grade site to drain. Maintain excavations free of water. Provide, operate, and maintain pumping equipment.
- C. Protect site from puddling or running water. Provide water barriers as required to protect site from soil erosion.
- D. Ventilate enclosed areas to assist cure of materials, to dissipate humidity, and to prevent accumulation of dust, fumes, vapors, or gases.
- E. Dust Control: Execute work by methods to minimize raising dust from construction operations. Provide positive means to prevent air-borne dust from dispersing into atmosphere and over adjacent property.
  - 1. Provide dust-proof enclosures to prevent entry of dust generated outdoors.
  - 2. Provide dust-proof barriers between construction areas and areas continuing to be occupied by Owner.
- F. Erosion and Sediment Control: Plan and execute work by methods to control surface drainage from cuts and fills, from borrow and waste disposal areas. Prevent erosion and sedimentation.
  - 1. Minimize amount of bare soil exposed at one time.
  - 2. Provide temporary measures such as berms, dikes, and drains, to prevent water flow.
  - 3. Construct fill and waste areas by selective placement to avoid erosive surface silts or clays.
  - 4. Periodically inspect earthwork to detect evidence of erosion and sedimentation; promptly apply corrective measures.
- G. Noise Control: Provide methods, means, and facilities to minimize noise produced by construction operations.
  - 1. Outdoors: Limit conduct of especially noisy exterior work to \_\_\_\_\_.
  - 2. Indoors: Limit conduct of especially noisy interior work to \_\_\_\_\_.
- H. Pest and Rodent Control: Provide methods, means, and facilities to prevent pests and insects from damaging the work.
  - 1. Pest Control Service: Monthly treatments.

- I. Pollution Control: Provide methods, means, and facilities to prevent contamination of soil, water, and atmosphere from discharge of noxious, toxic substances, and pollutants produced by construction operations. Comply with federal, state, and local regulations.

### **1.07 COORDINATION**

- A. Coordinate scheduling, submittals, and work of the various sections of the Project Manual to ensure efficient and orderly sequence of installation of interdependent construction elements, with provisions for accommodating items installed later.
- B. Notify affected utility companies and comply with their requirements.
- C. Verify that utility requirements and characteristics of new operating equipment are compatible with building utilities. Coordinate work of various sections having interdependent responsibilities for installing, connecting to, and placing in service, such equipment.
- D. Coordinate space requirements, supports, and installation of mechanical and electrical work that are indicated diagrammatically on drawings. Follow routing indicated for pipes, ducts, and conduit, as closely as practicable; place runs parallel with lines of building. Utilize spaces efficiently to maximize accessibility for other installations, for maintenance, and for repairs.
- E. In finished areas except as otherwise indicated, conceal pipes, ducts, and wiring within the construction. Coordinate locations of fixtures and outlets with finish elements.
- F. Coordinate completion and clean-up of work of separate sections.
- G. After Owner occupancy of premises, coordinate access to site for correction of defective work and work not in accordance with Contract Documents, to minimize disruption of Owner's activities.

## **PART 2 PRODUCTS (NOT USED)**

## **PART 3 EXECUTION**

### **3.01 EXAMINATION**

- A. Verify that existing site conditions and substrate surfaces are acceptable for subsequent work. Start of work means acceptance of existing conditions.
- B. Verify that existing substrate is capable of structural support or attachment of new work being applied or attached.
- C. Examine and verify specific conditions described in individual specification sections.
- D. Take field measurements before confirming product orders or beginning fabrication, to minimize waste due to over-ordering or misfabrication.
- E. Verify that utility services are available, of the correct characteristics, and in the correct locations.
- F. Prior to Cutting: Examine existing conditions prior to commencing work, including elements subject to damage or movement during cutting and patching. After uncovering existing work, assess conditions affecting performance of work. Beginning of cutting or patching means acceptance of existing conditions.

### **3.02 PREPARATION**

- A. Clean substrate surfaces prior to applying next material or substance.
- B. Seal cracks or openings of substrate prior to applying next material or substance.
- C. Apply manufacturer required or recommended substrate primer, sealer, or conditioner prior to applying any new material or substance in contact or bond.

### **3.03 PREINSTALLATION MEETINGS**

- A. When required in individual specification sections, convene a preinstallation meeting at the site prior to commencing work of the section.

- B. Require attendance of parties directly affecting, or affected by, work of the specific section including installer and manufacturer's representatives, fabricator and those having interface with the work.
- C. Notify Architect four days in advance of meeting date.
- D. Prepare agenda and preside at meeting:
  - 1. Review conditions of examination, preparation and installation procedures.
  - 2. Review coordination with related work.
  - 3. Contract Documents.
  - 4. Related Change Orders.
  - 5. Purchases.
  - 6. Deliveries.
  - 7. Submittals.
  - 8. Review of mockups.
  - 9. Possible conflicts.
  - 10. Compatibility problems.
  - 11. Time schedules.
  - 12. Weather limitations.
  - 13. Manufacturer's written recommendations.
  - 14. Warranty requirements.
  - 15. Compatibility of materials.
  - 16. Acceptability of substrates.
  - 17. Temporary facilities and controls.
  - 18. Space and access limitations.
  - 19. Regulations of authorities having jurisdiction.
  - 20. Testing and inspecting requirements.
  - 21. Required performance results.
  - 22. Protection of construction and personnel.
- E. Record minutes and distribute copies within two days after meeting to participants, with two copies to Architect, Owner, participants, and those affected by decisions made.
- F. Do not proceed with installation if the conference cannot be successfully concluded. Initiate whatever actions are necessary to resolve impediments to performance of the Work and reconvene the conference at earliest feasible date.

#### **3.04 LAYING OUT THE WORK**

- A. Verify locations of survey control points prior to starting work.
- B. Promptly notify Architect of any discrepancies discovered.
- C. Contractor shall locate and protect survey control and reference points.
- D. Protect survey control points prior to starting site work; preserve permanent reference points during construction.
- E. Promptly report to Architect the loss or destruction of any reference point or relocation required because of changes in grades or other reasons.
- F. Replace dislocated survey control points based on original survey control. Make no changes without prior written notice to Architect.
- G. Utilize recognized engineering survey practices.
- H. Establish a minimum of two permanent bench marks on site, referenced to established control points. Record locations, with horizontal and vertical data, on project record documents.
- I. Establish elevations, lines and levels. Locate and lay out by instrumentation and similar appropriate means:
  - 1. Site improvements including pavements; stakes for grading, fill and topsoil placement; utility locations, slopes, and invert elevations.

- J. Maintain a complete and accurate log of control and survey work as it progresses.

### **3.05 GENERAL INSTALLATION REQUIREMENTS**

- A. In addition to compliance with regulatory requirements, conduct construction operations in compliance with NFPA 241, including applicable recommendations in Appendix A.

### **3.06 ALTERATIONS**

- A. Drawings showing existing construction and utilities are based on casual field observation and existing record documents only.
1. Verify that construction and utility arrangements are as indicated.
  2. Report discrepancies to Architect before disturbing existing installation.
  3. Beginning of alterations work constitutes acceptance of existing conditions.
- B. Remove existing work as indicated and as required to accomplish new work.
1. Remove items indicated on drawings.
  2. Relocate items indicated on drawings.
- C. Protect existing work to remain.
1. Prevent movement of structure; provide shoring and bracing if necessary.
  2. Perform cutting to accomplish removals neatly and as specified for cutting new work.
  3. Repair adjacent construction and finishes damaged during removal work.
- D. Remove demolition debris and abandoned items from alterations areas and dispose of off-site; do not burn or bury.
1. asbestos containing non-friable resilient floor covering materials should be disposed of in accordance with any applicable state and local regulations.
- E. Comply with all other applicable requirements of this section.

### **3.07 CUTTING AND PATCHING**

- A. Perform whatever cutting and patching is necessary to:
1. Complete the work.
  2. Repair new work damaged by subsequent work.
  3. Remove samples of installed work for testing when requested.
  4. Remove and replace defective and non-conforming work.
- B. Execute work by methods that avoid damage to other work and that will provide appropriate surfaces to receive patching and finishing. In existing work, minimize damage and restore to original condition.
- C. Employ original installer to perform cutting for weather exposed and moisture resistant elements, and sight exposed surfaces.
- D. Cut rigid materials using masonry saw or core drill. Pneumatic tools not allowed without prior approval.
- E. Restore work with new products in accordance with requirements of Contract Documents.
- F. Fit work air tight to pipes, sleeves, ducts, conduit, and other penetrations through surfaces.
- G. At penetrations of fire rated walls, partitions, ceiling, or floor construction, completely seal voids with fire rated material in accordance with Section 07 8400, to full thickness of the penetrated element.
- H. Patching:
1. Finish patched surfaces to match finish that existed prior to patching. On continuous surfaces, refinish to nearest intersection or natural break. For an assembly, refinish entire unit.
  2. Match color, texture, and appearance.
  3. Repair patched surfaces that are damaged, lifted, discolored, or showing other imperfections due to patching work. If defects are due to condition of substrate, repair substrate prior to repairing finish.

**3.08 PROGRESS CLEANING**

- A. Maintain areas free of waste materials, debris, and rubbish. Maintain site in a clean and orderly condition.
- B. Remove debris and rubbish from pipe chases, plenums, attics, crawl spaces, and other closed or remote spaces, prior to enclosing the space.
- C. Broom and vacuum clean interior areas prior to start of surface finishing, and continue cleaning to eliminate dust.
- D. Collect and remove waste materials, debris, and trash/rubbish from site periodically and dispose off-site; do not burn or bury.

**3.09 PROTECTION OF INSTALLED WORK**

- A. Protect installed work from damage by construction operations.
- B. Provide special protection where specified in individual specification sections.
- C. Prohibit traffic from landscaped areas.

**3.10 FINAL CLEANING**

- A. Execute final cleaning prior to final project assessment.
  - 1. Execute in accord with Section 01 7700 - Closeout Procedures.
- B. Clean site; sweep paved areas, rake clean landscaped surfaces.
- C. Remove waste, surplus materials, trash/rubbish, and construction facilities from the site; dispose of in legal manner; do not burn or bury.

**END OF SECTION**



**SECTION 01 7700**  
**CLOSEOUT PROCEDURES**

**PART 1 - GENERAL**

**1.01 SUMMARY**

- A. Section includes administrative and procedural requirements for contract closeout, including, but not limited to, the following:
  - 1. Substantial Completion procedures.
  - 2. Final completion procedures.
  - 3. Final cleaning.
  - 4. Related Requirements:
    - a. Section 013233 "Photographic Documentation" for submitting final completion construction photographic documentation.

**1.02 SUBSTANTIAL COMPLETION PROCEDURES**

- A. Submittals Prior to Substantial Completion: Complete the following a minimum of 10 days prior to requesting inspection for determining date of Substantial Completion. List items below that are incomplete at time of request.
  - 1. Submit closeout submittals specified in other Division 01 Sections, including final completion construction photographic documentation, damage or settlement surveys, property surveys, and similar final record information.
  - 2. Procedures Prior to Substantial Completion: Complete the following a minimum of 10 days prior to requesting inspection for determining date of Substantial Completion. List items below that are incomplete at time of request.
    - a. Advise Owner of pending insurance changeover requirements.
    - b. Terminate and remove temporary facilities from Project site.
    - c. Complete final cleaning requirements.
  - 3. Inspection: Submit a written request for inspection to determine Substantial Completion a minimum of 10 days prior to date the work will be completed and ready for final inspection. On receipt of request, Architect will either proceed with inspection or notify Contractor of unfulfilled requirements. Architect will prepare the Certificate of Substantial Completion after inspection or will notify Contractor of items, either on Contractor's list or additional items identified by Architect, that must be completed or corrected before certificate will be issued.
    - a. Reinspection: Request reinspection when the Work identified in previous inspections as incomplete is completed or corrected.
    - b. Results of completed inspection will form the basis of requirements for final completion.

**1.03 FINAL COMPLETION PROCEDURES**

- A. Preliminary Procedures: Before requesting final inspection for determining final completion, complete the following:
  - 1. Submit a final Application for Payment according to Section 012900 "Payment Procedures."
  - 2. Certified List of Incomplete Items: Submit certified copy of Architect's Substantial Completion inspection list of items to be completed or corrected (punch list), endorsed and dated by Architect. Certified copy of the list shall state that each item has been completed or otherwise resolved for acceptance.
  - 3. Certificate of Insurance: Submit evidence of final, continuing insurance coverage complying with insurance requirements.
  - 4. Inspection: Submit a written request for final inspection to determine acceptance. On receipt of request, Architect will either proceed with inspection or notify Contractor of unfulfilled requirements. Architect will prepare a final Certificate for Payment after inspection or will notify Contractor of construction that must be completed or corrected before certificate will be issued.

**PART 2 - PRODUCTS (NOT USED)**

**PART 3 - EXECUTION**

**3.01 FINAL CLEANING**

- A. General: Perform final cleaning. Conduct cleaning and waste-removal operations to comply with local laws and ordinances and Federal and local environmental and antipollution regulations.
  - 1. 1. Complete the following cleaning operations before requesting inspection for certification of Substantial Completion:
    - a. Clean Project site, yard, and grounds, in areas disturbed by demolition activities, including landscape development areas, of rubbish, waste material, litter, and other foreign substances.
    - b. Sweep paved areas broom clean. Remove petrochemical spills, stains, and other foreign deposits.
    - c. Rake grounds that are neither planted nor paved to a smooth, even-textured surface.
    - d. Remove tools, construction equipment, machinery, and surplus material from Project site.

**END OF SECTION**

**SECTION 01 7800**  
**CLOSEOUT SUBMITTALS**

**PART 1 GENERAL**

**1.01 SECTION INCLUDES**

- A. Project Record Documents.
- B. Operation and Maintenance Data.
- C. Warranties and bonds.

**1.02 RELATED REQUIREMENTS**

- A. Section 00 7200 - General Conditions: Performance bond and labor and material payment bonds, warranty, and correction of work.
- B. Section 01 3000 - Administrative Requirements: Submittals procedures, shop drawings, product data, and samples.
- C. Section 01 7000 - Execution and Closeout Requirements: Contract closeout procedures.
- D. Individual Product Sections: Specific requirements for operation and maintenance data.
- E. Individual Product Sections: Warranties required for specific products or Work.

**1.03 SUBMITTALS**

- A. Project Record Documents: Submit documents to Architect with claim for final Application for Payment.
  - 1. In addition to required hard copy, submit all closeout documents in .pdf format suitable for Owner's archival purposes.
- B. Operation and Maintenance Data:
  - 1. Submit two copies of preliminary draft or proposed formats and outlines of contents before start of Closeout procedures. Architect will review draft and return one copy with comments.
  - 2. For equipment, or component parts of equipment put into service during construction and operated by Owner, submit completed documents within ten days after acceptance.
  - 3. Submit one copy of completed documents 15 days prior to final inspection. This copy will be reviewed and returned after final inspection, with Architect comments. Revise content of all document sets as required prior to final submission.
  - 4. Submit two sets of revised final documents in final form within 10 days after final inspection.
- C. Warranties and Bonds:
  - 1. For equipment or component parts of equipment put into service during construction with Owner's permission, submit documents within 10 days after acceptance.
  - 2. Make other submittals within 10 days after Date of Substantial Completion, prior to final Application for Payment.
  - 3. For items of Work for which acceptance is delayed beyond Date of Substantial Completion, submit within 10 days after acceptance, listing the date of acceptance as the beginning of the warranty period.

**PART 2 PRODUCTS - NOT USED**

**PART 3 EXECUTION**

**3.01 PROJECT RECORD DOCUMENTS (AS-BUILTS)**

- A. Maintain on site one set of the following record documents; record actual revisions to the Work:
  - 1. Drawings.
  - 2. Specifications.
  - 3. Addenda.
  - 4. Change Orders and other modifications to the Contract.

5. Reviewed shop drawings, product data, and samples.
  6. Manufacturer's instruction for assembly, installation, and adjusting.
- B. Ensure entries are complete and accurate, enabling future reference by Owner.
- C. Store record documents separate from documents used for construction.
- D. Record information concurrent with construction progress.
- E. Specifications: Legibly mark and record at each product section description of actual products installed, including the following:
1. Manufacturer's name and product model and number.
  2. Product substitutions or alternates utilized.
  3. Changes made by Addenda and modifications.
- F. Record Drawings and Shop Drawings: Legibly mark each item to record actual construction including:
1. Measured depths of foundations in relation to finish first floor datum.
  2. Measured horizontal and vertical locations of underground utilities and appurtenances, referenced to permanent surface improvements.
  3. Measured locations of internal utilities and appurtenances concealed in construction, referenced to visible and accessible features of the Work.
  4. Field changes of dimension and detail.
  5. Details not on original Contract drawings.
- G. Final Submittal: In addition to hard copy, provide the following:
1. Complete set of record documents in .pdf format for Owner's archival purposes.
  2. Provide Autocad format drawing of site utilities installed, relocated or abandoned for inclusion in Master Campus File.

### **3.02 OPERATION AND MAINTENANCE DATA**

- A. Source Data: For each product or system, list names, addresses and telephone numbers of Subcontractors and suppliers, including local source of supplies and replacement parts.
- B. Product Data: Mark each sheet to clearly identify specific products and component parts, and data applicable to installation. Delete inapplicable information.
- C. Drawings: Supplement product data to illustrate relations of component parts of equipment and systems, to show control and flow diagrams. Do not use Project Record Documents as maintenance drawings.
- D. Typed Text: As required to supplement product data. Provide logical sequence of instructions for each procedure, incorporating manufacturer's instructions.

### **3.03 OPERATION AND MAINTENANCE DATA FOR MATERIALS AND FINISHES**

- A. For Each Product, Applied Material, and Finish:
1. Product data, with catalog number, size, composition, and color and texture designations.
  2. Information for re-ordering custom manufactured products.
- B. Instructions for Care and Maintenance: Manufacturer's recommendations for cleaning agents and methods, precautions against detrimental cleaning agents and methods, and recommended schedule for cleaning and maintenance.
- C. Moisture protection and weather-exposed products: Include product data listing applicable reference standards, chemical composition, and details of installation. Provide recommendations for inspections, maintenance, and repair.
- D. Additional information as specified in individual product specification sections.
- E. Where additional instructions are required, beyond the manufacturer's standard printed instructions, have instructions prepared by personnel experienced in the operation and maintenance of the specific products.

### **3.04 OPERATION AND MAINTENANCE DATA FOR EQUIPMENT AND SYSTEMS**

- A. For Each Item of Equipment and Each System:
  - 1. Description of unit or system, and component parts.
  - 2. Identify function, normal operating characteristics, and limiting conditions.
  - 3. Include performance curves, with engineering data and tests.
  - 4. Complete nomenclature and model number of replaceable parts.
- B. Where additional instructions are required, beyond the manufacturer's standard printed instructions, have instructions prepared by personnel experienced in the operation and maintenance of the specific products.
- C. Panelboard Circuit Directories: Provide electrical service characteristics, controls, and communications; typed.
- D. Include color coded wiring diagrams as installed.
- E. Operating Procedures: Include start-up, break-in, and routine normal operating instructions and sequences. Include regulation, control, stopping, shut-down, and emergency instructions. Include summer, winter, and any special operating instructions.
- F. Maintenance Requirements: Include routine procedures and guide for preventative maintenance and trouble shooting; disassembly, repair, and reassembly instructions; and alignment, adjusting, balancing, and checking instructions.
- G. Provide servicing and lubrication schedule, and list of lubricants required.
- H. Include manufacturer's printed operation and maintenance instructions.
- I. Include sequence of operation by controls manufacturer.
- J. Provide original manufacturer's parts list, illustrations, assembly drawings, and diagrams required for maintenance.
- K. Provide control diagrams by controls manufacturer as installed.
- L. Provide Contractor's coordination drawings, with color coded piping diagrams as installed.
- M. Provide charts of valve tag numbers, with location and function of each valve, keyed to flow and control diagrams.
- N. Provide list of original manufacturer's spare parts, current prices, and recommended quantities to be maintained in storage.
- O. Include test and balancing reports.
- P. Additional Requirements: As specified in individual product specification sections.

### **3.05 ASSEMBLY OF OPERATION AND MAINTENANCE MANUALS**

- A. Assemble operation and maintenance data into durable manuals for Owner's personnel use, with data arranged in the same sequence as, and identified by, the specification sections.
- B. Where systems involve more than one specification section, provide separate tabbed divider for each system.
- C. Prepare instructions and data by personnel experienced in maintenance and operation of described products.
- D. Prepare data in the form of an instructional manual.
- E. Binders: Commercial quality, 8-1/2 by 11 inch three D side ring binders with durable plastic covers; 2 inch maximum ring size. When multiple binders are used, correlate data into related consistent groupings.
- F. Cover: Identify each binder with typed or printed title OPERATION AND MAINTENANCE INSTRUCTIONS; identify title of Project; identify subject matter of contents.
- G. Project Directory: Title and address of Project; names, addresses, and telephone numbers of Architect, Consultants, Contractor and subcontractors, with names of responsible parties.

- H. Tables of Contents: List every item separated by a divider, using the same identification as on the divider tab; where multiple volumes are required, include all volumes Tables of Contents in each volume, with the current volume clearly identified.
- I. Dividers: Provide tabbed dividers for each separate product and system; identify the contents on the divider tab; immediately following the divider tab include a description of product and major component parts of equipment.
- J. Text: Manufacturer's printed data, or typewritten data on 24 pound paper.
- K. Drawings: Provide with reinforced punched binder tab. Bind in with text; fold larger drawings to size of text pages.
- L. Arrange content by systems under section numbers and sequence of Table of Contents of this Project Manual.
- M. Contents: Prepare a Table of Contents for each volume, with each product or system description identified, in three parts as follows:
  - 1. Part 1: Directory, listing names, addresses, and telephone numbers of Architect, Contractor, Subcontractors, and major equipment suppliers.
  - 2. Part 2: Operation and maintenance instructions, arranged by system and subdivided by specification section. For each category, identify names, addresses, and telephone numbers of Subcontractors and suppliers. Identify the following:
    - a. Significant design criteria.
    - b. List of equipment.
    - c. Parts list for each component.
    - d. Operating instructions.
    - e. Maintenance instructions for equipment and systems.
    - f. Maintenance instructions for special finishes, including recommended cleaning methods and materials, and special precautions identifying detrimental agents.
  - 3. Part 3: Project documents and certificates, including the following:
    - a. Shop drawings and product data.
    - b. Air and water balance reports.
    - c. Certificates.
    - d. Photocopies of warranties and bonds.
- N. Provide a listing in Table of Contents for design data, with tabbed dividers and space for insertion of data.
- O. Table of Contents: Provide title of Project; names, addresses, and telephone numbers of Architect, Consultants, and Contractor with name of responsible parties; schedule of products and systems, indexed to content of the volume.

### **3.06 WARRANTIES AND BONDS**

- A. Obtain warranties and bonds, executed in duplicate by responsible Subcontractors, suppliers, and manufacturers, within 10 days after completion of the applicable item of work. Except for items put into use with Owner's permission, leave date of beginning of time of warranty until Date of Substantial completion is determined.
- B. Verify that documents are in proper form, contain full information, and are notarized.
- C. Co-execute submittals when required.
- D. Retain warranties and bonds until time specified for submittal.
- E. Manual: Bind in commercial quality 8-1/2 by 11 inch three D side ring binders with durable plastic covers.
- F. Cover: Identify each binder with typed or printed title WARRANTIES AND BONDS, with title of Project; name, address and telephone number of Contractor and equipment supplier; and name of responsible company principal.

- G. Table of Contents: Neatly typed, in the sequence of the Table of Contents of the Project Manual, with each item identified with the number and title of the specification section in which specified, and the name of product or work item.
- H. Separate each warranty or bond with index tab sheets keyed to the Table of Contents listing. Provide full information, using separate typed sheets as necessary. List Subcontractor, supplier, and manufacturer, with name, address, and telephone number of responsible principal.

**END OF SECTION**

**SECTION 01 7900**  
**DEMONSTRATION AND TRAINING**

**PART 1 GENERAL**

**1.01 SUMMARY**

- A. Demonstration of products and systems where indicated in specific specification sections.
- B. Training of Owner personnel in operation and maintenance is required for:
  - 1. All software-operated systems.
  - 2. HVAC systems and equipment.
  - 3. Plumbing equipment.
  - 4. Electrical systems and equipment.
  - 5. Conveying systems.
  - 6. Landscape irrigation.
  - 7. Items specified in individual product Sections.
- C. Training of Owner personnel in care, cleaning, maintenance, and repair is required for:
  - 1. Roofing, waterproofing, and other weather-exposed or moisture protection products.
  - 2. Finishes, including flooring, wall finishes, ceiling finishes.
  - 3. Fixtures and fittings.
  - 4. Items specified in individual product Sections.

**1.02 RELATED REQUIREMENTS**

- A. Section 01 7800 - Closeout Submittals: Operation and maintenance manuals.
- B. Other Specification Sections: Additional requirements for demonstration and training.

**1.03 SUBMITTALS**

- A. See Section 01 3000 - Administrative Requirements, for submittal procedures.
- B. Training Plan: Owner will designate personnel to be trained; tailor training to needs and skill-level of attendees.
  - 1. Submit to Architect for transmittal to Owner.
  - 2. Submit not less than four weeks prior to start of training.
  - 3. Revise and resubmit until acceptable.
  - 4. Provide an overall schedule showing all training sessions.
  - 5. Include at least the following for each training session:
    - a. Identification, date, time, and duration.
    - b. Description of products and/or systems to be covered.
    - c. Name of firm and person conducting training; include qualifications.
    - d. Intended audience, such as job description.
    - e. Objectives of training and suggested methods of ensuring adequate training.
    - f. Methods to be used, such as classroom lecture, live demonstrations, hands-on, etc.
    - g. Media to be used, such as slides, hand-outs, etc.
    - h. Training equipment required, such as projector, projection screen, etc., to be provided by Contractor.
- C. Training Manuals: Provide training manual for each attendee; allow for minimum of two attendees per training session.
  - 1. Include applicable portion of O&M manuals.
  - 2. Include copies of all hand-outs, slides, overheads, video presentations, etc., that are not included in O&M manuals.
  - 3. Provide one extra copy of each training manual to be included with operation and maintenance data.
- D. Training Reports:
  - 1. Identification of each training session, date, time, and duration.
  - 2. Sign-in sheet showing names and job titles of attendees.



3. List of attendee questions and written answers given, including copies of and references to supporting documentation required for clarification; include answers to questions that could not be answered in original training session.
- E. Video Recordings: Submit digital video recording of each demonstration and training session for Owner's subsequent use.
  1. Format: DVD Disc.
  2. Label each disc and container with session identification and date.

#### **1.04 QUALITY ASSURANCE**

- A. Instructor Qualifications: Familiar with design, operation, maintenance and troubleshooting of the relevant products and systems.
  1. Provide as instructors the most qualified trainer of those contractors and/or installers who actually supplied and installed the systems and equipment.
  2. Where a single person is not familiar with all aspects, provide specialists with necessary qualifications.

### **PART 2 PRODUCTS - NOT USED**

### **PART 3 EXECUTION**

#### **3.01 DEMONSTRATION - GENERAL**

- A. Demonstrations conducted during system start-up do not qualify as demonstrations for the purposes of this section, unless approved in advance by Owner.
- B. Demonstration may be combined with Owner personnel training if applicable.
- C. Operating Equipment and Systems: Demonstrate operation in all modes, including start-up, shut-down, seasonal changeover, emergency conditions, and troubleshooting, and maintenance procedures, including scheduled and preventive maintenance.
  1. Perform demonstrations not less than two weeks prior to Substantial Completion.
  2. For equipment or systems requiring seasonal operation, perform demonstration for other season within six months.
- D. Non-Operating Products: Demonstrate cleaning, scheduled and preventive maintenance, and repair procedures.
  1. Perform demonstrations not less than two weeks prior to Substantial Completion.

#### **3.02 TRAINING - GENERAL**

- A. Conduct training on-site unless otherwise indicated.
- B. Owner will provide classroom and seating at no cost to Contractor.
- C. Provide training in minimum two hour segments.
- D. Training schedule will be subject to availability of Owner's personnel to be trained; re-schedule training sessions as required by Owner; once schedule has been approved by Owner failure to conduct sessions according to schedule will be cause for Owner to charge Contractor for personnel "show-up" time.
- E. Review of Facility Policy on Operation and Maintenance Data: During training discuss:
  1. The location of the O&M manuals and procedures for use and preservation; backup copies.
  2. Typical contents and organization of all manuals, including explanatory information, system narratives, and product specific information.
  3. Typical uses of the O&M manuals.
- F. Product- and System-Specific Training:
  1. Review the applicable O&M manuals.
  2. For systems, provide an overview of system operation, design parameters and constraints, and operational strategies.

3. Review instructions for proper operation in all modes, including start-up, shut-down, seasonal changeover and emergency procedures, and for maintenance, including preventative maintenance.
  4. Provide hands-on training on all operational modes possible and preventive maintenance.
  5. Emphasize safe and proper operating requirements; discuss relevant health and safety issues and emergency procedures.
  6. Discuss common troubleshooting problems and solutions.
  7. Discuss any peculiarities of equipment installation or operation.
  8. Discuss warranties and guarantees, including procedures necessary to avoid voiding coverage.
  9. Review recommended tools and spare parts inventory suggestions of manufacturers.
  10. Review spare parts and tools required to be furnished by Contractor.
  11. Review spare parts suppliers and sources and procurement procedures.
- G. Be prepared to answer questions raised by training attendees; if unable to answer during training session, provide written response within three days.

**END OF SECTION**

**SECTION 02 4100**  
**DEMOLITION**

**PART 1 GENERAL**

**1.01 SECTION INCLUDES**

- A. Selective demolition of built site elements.
- B. Selective demolition of building elements for alteration purposes.
- C. Salvage and storage of existing items to be reused or recycled.

**1.02 RELATED REQUIREMENTS**

- A. Section 01 1000 - Summary: Limitations on Contractor's use of site and premises.
- B. Section 01 1000 - Summary: Description of items to be salvaged or removed for re-use by Contractor.
- C. Section 01 5000 - Temporary Facilities and Controls: Site fences, security, protective barriers, and waste removal.
- D. Section 01 6000 - Product Requirements: Handling and storage of items removed for salvage and relocation.
- E. Section 01 7000 - Execution and Closeout Requirements: Project conditions; protection of bench marks, survey control points, and existing construction to remain; reinstallation of removed products; temporary bracing and shoring.
- F. Section 31 2323 - Fill: Fill material for filling holes, pits, and excavations generated as a result of removal operations.

**1.03 REFERENCE STANDARDS**

- A. 29 CFR 1926 - U.S. Occupational Safety and Health Standards; current edition.
- B. ANSI/ASSE A10.6 - Safety & Health Program Requirements for Demolition Operations - American National Standard for Construction and Demolition Operations; October 2006.
- C. NFPA 241 - Standard for Safeguarding Construction, Alteration, and Demolition Operations; 2013.

**1.04 ADMINISTRATIVE REQUIREMENTS**

- A. Predemolition Meeting: Conduct a preinstallation meeting one week prior to the start of the work of this section; require attendance by all affected subcontractors. Hold meeting at site of the Work.
  - 1. Review and finalize selective demolition schedule and verify availability of materials, demolition personnel, equipment, and facilities needed to make progress and avoid delays.
  - 2. Review areas where existing construction is to remain and requires protection.
  - 3. Proposed Protection Measures: Discuss as part of preconstruction meeting measures proposed for protecting individuals and property, for environmental protection, for dust control and, for noise control. Record in meeting minutes the proposed locations and construction of barriers.
  - 4. Inspect and discuss condition of construction to be demolished.
  - 5. Review structural load limitations of existing structures.
  - 6. Review and finalize protection requirements.
  - 7. Review procedures for noise control and dust control.
  - 8. Review procedures for protection of adjacent buildings.
  - 9. Review items to be salvaged and returned to Owner.

**1.05 SUBMITTALS**

- A. See Section 01 3000 - Administrative Requirements, for submittal procedures.
- B. Schedule of Selective Demolition Activities: Indicate the following:

1. Detailed sequence of selective demolition and removal work, with starting and ending dates for each activity.
  2. Interruption of utility services. Indicate how long utility services will be interrupted.
  3. Coordination for shutoff, capping, and continuation of utility services.
- C. Pre-demolition Photographs or Video: Show existing conditions of adjoining construction, including finish surfaces that might be misconstrued as damage caused by demolition operations. Comply with Section 013233 "Photographic Documentation." Submit before Work begins.
- D. Site Plan: Showing:
1. Vegetation to be protected.
  2. Areas for temporary construction and field offices.
  3. Areas for temporary and permanent placement of removed materials.
- E. Demolition Plan: Submit demolition plan as specified by OSHA and local authorities.
1. Indicate extent of demolition, removal sequence, bracing and shoring, and location and construction of barricades and fences.
  2. Identify demolition firm and submit qualifications.
  3. Include a summary of safety procedures.
- F. Statement of Refrigerant Recovery: Signed by refrigerant recovery technician responsible for recovering refrigerant, stating that all refrigerant that was present was recovered and that recovery was performed according to EPA regulations. Include name and address of technician and date refrigerant was recovered.
- G. Project Record Documents: Accurately record actual locations of capped and active utilities and subsurface construction.

#### **1.06 QUALITY ASSURANCE**

- A. Demolition Firm Qualifications: Company specializing in the type of work required.
1. Minimum of five years of documented experience.
- B. Refrigerant Recovery Technician Qualifications: Certified by EPA-approved certification program.
- C. Regulatory Requirements: Comply with governing EPA notification regulations before beginning selective demolition. Comply with hauling and disposal regulations of authorities having jurisdiction.
- D. Standards: Comply with ANSI/ASSE A10.6 and NFPA 241.

#### **1.07 FIELD CONDITIONS**

- A. Notify Architect of discrepancies between existing conditions and Drawings before proceeding with selective demolition.
- B. Storage or sale of removed items or materials on-site is not permitted.
- C. Utility Service: Maintain existing utilities indicated to remain in service and protect them against damage during selective demolition operations.
- D. Buildings and site immediately adjacent to demolition area may be occupied. Conduct demolition so operations of occupied buildings and site will not be disrupted.
1. Provide not less than 72 hours' notice of activities that will affect operations of adjacent occupied areas.
  2. Maintain access to existing walkways, exits, and other facilities used by occupants of adjacent buildings. Do not obstruct without written permission from authorities having jurisdiction.

### **PART 2 PRODUCTS**

#### **2.01 MATERIALS**

- A. Fill Material: As specified in Section 31 2323 - Fill.

- B. Materials Ownership: Unless otherwise indicated, demolition waste becomes property of Contractor.

### **PART 3 EXECUTION**

#### **3.01 SCOPE**

- A. Remove the portion of the building(s) as indicated on Drawings.
- B. Remove paving and curbs as required to accomplish new work.
- C. Remove all other paving and curbs as indicated on drawings.
- D. Remove other items indicated, for salvage, relocation, recycling, and disposal.
- E. Fill excavations, open pits, and holes in ground areas generated as result of removals, using specified fill; compact fill as specified in Section 31 2200.

#### **3.02 GENERAL PROCEDURES AND PROJECT CONDITIONS**

- A. Comply with other requirements specified in Section 01 7000.
- B. Comply with applicable codes and regulations for demolition operations and safety of adjacent structures and the public.
  - 1. Obtain required permits.
  - 2. Comply with applicable requirements of NFPA 241.
  - 3. Use of explosives is not permitted.
  - 4. Take precautions to prevent catastrophic or uncontrolled collapse of structures to be removed; do not allow worker or public access within range of potential collapse of unstable structures.
  - 5. Provide, erect, and maintain temporary barriers and security devices.
  - 6. Use physical barriers to prevent access to areas that could be hazardous to workers or the public.
  - 7. Conduct operations to minimize effects on and interference with adjacent structures and occupants.
  - 8. Do not close or obstruct roadways or sidewalks without permit.
  - 9. Conduct operations to minimize obstruction of public and private entrances and exits; do not obstruct required exits at any time; protect persons using entrances and exits from removal operations.
  - 10. Obtain written permission from owners of adjacent properties when demolition equipment will traverse, infringe upon or limit access to their property.
- C. Do not begin removal until receipt of notification to proceed from Owner.
- D. Minimize production of dust due to demolition operations; do not use water if that will result in ice, flooding, sedimentation of public waterways or storm sewers, or other pollution.
- E. If hazardous materials are discovered during removal operations, stop work and notify Architect and Owner; hazardous materials include regulated asbestos containing materials, lead, PCB's, and mercury.
- F. Perform demolition in a manner that maximizes salvage and recycling of materials.
  - 1. Dismantle existing construction and separate materials.
  - 2. Set aside reusable, recyclable, and salvageable materials; store and deliver to collection point or point of reuse.
- G. Partial Removal of Paving and Curbs: Neatly saw cut at right angle to surface.

#### **3.03 SELECTIVE DEMOLITION, GENERAL**

- A. General: Demolish and remove existing construction only to the extent required by new construction and as indicated. Use methods required to complete the Work within limitations of governing regulations.

- B. Site Access and Temporary Controls: Conduct selective demolition and debris-removal operations to ensure minimum interference with roads, streets, walks, walkways, and other adjacent occupied and used facilities.

### **3.04 SELECTIVE DEMOLITION PROCEDURES FOR SPECIFIC MATERIALS**

- A. Concrete: Demolish in sections. Cut concrete full depth at junctures with construction to remain and at regular intervals using power-driven saw, then remove concrete between saw cuts.

### **3.05 DISPOSAL OF DEMOLISHED MATERIALS**

- A. Remove demolition waste materials from Project site and dispose of them in an EPA-approved construction and demolition waste landfill acceptable to authorities having jurisdiction.
  1. Do not allow demolished materials to accumulate on-site.
  2. Remove and transport debris in a manner that will prevent spillage on adjacent surfaces and areas.

### **3.06 EXISTING UTILITIES**

- A. Coordinate work with utility companies; notify before starting work and comply with their requirements; obtain required permits.
- B. Protect existing utilities to remain from damage.
- C. Do not disrupt public utilities without permit from authority having jurisdiction.
- D. Do not close, shut off, or disrupt existing life safety systems that are in use without at least 7 days prior written notification to Owner.
- E. Do not close, shut off, or disrupt existing utility branches or take-offs that are in use without at least 3 days prior written notification to Owner.
- F. Locate and mark utilities to remain; mark using highly visible tags or flags, with identification of utility type; protect from damage due to subsequent construction, using substantial barricades if necessary.
- G. Remove exposed piping, valves, meters, equipment, supports, and foundations of disconnected and abandoned utilities.
- H. Prepare building demolition areas by disconnecting and capping utilities outside the demolition zone; identify and mark utilities to be subsequently reconnected, in same manner as other utilities to remain.

### **3.07 SELECTIVE DEMOLITION FOR ALTERATIONS**

- A. Drawings showing existing construction and utilities are based on casual field observation and existing record documents only.
  1. Verify that construction and utility arrangements are as indicated.
  2. Report discrepancies to Architect before disturbing existing installation.
  3. Beginning of demolition work constitutes acceptance of existing conditions that would be apparent upon examination prior to starting demolition.
  4. Maintain existing active systems that are to remain in operation; maintain access to equipment and operational components.
  5. Where existing active systems serve occupied facilities but are to be replaced with new services, maintain existing systems in service until new systems are complete and ready for service.
  6. See Section 01 1000 for other limitations on outages and required notifications.
  7. Verify that abandoned services serve only abandoned facilities before removal.
  8. Remove abandoned pipe, ducts, conduits, and equipment, including those above accessible ceilings; remove back to source of supply where possible, otherwise cap stub and tag with identification.
- B. Protect existing work to remain.
  1. Prevent movement of structure; provide shoring and bracing if necessary.
  2. Perform cutting to accomplish removals neatly and as specified for cutting new work.

3. Repair adjacent construction and finishes damaged during removal work.
4. Patch as specified for patching new work.

**3.08 DEBRIS AND WASTE REMOVAL**

- A. Remove debris, junk, and trash from site.
- B. Remove from site all materials not to be reused on site; do not burn or bury.
- C. Leave site in clean condition, ready for subsequent work.
- D. Clean up spillage and wind-blown debris from public and private lands.

**END OF SECTION**

**SECTION 033000**

**CAST-IN-PLACE CONCRETE**

PART 1 GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

- A. This Section specifies cast-in place concrete, including formwork, reinforcement, concrete materials, mixture design, placement procedures, and finishes, for the following:
  - 1. Footings.
  - 2. Slabs-on-grade.
  - 3. Concrete in masonry.
  - 4. Concrete walls.
- B. Related Sections include the following:
  - 1. 07 2616 Below Grade Vapor Barrier.

1.3 SUBMITTALS

- A. Product Data: For each type of product indicated.
- B. Design Mixtures: For each concrete mixture. Submit alternate design mixtures when characteristics of materials, Project conditions, weather, test results, or other circumstances warrant adjustments.
  - 1. Indicate amounts of mixing water to be withheld for later addition at Project site.
- C. Steel Reinforcement Shop Drawings: Placing drawings that detail fabrication, bending, and placement. Include bar sizes, lengths, material, grade, bar schedules, stirrup spacing, bent bar diagrams, bar arrangement, splices and laps, mechanical connections, tie spacing, hoop spacing, and supports for concrete reinforcement.
- D. Welding certificates.
- E. Field quality-control test and inspection reports.



#### 1.4 QUALITY ASSURANCE

- A. Source Limitations: Obtain each type or class of cementitious material of the same brand from the same manufacturer's plant, obtain aggregate from one source, and obtain admixtures through one source from a single manufacturer.
- B. Welding: Qualify procedures and personnel according to AWS D1.4, "Structural Welding Code--Reinforcing Steel."
- C. ACI Publications: Comply with the following unless modified by requirements in the Contract Documents:
  - 1. Retain second option in first subparagraph below if ACI 301, Section 7, for structural lightweight concrete is applicable.
  - 2. ACI 301, "Specification for Structural Concrete," Sections 1 through 5".
  - 3. ACI 117, "Specifications for Tolerances for Concrete Construction and Materials."
- D. Concrete Testing Service: Engage a qualified independent testing agency to perform material evaluation tests and to design concrete mixtures.

#### 1.5 DELIVERY, STORAGE, AND HANDLING

- A. Steel Reinforcement: Deliver, store, and handle steel reinforcement to prevent bending and damage.
- B. Waterstops: Store waterstops under cover to protect from moisture, sunlight, dirt, oil, and other contaminants.

### PART 2 PRODUCTS

#### 2.1 STEEL REINFORCEMENT

- A. Reinforcing Bars: ASTM A 615/A 615M, Grade 60, deformed.
- B. Plain-Steel Welded Wire Reinforcement: ASTM A 185, plain, fabricated from as-drawn steel wire into flat sheets.

#### 2.2 REINFORCEMENT ACCESSORIES

- A. Joint Dowel Bars: ASTM A 615/A 615M, Grade 60 (Grade 420), plain-steel bars, cut bars true to length with ends square and free of burrs.

#### 2.3 CONCRETE MATERIALS

- A. Cementitious Material: Use the following cementitious materials, of the same type, brand, and source, throughout Project:
  - 1. Portland Cement: ASTM C 150, Type I/II, gray. Supplement with the following:

- a. Fly Ash: ASTM C 618, Class C
- B. Normal-Weight Aggregates: ASTM C 33, Class 3M coarse aggregate or better, graded. Provide aggregates from a single source.
  - 1. Maximum Coarse-Aggregate Size: 1 inch (25 mm) nominal.
  - 2. Pea gravel for masonry concrete.
- C. Water: ASTM C 94/C 94M and potable.

## 2.4 ADMIXTURES

- A. Air-Entraining Admixture: ASTM C 260.
- B. Chemical Admixtures: Provide admixtures certified by manufacturer to be compatible with other admixtures and that will not contribute water-soluble chloride ions exceeding those permitted in hardened concrete. Do not use calcium chloride or admixtures containing calcium chloride.
  - 1. Water-Reducing Admixture: ASTM C 494/C 494M, Type A.
  - 2. Retarding Admixture: ASTM C 494/C 494M, Type B.
  - 3. Water-Reducing and Retarding Admixture: ASTM C 494/C 494M, Type D.
  - 4. High-Range, Water-Reducing Admixture: ASTM C 494/C 494M, Type F.
  - 5. High-Range, Water-Reducing and Retarding Admixture: ASTM C 494/C 494M, Type G.
  - 6. Plasticizing and Retarding Admixture: ASTM C 1017/C 1017M, Type II.

## 2.5 WATERSTOPS

- A. Self-Expanding Butyl Strip Waterstops: Manufactured rectangular or trapezoidal strip, butyl rubber with sodium bentonite or other hydrophilic polymers, for adhesive bonding to concrete, 3/4 by 1 inch (19 by 25 mm).
  - 1. Products: Subject to compliance with requirements, available products that may be incorporated into the Work include, but are not limited to, the following:
    - a. Carlisle Coatings & Waterproofing, Inc.; MiraSTOP.
    - b. CETCO; Volclay Waterstop-RX.
    - c. Concrete Sealants Inc.; Conseal CS-231.
    - d. Greenstreak; Swellstop.
    - e. Henry Company, Sealants Division; Hydro-Flex.
    - f. JP Specialties, Inc.; Earth Shield Type 20.

## 2.6 VAPOR RETARDERS

- A. Plastic Vapor Retarder: ASTM E 1745, Class B. Include manufacturer's recommended adhesive or pressure-sensitive joint tape.
  - 1. Products: Stego Industries, LLC; Stego Wrap, 15 mils

## 2.7 CURING MATERIALS

- A. Clear, Waterborne, Membrane-Forming Curing Compound: ASTM C 309, Type 1, Class B, dissipating.
  - 1. Products: Subject to compliance with requirements, available products that may be incorporated into the Work include, but are not limited to, the following:
    - a. Anti-Hydro International, Inc.; AH Curing Compound #2 DR WB.
    - b. BASF Construction Chemicals - Building Systems; Kure 200.
    - c. ChemMasters; Safe-Cure Clear.
    - d. Conspec by Dayton Superior; W.B. Resin Cure.
    - e. Dayton Superior Corporation; Day-Chem Rez Cure (J-11-W).
    - f. Edoco by Dayton Superior; Res X Cure WB.
- B. Evaporation retarder in paragraph below temporarily reduces moisture loss from concrete surfaces awaiting finishing in hot, dry, and windy conditions. Evaporation retarders are not curing compounds.
- C. Moisture-Retaining Cover: ASTM C 171, polyethylene film or white burlap-polyethylene sheet.
- D. Water: Potable.

## 2.8 RELATED MATERIALS

- A. Expansion- and Isolation-Joint-Filler Strips: ASTM D 1751, asphalt-saturated cellulosic fiber or ASTM D 1752, cork or self-expanding cork.
- B. Bonding Agent: ASTM C 1059, Type II, non-redispersible, acrylic emulsion or styrene butadiene.
- C. Reglets: Fabricate reglets of not less than 0.0217-inch- (0.55-mm-) thick, galvanized steel sheet. Temporarily fill or cover face opening of reglet to prevent intrusion of concrete or debris.
- D. Dovetail Anchor Slots: Hot-dip galvanized steel sheet, not less than 0.0336 inch (0.85 mm) thick, with bent tab anchors. Temporarily fill or cover face opening of slots to prevent intrusion of concrete or debris.

## 2.9 CONCRETE MIXTURES, GENERAL

- A. Prepare design mixtures for each type and strength of concrete, proportioned on the basis of laboratory trial mixture or field test data, or both, according to ACI 301.
  - 1. Use a qualified independent testing agency for preparing and reporting proposed mixture designs based on laboratory trial mixtures.
- B. Cementitious Materials: Limit percentage, by weight, of cementitious materials other than portland cement in concrete as follows:

1. Fly Ash: 25 percent.
- C. Limit water-soluble, chloride-ion content in hardened concrete to 0.15 percent by weight of cement.
- D. Admixtures: Use admixtures according to manufacturer's written instructions.
1. Use water-reducing, high-range water-reducing or plasticizing admixture in concrete, as required, for placement and workability.
  2. Use water-reducing and retarding admixture when required by high temperatures, low humidity, or other adverse placement conditions.
  3. Use water-reducing admixture in pumped concrete, concrete for heavy-use industrial slabs and parking structure slabs, concrete required to be watertight, and concrete with a water-cementitious materials ratio below 0.50.
  4. Use corrosion-inhibiting admixture in concrete mixtures where indicated.

## 2.10 CONCRETE MIXTURES FOR BUILDING ELEMENTS

- A. Design mix to provide normal weight concrete with compressive strength as shown and scheduled on drawings.
- B. Provide ready mix concrete per ASTM C94 and as specified.
- C. Proportion and design mixes to result in concrete slump at point of placement as follows:
1. Reinforced Foundation Systems: 4" to 6".
  2. Other Concrete: 3" to 5".
  3. Maximum Slump for concrete containing High-Range Water Reducing Admixture: 8" for admixture added to concrete with 2" to 4" slump.
- D. Maximum water cement ratio: 0.50 for concrete required to have low water permeability.
- E. Air Content: Add air entraining admixture at manufacturer's prescribed rate to provide concrete at placement with air content for 4 to 6 percent.
- F. Do not air entrain concrete for travel finished interior floors and suspended slabs. Do not allow entrapped air to exceed 3 percent.

## 2.11 FABRICATING REINFORCEMENT

- A. Fabricate steel reinforcement according to CRSI's "Manual of Standard Practice."

## 2.12 CONCRETE MIXING

- A. Ready-Mixed Concrete: Measure, batch, mix, and deliver concrete according to ASTM C 94/C 94M and ASTM C 1116, and furnish batch ticket information.
1. When air temperature is between 85 and 90 deg F (30 and 32 deg C), reduce mixing and delivery time from 1-1/2 hours to 75 minutes; when air temperature is above 90 deg F (32 deg C), reduce mixing and delivery time to 60 minutes.

## PART 3 EXECUTION

### 3.1 FORMWORK

- A. Design, erect, shore, brace, and maintain formwork, according to ACI 301, to support vertical, lateral, static, and dynamic loads, and construction loads that might be applied, until structure can support such loads.
- B. Construct formwork so concrete members and structures are of size, shape, alignment, elevation, and position indicated, within tolerance limits of ACI 117.
- C. Limit concrete surface irregularities, designated by ACI 347R as abrupt or gradual, as follows:
  - 1. Class A, 1/8 inch (3.2 mm) for smooth-formed finished surfaces.
  - 2. Class B, 1/4 inch (6 mm) for rough-formed finished surfaces.
- D. Construct forms tight enough to prevent loss of concrete mortar.
- E. Fabricate forms for easy removal without hammering or prying against concrete surfaces. Provide crush or wrecking plates where stripping may damage cast concrete surfaces. Provide top forms for inclined surfaces steeper than 1.5 horizontal to 1 vertical.
  - 1. Install keyways, reglets, recesses, and the like, for easy removal.
  - 2. Do not use rust-stained steel form-facing material.
- F. Set edge forms, bulkheads, and intermediate screed strips for slabs to achieve required elevations and slopes in finished concrete surfaces. Provide and secure units to support screed strips; use strike-off templates or compacting-type screeds.
- G. Provide temporary openings for cleanouts and inspection ports where interior area of formwork is inaccessible. Close openings with panels tightly fitted to forms and securely braced to prevent loss of concrete mortar. Locate temporary openings in forms at inconspicuous locations.
- H. Chamfer exterior corners and edges of permanently exposed concrete.
- I. Form openings, chases, offsets, sinkages, keyways, reglets, blocking, screeds, and bulkheads required in the Work. Determine sizes and locations from trades providing such items.
- J. Clean forms and adjacent surfaces to receive concrete. Remove chips, wood, sawdust, dirt, and other debris just before placing concrete.
- K. Retighten forms and bracing before placing concrete, as required, to prevent mortar leaks and maintain proper alignment.
- L. Coat contact surfaces of forms with form-release agent, according to manufacturer's written instructions, before placing reinforcement.

### 3.02 EMBEDDED ITEMS

- A. Place and secure anchorage devices and other embedded items required for adjoining work that is attached to or supported by cast-in-place concrete. Use setting drawings, templates, diagrams, instructions, and directions furnished with items to be embedded.
  - 1. Install anchor rods, accurately located, to elevations required and complying with tolerances in Section 7.5 of AISC's "Code of Standard Practice for Steel Buildings and Bridges."
  - 2. Install reglets to receive waterproofing and to receive through-wall flashings in outer face of concrete frame at exterior walls, where flashing is shown at lintels, shelf angles, and other conditions.
  - 3. Install dovetail anchor slots in concrete structures as indicated.

### 3.03 REMOVING AND REUSING FORMS

- A. General: Formwork for sides of beams, walls, columns, and similar parts of the Work that does not support weight of concrete may be removed after cumulatively curing at not less than 50 deg F (10 deg C) for 24 hours after placing concrete, if concrete is hard enough to not be damaged by form-removal operations and curing and protection operations are maintained.
  - 1. Leave formwork for beam soffits, joists, slabs, and other structural elements that supports weight of concrete in place until concrete has achieved at least 70 percent of its 28-day design compressive strength.
  - 2. Remove forms only if shores have been arranged to permit removal of forms without loosening or disturbing shores.
- B. Clean and repair surfaces of forms to be reused in the Work. Split, frayed, delaminated, or otherwise damaged form-facing material will not be acceptable for exposed surfaces. Apply new form-release agent.
- C. When forms are reused, clean surfaces, remove fins and laitance, and tighten to close joints. Align and secure joints to avoid offsets. Do not use patched forms for exposed concrete surfaces unless approved by Architect.

### 3.4 STEEL REINFORCEMENT

- A. General: Comply with CRSI's "Manual of Standard Practice" for placing reinforcement.
  - 1. Do not cut or puncture vapor retarder. Repair damage and reseal vapor retarder before placing concrete.
- B. Clean reinforcement of loose rust and mill scale, earth, ice, and other foreign materials that would reduce bond to concrete.
- C. Accurately position, support, and secure reinforcement against displacement. Locate and support reinforcement with bar supports to maintain minimum concrete cover. Do not tack weld crossing reinforcing bars.
  - 1. Weld reinforcing bars according to AWS D1.4, where indicated.

- D. Set wire ties with ends directed into concrete, not toward exposed concrete surfaces.
- E. Install welded wire reinforcement in longest practicable lengths on bar supports spaced to minimize sagging. Lap edges and ends of adjoining sheets at least one mesh spacing. Offset laps of adjoining sheet widths to prevent continuous laps in either direction. Lace overlaps with wire.

### 3.5 JOINTS

- A. General: Construct joints true to line with faces perpendicular to surface plane of concrete.
- B. Construction Joints: Install so strength and appearance of concrete are not impaired, at locations indicated or as approved by Architect.
  - 1. Place joints perpendicular to main reinforcement. Continue reinforcement across construction joints, unless otherwise indicated. Do not continue reinforcement through sides of strip placements of floors and slabs.
  - 2. Form keyed joints as indicated. Embed keys at least 1-1/2 inches (38 mm) into concrete.
  - 3. Locate joints for beams, slabs, joists, and girders in the middle third of spans. Offset joints in girders a minimum distance of twice the beam width from a beam-girder intersection.
  - 4. Locate horizontal joints in walls and columns at underside of floors, slabs, beams, and girders and at the top of footings or floor slabs.
  - 5. Space vertical joints in walls as indicated. Locate joints beside piers integral with walls, near corners, and in concealed locations where possible.
  - 6. Use a bonding agent at locations where fresh concrete is placed against hardened or partially hardened concrete surfaces.
  - 7. Use epoxy-bonding adhesive at locations where fresh concrete is placed against hardened or partially hardened concrete surfaces.
- C. Contraction Joints in Slabs-on-Grade: Form weakened-plane contraction joints, sectioning concrete into areas as indicated. Construct contraction joints for a depth equal to at least one-fourth of concrete thickness as follows:
  - 1. Grooved Joints: Form contraction joints after initial floating by grooving and finishing each edge of joint to a radius of 1/8 inch (3.2 mm). Repeat grooving of contraction joints after applying surface finishes. Eliminate groover tool marks on concrete surfaces.
  - 2. Sawed Joints: Form contraction joints with power saws equipped with shatterproof abrasive or diamond-rimmed blades. Cut 1/8-inch- (3.2-mm-) wide joints into concrete when cutting action will not tear, abrade, or otherwise damage surface and before concrete develops random contraction cracks.
- D. Isolation Joints in Slabs-on-Grade: After removing formwork, install joint-filler strips at slab junctions with vertical surfaces, such as column pedestals, foundation walls, grade beams, and other locations, as indicated.
  - 1. Extend joint-filler strips full width and depth of joint, terminating flush with finished concrete surface, unless otherwise indicated.
  - 2. Terminate full-width joint-filler strips not less than 1/2 inch (13 mm) or more than 1 inch (25 mm) below finished concrete surface where joint sealants, specified in Division 07 Section "Joint Sealants," are indicated.

3. Install joint-filler strips in lengths as long as practicable. Where more than one length is required, lace or clip sections together.
- E. Doweled Joints: Install dowel bars and support assemblies at joints where indicated. Lubricate or asphalt coat one-half of dowel length to prevent concrete bonding to one side of joint.

### 3.6 WATERSTOPS

- A. Self-Expanding Strip Waterstops: Install in construction joints and at other locations indicated, according to manufacturer's written instructions, adhesive bonding, mechanically fastening, and firmly pressing into place. Install in longest lengths practicable.

### 3.7 VAPOR-RETARDER INSTALLATION

- A. Sheet Vapor Retarders: Place, protect, and repair sheet vapor retarder according to ASTM E 1643 and manufacturer's written instructions.
  1. Lap joints 6 inches and seal with manufacturer's recommended tape.
- B. Bituminous Vapor Retarders: Place, protect, and repair bituminous vapor retarder according to manufacturer's written instructions.

### 3.08 CONCRETE PLACEMENT

- A. Before placing concrete, verify that installation of formwork, reinforcement, and embedded items is complete and that required inspections have been performed.
- B. Do not add water to concrete during delivery, at Project site, or during placement unless approved by Architect.
- C. Before test sampling and placing concrete, water may be added at Project site, subject to limitations of ACI 301.
  1. Do not add water to concrete after adding high-range water-reducing admixtures to mixture.
- D. Deposit concrete continuously in one layer or in horizontal layers of such thickness that no new concrete will be placed on concrete that has hardened enough to cause seams or planes of weakness. If a section cannot be placed continuously, provide construction joints as indicated. Deposit concrete to avoid segregation.
  1. Deposit concrete in horizontal layers of depth to not exceed formwork design pressures and in a manner to avoid inclined construction joints.
  2. Consolidate placed concrete with mechanical vibrating equipment according to ACI 301.
  3. Do not use vibrators to transport concrete inside forms. Insert and withdraw vibrators vertically at uniformly spaced locations to rapidly penetrate placed layer and at least 6 inches (150 mm) into preceding layer. Do not insert vibrators into lower layers of concrete that have begun to lose plasticity. At each insertion, limit duration of vibration to time necessary to consolidate concrete and complete embedment of reinforcement and other embedded items without causing mixture constituents to segregate.



- E. Deposit and consolidate concrete for floors and slabs in a continuous operation, within limits of construction joints, until placement of a panel or section is complete.
  - 1. Consolidate concrete during placement operations so concrete is thoroughly worked around reinforcement and other embedded items and into corners.
  - 2. Maintain reinforcement in position on chairs during concrete placement.
  - 3. Screed slab surfaces with a straightedge and strike off to correct elevations.
  - 4. Slope surfaces uniformly to drains where required.
  - 5. Begin initial floating using bull floats or darbies to form a uniform and open-textured surface plane, before excess bleedwater appears on the surface. Do not further disturb slab surfaces before starting finishing operations.
  
- F. Cold-Weather Placement: Comply with ACI 306.1 and as follows. Protect concrete work from physical damage or reduced strength that could be caused by frost, freezing actions, or low temperatures.
  - 1. When average high and low temperature is expected to fall below 40 deg F (4.4 deg C) for three successive days, maintain delivered concrete mixture temperature within the temperature range required by ACI 301.
  - 2. Do not use frozen materials or materials containing ice or snow. Do not place concrete on frozen subgrade or on subgrade containing frozen materials.
  - 3. Do not use calcium chloride, salt, or other materials containing antifreeze agents or chemical accelerators unless otherwise specified and approved in mixture designs.
  
- G. Hot-Weather Placement: Comply with ACI 301 and as follows:
  - 1. Maintain concrete temperature below 90 deg F (32 deg C) at time of placement. Chilled mixing water or chopped ice may be used to control temperature, provided water equivalent of ice is calculated to total amount of mixing water. Using liquid nitrogen to cool concrete is Contractor's option.
  - 2. Fog-spray forms, steel reinforcement, and subgrade just before placing concrete. Keep subgrade uniformly moist without standing water, soft spots, or dry areas.

### 3.09 FINISHING FORMED SURFACES

- A. Rough-Formed Finish: As-cast concrete texture imparted by form-facing material with tie holes and defects repaired and patched. Remove fins and other projections that exceed specified limits on formed-surface irregularities.
  - 1. Apply to concrete surfaces not exposed to public view.
  
- B. Smooth-Formed Finish: As-cast concrete texture imparted by form-facing material, arranged in an orderly and symmetrical manner with a minimum of seams. Repair and patch tie holes and defects. Remove fins and other projections that exceed specified limits on formed-surface irregularities.
  - 1. Apply to concrete surfaces exposed to public view
  - 2. Apply where sheet membrane waterproofing is required.
  
- C. Rubbed Finish: Apply the following to smooth-formed finished as-cast concrete where indicated:

1. Smooth-Rubbed Finish: Not later than one day after form removal, moisten concrete surfaces and rub with carborundum brick or another abrasive until producing a uniform color and texture. Do not apply cement grout other than that created by the rubbing process.
  2. Grout-Cleaned Finish: Wet concrete surfaces and apply grout of a consistency of thick paint to coat surfaces and fill small holes. Mix one part portland cement to one and one-half parts fine sand with a 1:1 mixture of bonding admixture and water. Add white portland cement in amounts determined by trial patches so color of dry grout will match adjacent surfaces. Scrub grout into voids and remove excess grout. When grout whitens, rub surface with clean burlap and keep surface damp by fog spray for at least 36 hours.
  3. Cork-Floated Finish: Wet concrete surfaces and apply a stiff grout. Mix one part portland cement and one part fine sand with a 1:1 mixture of bonding agent and water. Add white portland cement in amounts determined by trial patches so color of dry grout will match adjacent surfaces. Compress grout into voids by grinding surface. In a swirling motion, finish surface with a cork float.
- D. Related Unformed Surfaces: At tops of walls, horizontal offsets, and similar unformed surfaces adjacent to formed surfaces, strike off smooth and finish with a texture matching adjacent formed surfaces. Continue final surface treatment of formed surfaces uniformly across adjacent unformed surfaces, unless otherwise indicated.

### 3.10 FINISHING FLOORS AND SLABS

- A. General: Comply with ACI 302.1R recommendations for screeding, restraighening, and finishing operations for concrete surfaces. Do not wet concrete surfaces.
- B. Scratch Finish: While still plastic, texture concrete surface that has been screeded and bull-floated or darbied. Use stiff brushes, brooms, or rakes to produce a profile amplitude of 1/4 inch (6 mm) in 1 direction.
1. Apply scratch finish to surfaces indicated.
- C. Float Finish: Consolidate surface with power-driven floats or by hand floating if area is small or inaccessible to power driven floats. Restraighten, cut down high spots, and fill low spots. Repeat float passes and restraighening until surface is left with a uniform, smooth, granular texture.
1. Apply float finish to surfaces indicated.
  2. Apply a wood float finish for waterproofed areas such as the balcony.
- D. Trowel Finish: After applying float finish, apply first troweling and consolidate concrete by hand or power-driven trowel. Continue troweling passes and restraighten until surface is free of trowel marks and uniform in texture and appearance. Grind smooth any surface defects that would telegraph through applied coatings or floor coverings.
1. Apply a trowel finish to surfaces indicated.
  2. Finish and measure surface so gap at any point between concrete surface and an un-leveled, freestanding, 10-foot- (3.05-m-) long straightedge resting on 2 high spots and placed anywhere on the surface does not exceed 1/8 inch (3.2 mm).
- E. Trowel and Fine-Broom Finish: Apply a first trowel finish to surfaces indicated. While concrete is still plastic, slightly scarify surface with a fine broom.

1. Comply with flatness and levelness tolerances for trowel finished floor surfaces.

### 3.11 MISCELLANEOUS CONCRETE ITEMS

- A. Filling In: Fill in holes and openings left in concrete structures, unless otherwise indicated, after work of other trades is in place. Mix, place, and cure concrete, as specified, to blend with in-place construction. Provide other miscellaneous concrete filling indicated or required to complete the Work.
- B. Curbs: Provide monolithic finish to interior curbs by stripping forms while concrete is still green and by steel-troweling surfaces to a hard, dense finish with corners, intersections, and terminations slightly rounded.
- C. Equipment Bases and Foundations: Provide machine and equipment bases and foundations as shown on Drawings. Set anchor bolts for machines and equipment at correct elevations, complying with diagrams or templates from manufacturer furnishing machines and equipment.
- D. Steel Pan Stairs: Provide concrete fill for steel pan stair treads, landings, and associated items. Cast-in inserts and accessories as shown on Drawings. Screed, tamp, and trowel-finish concrete surfaces.

### 3.12 CONCRETE PROTECTING AND CURING

- A. General: Protect freshly placed concrete from premature drying and excessive cold or hot temperatures. Comply with ACI 306.1 for cold-weather protection and ACI 301 for hot-weather protection during curing.
- B. Evaporation Retarder: Apply evaporation retarder to unformed concrete surfaces if hot, dry, or windy conditions cause moisture loss approaching 0.2 lb/sq. ft. x h (1 kg/sq. m x h) before and during finishing operations. Apply according to manufacturer's written instructions after placing, screeding, and bull floating or darbying concrete, but before float finishing.
- C. Formed Surfaces: Cure formed concrete surfaces, including underside of beams, supported slabs, and other similar surfaces. If forms remain during curing period, moist cure after loosening forms. If removing forms before end of curing period, continue curing for the remainder of the curing period.
- D. Unformed Surfaces: Begin curing immediately after finishing concrete. Cure unformed surfaces, including floors and slabs, concrete floor toppings, and other surfaces.
- E. Cure concrete according to ACI 308.1, by one or a combination of the following methods:
  1. Moisture Curing: Keep surfaces continuously moist for not less than seven days with the following materials:
    - a. Water.
    - b. Continuous water-fog spray.
    - c. Absorptive cover, water saturated, and kept continuously wet. Cover concrete surfaces and edges with 12-inch (300-mm) lap over adjacent absorptive covers.

2. Moisture-Retaining-Cover Curing: Cover concrete surfaces with moisture-retaining cover for curing concrete, placed in widest practicable width, with sides and ends lapped at least 12 inches (300 mm), and sealed by waterproof tape or adhesive. Cure for not less than seven days. Immediately repair any holes or tears during curing period using cover material and waterproof tape.
  - a. Moisture cure or use moisture-retaining covers to cure concrete surfaces to receive floor coverings.
  - b. Moisture cure or use moisture-retaining covers to cure concrete surfaces to receive penetrating liquid floor treatments.
  - c. Cure concrete surfaces to receive floor coverings with either a moisture-retaining cover or a curing compound that the manufacturer certifies will not interfere with bonding of floor covering used on Project.
3. Curing Compound: Apply uniformly in continuous operation by power spray or roller according to manufacturer's written instructions. Recoat areas subjected to heavy rainfall within three hours after initial application. Maintain continuity of coating and repair damage during curing period.
  - a. After curing period has elapsed, remove curing compound without damaging concrete surfaces by method recommended by curing compound manufacturer unless manufacturer certifies curing compound will not interfere with bonding of floor covering used on Project.
4. Curing and Sealing Compound: Apply uniformly to floors and slabs indicated in a continuous operation by power spray or roller according to manufacturer's written instructions. Recoat areas subjected to heavy rainfall within three hours after initial application. Repeat process 24 hours later and apply a second coat. Maintain continuity of coating and repair damage during curing period.

### 3.13 JOINT FILLING

- A. Prepare, clean, and install joint filler according to manufacturer's written instructions.
- B. Defer joint filling until concrete has aged at least [one] [six] month(s). Do not fill joints until construction traffic has permanently ceased

### 3.14 CONCRETE SURFACE REPAIRS

- A. Defective Concrete: Repair and patch defective areas when approved by Architect. Remove and replace concrete that cannot be repaired and patched to Architect's approval.
- B. Patching Mortar: Mix dry-pack patching mortar, consisting of one part portland cement to two and one-half parts fine aggregate passing a No. 16 (1.18-mm) sieve, using only enough water for handling and placing.
- C. Repairing Formed Surfaces: Surface defects include color and texture irregularities, cracks, spalls, air bubbles, honeycombs, rock pockets, fins and other projections on the surface, and stains and other discolorations that cannot be removed by cleaning.

1. Immediately after form removal, cut out honeycombs, rock pockets, and voids more than 1/2 inch (13 mm) in any dimension in solid concrete, but not less than 1 inch (25 mm) in depth. Make edges of cuts perpendicular to concrete surface. Clean, dampen with water, and brush-coat holes and voids with bonding agent. Fill and compact with patching mortar before bonding agent has dried. Fill form-tie voids with patching mortar or cone plugs secured in place with bonding agent.
  2. Repair defects on surfaces exposed to view by blending white portland cement and standard portland cement so that, when dry, patching mortar will match surrounding color. Patch a test area at inconspicuous locations to verify mixture and color match before proceeding with patching. Compact mortar in place and strike off slightly higher than surrounding surface.
  3. Repair defects on concealed formed surfaces that affect concrete's durability and structural performance as determined by Architect.
- D. Repairing Unformed Surfaces: Test unformed surfaces, such as floors and slabs, for finish and verify surface tolerances specified for each surface. Correct low and high areas. Test surfaces sloped to drain for trueness of slope and smoothness; use a sloped template.
1. Repair finished surfaces containing defects. Surface defects include spalls, popouts, honeycombs, rock pockets, crazing and cracks in excess of 0.01 inch (0.25 mm) wide or that penetrate to reinforcement or completely through unreinforced sections regardless of width, and other objectionable conditions.
  2. After concrete has cured at least 14 days, correct high areas by grinding.
  3. Correct localized low areas during or immediately after completing surface finishing operations by cutting out low areas and replacing with patching mortar. Finish repaired areas to blend into adjacent concrete.
  4. Correct other low areas scheduled to receive floor coverings with a repair underlayment. Prepare, mix, and apply repair underlayment and primer according to manufacturer's written instructions to produce a smooth, uniform, plane, and level surface. Feather edges to match adjacent floor elevations.
  5. Correct other low areas scheduled to remain exposed with a repair topping. Cut out low areas to ensure a minimum repair topping depth of 1/4 inch (6 mm) to match adjacent floor elevations. Prepare, mix, and apply repair topping and primer according to manufacturer's written instructions to produce a smooth, uniform, plane, and level surface.
  6. Repair defective areas, except random cracks and single holes 1 inch (25 mm) or less in diameter, by cutting out and replacing with fresh concrete. Remove defective areas with clean, square cuts and expose steel reinforcement with at least a 3/4-inch (19-mm) clearance all around. Dampen concrete surfaces in contact with patching concrete and apply bonding agent. Mix patching concrete of same materials and mixture as original concrete except without coarse aggregate. Place, compact, and finish to blend with adjacent finished concrete. Cure in same manner as adjacent concrete.
  7. Repair random cracks and single holes 1 inch (25 mm) or less in diameter with patching mortar. Groove top of cracks and cut out holes to sound concrete and clean off dust, dirt, and loose particles. Dampen cleaned concrete surfaces and apply bonding agent. Place patching mortar before bonding agent has dried. Compact patching mortar and finish to match adjacent concrete. Keep patched area continuously moist for at least 72 hours.
- E. Perform structural repairs of concrete, subject to Architect's approval, using epoxy adhesive and patching mortar.
- F. Repair materials and installation not specified above may be used, subject to Architect's approval.

3.15 FIELD QUALITY CONTROL

- A. Testing and Inspecting: Owner will engage a special inspector and qualified testing and inspecting agency to perform field tests and inspections and prepare test reports.
- B. Testing and Inspecting: Engage a qualified testing and inspecting agency to perform tests and inspections and to submit reports.
- C. Inspections:
  - 1. Steel reinforcement placement.
  - 2. Steel reinforcement welding.
  - 3. Headed bolts and studs.
  - 4. Verification of use of required design mixture.
  - 5. Concrete placement, including conveying and depositing.
  - 6. Curing procedures and maintenance of curing temperature.
  - 7. Verification of concrete strength before removal of shores and forms from beams and slabs.
- D. Concrete Tests: Testing of composite samples of fresh concrete obtained according to ASTM C 172 shall be performed according to the following requirements:
  - 1. Testing Frequency: Obtain one composite sample for each day's pour of each concrete mixture exceeding 5 cu. yd. (4 cu. m), but less than 25 cu. yd. (19 cu. m), plus one set for each additional 50 cu. yd. (38 cu. m) or fraction thereof.
  - 2. Slump: ASTM C 143/C 143M; one test at point of placement for each composite sample, but not less than one test for each day's pour of each concrete mixture. Perform additional tests when concrete consistency appears to change.
  - 3. Air Content: ASTM C 231, pressure method, for normal-weight concrete; one test for each composite sample, but not less than one test for each day's pour of each concrete mixture.
  - 4. Concrete Temperature: ASTM C 1064/C 1064M; one test hourly when air temperature is 40 deg F (4.4 deg C) and below and when 80 deg F (27 deg C) and above, and one test for each composite sample.
  - 5. Unit Weight: ASTM C 567, fresh unit weight of structural lightweight concrete; one test for each composite sample, but not less than one test for each day's pour of each concrete mixture.
  - 6. Compressive-Strength Tests: ASTM C 39/C 39M; test one set of two laboratory-cured specimens at 7 days and one set of two specimens at 28 days.
    - a. Test one set of two field-cured specimens at 7 days and one set of two specimens at 28 days.
    - b. A compressive-strength test shall be the average compressive strength from a set of two specimens obtained from same composite sample and tested at age indicated.
  - 7. When strength of field-cured cylinders is less than 85 percent of companion laboratory-cured cylinders, Contractor shall evaluate operations and provide corrective procedures for protecting and curing in-place concrete.
  - 8. Strength of each concrete mixture will be satisfactory if every average of any three consecutive compressive-strength tests equals or exceeds specified compressive strength and no compressive-strength test value falls below specified compressive strength by more than 500 psi (3.4 MPa).

9. Test results shall be reported in writing to Architect, concrete manufacturer, and Contractor within 48 hours of testing. Reports of compressive-strength tests shall contain Project identification name and number, date of concrete placement, name of concrete testing and inspecting agency, location of concrete batch in Work, design compressive strength at 28 days, concrete mixture proportions and materials, compressive breaking strength, and type of break for both 7- and 28-day tests.
10. Nondestructive Testing: Impact hammer, sonoscope, or other nondestructive device may be permitted by Architect but will not be used as sole basis for approval or rejection of concrete.
11. Additional Tests: Testing and inspecting agency shall make additional tests of concrete when test results indicate that slump, air entrainment, compressive strengths, or other requirements have not been met, as directed by Architect. Testing and inspecting agency may conduct tests to determine adequacy of concrete by cored cylinders complying with ASTM C 42/C 42M or by other methods as directed by Architect.
12. Additional testing and inspecting, at Contractor's expense, will be performed to determine compliance of replaced or additional work with specified requirements.
13. Correct deficiencies in the Work that test reports and inspections indicate does not comply with the Contract Documents.

END OF SECTION 033000

**SECTION 03 3511**  
**CONCRETE FLOOR FINISHES**

**PART 1 GENERAL**

**1.01 SECTION INCLUDES**

- A. Surface treatments for concrete floors and slabs.

**1.02 RELATED REQUIREMENTS**

- A. Section 03 3000 - Cast-in-Place Concrete: Finishing of concrete surface to tolerance; floating, troweling, and similar operations; curing.
- B. Section 03 3543.13 Polished and Dyed Concrete Finishing.

**1.03 ADMINISTRATIVE REQUIREMENTS**

- A. Coordinate the work with concrete floor placement and concrete floor curing.

**1.04 SUBMITTALS**

- A. See Section 01 3000 - Administrative Requirements, for submittal procedures.
- B. Product Data: Manufacturer's published data on each finishing product, including information on compatibility of different products and limitations.
- C. Maintenance Data: Provide data on maintenance and renewal of applied finishes.

**1.05 MOCK-UP**

- A. Mock-Up Size: 10 feet square.
- B. Locate where directed.
- C. Mock-up may remain as part of the work.

**1.06 DELIVERY, STORAGE, AND HANDLING**

- A. Deliver materials in manufacturer's sealed packaging, including application instructions.

**1.07 FIELD CONDITIONS**

- A. Maintain light level equivalent to a minimum 200 W light source at 8 feet above the floor surface over each 20 foot square area of floor being finished.
- B. Do not finish floors until interior heating system is operational.
- C. Maintain ambient temperature of 50 degrees F minimum.

**PART 2 PRODUCTS**

**2.01 CONCRETE FLOOR FINISH APPLICATIONS**

- A. Liquid Densifier/Hardener:
  - 1. Use at following locations: Finish Schedule - Type SCF.
- B. Concrete Stain:
  - 1. Use at following locations: Slab at Sauna.
- C. High Gloss Clear Sealer:

**2.02 DENSIFIERS AND HARDENERS**

- A. Liquid Densifier/Hardener: Penetrating chemical compound that reacts with concrete, filling the pores and dustproofing; for application to concrete after set.
  - 1. Composition: Lithium silicate.
  - 2. Products:
    - a. ARDEX Engineered Cements; ARDEX PC-50: [www.ardexamericas.com/#sle](http://www.ardexamericas.com/#sle).
    - b. Dayton Superior Corporation; Pentra-Hard® Guard: [www.daytonsuperior.com/#sle](http://www.daytonsuperior.com/#sle).
    - c. Euclid Chemical Company; EUCO DIAMOND HARD: [www.euclidchemical.com/#sle](http://www.euclidchemical.com/#sle).
    - d. Kaufman Products Inc; SureHard LS: [www.kaufmanproducts.net/#sle](http://www.kaufmanproducts.net/#sle).



- e. L&M Construction Chemicals, Inc, a subsidiary of Laticrete International, Inc; LiON HARD: [www.lmcc.com/#sle](http://www.lmcc.com/#sle).
- f. Nox-Crete Products Group; Duro-Nox LS: [www.nox-crete.com/#sle](http://www.nox-crete.com/#sle).
- g. PROSOCO, Inc; Consolideck LS: [www.prosoco.com/consolideck/#sle](http://www.prosoco.com/consolideck/#sle).
- h. SpecChem, LLC; LithSeal SC: [www.specchemllc.com/#sle](http://www.specchemllc.com/#sle).
- i. W. R. Meadows, Inc; Liqui-Hard Ultra: [www.wrmeadows.com/#sle](http://www.wrmeadows.com/#sle).
- j. Substitutions: See Section 01 6000 - Product Requirements.

### 2.03 COATINGS

- A. Concrete Stain or Dye: Translucent, penetrating compound for interior or exterior use; must be finished with a topical sealer.
  - 1. Composition: Water-based, non-reactive.
  - 2. Number of Coats: Minimum of two.
  - 3. VOC: 100 g/L or less.
  - 4. Primary Color: Black, full strength.
  - 5. Products:
    - a. BRICKFORM; BRICKFORM ARTesian Stain: [www.brickform.com/#sle](http://www.brickform.com/#sle).
    - b. Clemons Concrete Coatings; Super Dye: [www.clemonsconcretecoatings.com/#sle](http://www.clemonsconcretecoatings.com/#sle).
    - c. Euclid Chemical Company; VIBRA-STAIN: [www.euclidchemical.com/#sle](http://www.euclidchemical.com/#sle).
    - d. PROSOCO, Inc; GemTone Stain: [www.prosoco.com/consolideck/#sle](http://www.prosoco.com/consolideck/#sle).
    - e. SureCrete Design Products; Eco Stain: [www.surecretedesign.com/#sle](http://www.surecretedesign.com/#sle).
    - f. Substitutions: See Section 01 6000 - Product Requirements.
- B. Low Gloss Clear Coating: Transparent, non-yellowing, water- or solvent-based coating.
  - 1. Composition: Acrylic polymer-based.
  - 2. Nonvolatile Content: 15 percent, minimum, when measured by volume.
  - 3. Products:
    - a. Clemons Concrete Coatings; Supreme Shield 100: [www.clemonsconcretecoatings.com/#sle](http://www.clemonsconcretecoatings.com/#sle).
    - b. Concrete Sealers USA; TS202: [www.concretesealersusa.com/#sle](http://www.concretesealersusa.com/#sle).
    - c. Substitutions: See Section 01 6000 - Product Requirements.

## PART 3 EXECUTION

### 3.01 EXAMINATION

- A. Verify that floor surfaces are acceptable to receive the work of this section.
- B. Verify that flaws in concrete have been patched and joints filled with methods and materials suitable for further finishes.

### 3.02 GENERAL

- A. Apply materials in accordance with manufacturer's instructions.

### 3.03 COATING APPLICATION

- A. Verify that surface is free of previous coatings, sealers, curing compounds, water repellents, laitance, efflorescence, fats, oils, grease, wax, soluble salts, residues from cleaning agents, and other impediments to adhesion.
- B. Verify that water vapor emission from concrete and relative humidity in concrete are within limits established by coating manufacturer.
- C. Protect adjacent non-coated areas from drips, overflow, and overspray; immediately remove excess material.
- D. Apply coatings in accordance with manufacturer's instructions, matching approved mock-ups for color, special effects, sealing and workmanship.

**END OF SECTION**

**SECTION 03 3543.13**  
**POLISHED AND DYED CONCRETE FINISHING**

**PART 1 - GENERAL**

**1.01 SUMMARY**

- A. Ground and polished concrete finish for interior concrete floors denoted on Finish Schedule as PDC (Polished Dyed Concrete).
  - 1. Dry diamond grinding and polishing of concrete floors.
  - 2. Application of color dyes.
  - 3. Densifying impregnator/sealer and polishing to specified sheen level and aggregate exposure.

**1.02 RELATED REQUIREMENTS**

- A. Section 03 3000 - Cast-in-Place Concrete.

**1.03 REFERENCE STANDARDS**

- A. ACI 117 - Standard Specifications for Tolerances for Concrete Construction and Materials; 2010 (Reapproved 2015).
- B. ACI 302.1R - Guide to Concrete Floor and Slab Construction; 2015.
- C. ASTM E1155 - Standard Test Method for Determining F(F) Floor Flatness and F(L) Floor Levelness Numbers; 2014.
- D. ASTM C779, Standard Test Method for Abrasion of Horizontal Concrete Surfaces.
- E. ASTM C805, Impact Strength.
- F. ASTM G23-81, Ultraviolet Light & Water Spray.
- G. ASTM 1028, Co-efficient of Friction.
- H. ASTM C 150, Type I, II Portland cement conformity, depending on soil conditions.
- I. ASTM C 33, Aggregate conformity.
- J. Other Tests:
  - 1. Reflectivity.

**1.04 ADMINISTRATIVE REQUIREMENTS**

- A. Coordination: Coordinate the installation of poured-in-place concrete to insure appropriate mix design, curing, surface flatness and other requirements of ground and polished dyed concrete work as specified herein.
  - 1. Concrete Mix Design:
    - a. Concrete Mixture shall be 3000 PSI or higher, non-air entrained.
      - 1) All mix designs must be approved by Architect. In addition, send all approved mix designs to Installer/Applicator.
      - 2) Any admixtures, plasticizers, slag, fly ash or anything taking the place of Portland-based cement shall be kept to a minimum.
      - 3) The cement shall be Portland Cement Type I, conforming to ASTM C 150.
      - 4) Maintain concrete temperature below 85 degrees. Keep concrete as cool and moist for as long as possible. In essence, decrease rate of hydration and drying to minimize cracking.
      - 5) Color loads for integral color should never be smaller than three (3) cubic yards.
    - b. Use one (1) source for cement, aggregates and pozzolans throughout the job. Monitor and control incoming material consistency. Do not use calcium chloride-based admixtures. Non-chloride admixtures may be used.
    - c. Wash out all drums before loading. Keep slumps consistent with a maximum of four (4). Minimize driver added water maintaining a .45 water content ratio.
  - 2. Placement:

- a. Place concrete to achieve as true and smooth a top surface as possible. Mounds, or dips are not acceptable. GC shall control overall flatness and levelness, including on sloping areas to within tolerances permitted by specification - ASTM E1155.
  - b. Wet cures are most suitable, but if this cannot be achieved, use a penetrating, dissipating or wax based cure and seal. Do not use a densifier/hardener material due to the grinding of the floor after 6 days.
  - c. Slab shall be protected from indentation and footprints during pour and curing.
  - d. Flatness and levelness measured in accord with ACI 117 and ASTM E1155:
    - 1) Finish Concrete shall have a minimum Floor Flatness rating of at least 40.
    - 2) Finish Concrete shall have a minimum Floor Levelness rating of at least 30.
  - e. The Architect shall determine the saw cut pattern, color and layout.
- B. Preinstallation Meeting: Conduct a preinstallation meeting at least one week prior to the pouring of concrete to receive ground and polished dyed concrete; require attendance by all affected installers.
1. The purpose of the mandatory pre-installation conference is to review the criteria with the General Contractor, concrete subcontractor, concrete finish manufacturer, concrete finish installer and concrete polishing contractor.
  2. The meeting shall establish the following:
    - a. Roles and expectations of each subcontractor.
    - b. Days and times of concrete pour schedules.
    - c. Sequencing of operations for pouring, curing, finishing and protection of finished concrete surfaces.

#### **1.05 SUBMITTALS**

- A. See Section 01 3000 - Administrative Requirements, for submittal procedures.
- B. Product data for each grinding machine, including all types of grinding heads, dust extraction system, joint filler, concrete densifying impregnator, penetrating sealer, concrete dyes, joint filler and any other chemicals used in the process.
- C. Applicators qualification data.
- D. Polished concrete samples: size 3"x3" for each Polished Concrete color and finish required.
- E. Maintenance procedures for Polished Concrete using diamond impregnated cleaning pads.

#### **1.06 QUALITY ASSURANCE**

- A. Comply with applicable provisions of ACI 302.1R.
- B. Certified Contractors:
  1. Pre-qualified contractors meeting ALL requirements set forth within specifications.
  2. No substitutions will be allowed or approved.
- C. Provide project names, addresses, contact names, phone numbers of at least (5) five projects of similar scope and size completed by the installer.
- D. Installer/applicator shall be certified by concrete grinding/polishing equipment, chemical manufacturer and caulking manufacturer. Installer/applicator shall provide adequate number of skilled workmen who are thoroughly trained and experienced in the necessary craft.
- E. Manufacturer's Certification: Provide a letter of certification from both the equipment and chemical manufacturer stating that the installer is a Certified Contractor and is familiar with proper procedures and installation requirements recommended by the manufacturer.
- F.

#### **1.07 MOCK-UPS:**

- A. General Contractor to notify applicator 7 days prior to pour to schedule finish of mock-up.
- B. Reserve 100 square feet for each color and finish at location adjacent to floor that will receive polish, but will be covered with another flooring material. Mock-up floor shall be placed on the same day, preferably the same pour as the floors to receive polish.

- C. Install mock-ups to verify selections made under sample submittal and to demonstrate methods and workmanship proposed for the project. If mock-up not possible, submitted samples will be accepted as demonstrated methods & workmanship.
- D. Aggregate selected must be tested to ensure it will accept polish.
- E. If stand-alone mockup required, form should be clean and free from extraneous substance and be at least a 10' x 10' with a level plywood bottom on level ground with unobstructed access around all four sides.
- F. Control joints should be included in mock-up. Sawing performed by General Contractor can begin as soon as the surface is firm enough not to displace any of the aggregate. Demonstrate undyed concrete and 2 colors separated by control joint.
- G. Edges should be included in mock-up.
- H. Approved mock-ups may become part of the completed work if undisturbed at time of substantial completion.
- I. Provide protection for Mock-up as specified for finished areas.

#### **1.08 PROTECTION**

- A. Protect areas to receive polished concrete finish at all times during construction to prevent oils, dirt, metal, excessive water and other potentially damaging materials from affecting the finished concrete surface. Protection measures listed below shall begin immediately after the concrete slab is poured:
  - 1. General Contractor to apply Skudo LT (Light Traffic), Ram Board or Econo-Cover temporary surface protection.
  - 2. All hydraulic powered equipment shall be diapered to avoid staining of the concrete.
  - 3. All vehicle parking shall be prohibited on the finish slab area. If necessary to complete their scope of work, drop cloths shall be placed under vehicles at all times.
  - 4. No pipe cutting machine shall be used on the finished floor slab.
  - 5. Steel shall not be placed on the finish slab to avoid rusting.
  - 6. Acids and acidic detergents will not come in contact with slab.
  - 7. All painters will use drop cloths on the concrete. If paint gets on the concrete, it must be immediately removed.
  - 8. All trades will be informed that the slab must be protected at all times.

#### **1.09 FIELD CONDITIONS**

- A. Comply with manufacturers written instructions for substrate temperature and moisture content, ambient temperature and humidity, ventilation and other conditions affecting chemical performance.
- B. Finish Concrete shall be cured a minimum of 28 days or at which point equipment can be put on the slab and does not displace aggregate.
- C. Application of finish system shall take place a minimum of 21 days prior to fixture & trim installation and/or substantial completion.
- D. Finish Concrete area shall be closed to traffic during finish floor application and after application, for the time as recommended by manufacturer.

### **PART 2 - PRODUCTS**

#### **2.01 MANUFACTURERS**

- A. Polishing Equipment:
  - 1. HTC Inc: [www.htc-floorsystems.com](http://www.htc-floorsystems.com).
  - 2. SASE Company LLC: [www.sasecompany.com](http://www.sasecompany.com).
  - 3. Husqvarna AB: [www.husqvarnacp.com](http://www.husqvarnacp.com).
- B. Polishing Materials:
  - 1. Ameripolish

2. PROSOCO, Inc: [www.prosoco.com/consolideck/sle](http://www.prosoco.com/consolideck/sle).
3. SASE Company LLC: [www.sasecompany.com](http://www.sasecompany.com).
4. L.M. Scofield Company: [www.scofield.com](http://www.scofield.com).

C. Sealants:

1. Euclid Chemical Company: [www.euclidchemical.com](http://www.euclidchemical.com).
2. Hi-Tech Systems: [www.hitechpolyurea.com](http://www.hitechpolyurea.com).
3. Metzger McGuire: [www.metzgermcguire.com](http://www.metzgermcguire.com).

## 2.02 POLISHING EQUIPMENT AND MATERIALS

- A. Three-phase 480 Volt generator.
- B. 3 head or 4 head counter rotating, variable speed, electric floor grinding/polishing machines with at least 600 pounds down pressure. For example: HTC 950RX, HTC 800 HD, SASE PDG 8000, Husqvarna PG 820.
- C. HTC/Pullman Dust extraction system, pre-separator, and squeegee attachments with minimum flow rating of 322 cubic feet per minute such as the HTC 75D, HTC 86D, T8600, T12600, Bull 500, Bull 1250 & T55 or C5500.
- D. Grinding tools:
  1. Metal bonded diamonds 40, 80 and 150 metal or QuickCut transitional.
  2. Resin bonded diamonds 100, 200, 400 and 800 grits.
- E. Grinding Pads for Edges
  1. Metal bonded diamonds 50 and 100 grits.
  2. Resin bonded diamonds 100, 200,400, and 800 grits.
- F. Hand Grinder with dust extraction attachment and pads.
- G. Densifier: A concrete hardener chemically reactive, waterborne solution of inorganic silicate or silicate materials and proprietary components; odorless; colorless which hardens and densifies concrete surfaces to protect against abrasion, dusting, and absorption of liquids.
  1. Ameripolish 3D HS; Ameripolish, Inc.
  2. Consolideck LS; PROSOCO, Inc.
  3. SASE SFS D2; SASE Company, Inc.
- H. Control Joint and Saw Cut Filler, two part polyurea.
  1. Hi-Tech HT-PE85; Hi-Tech Systems
  2. Spal-Pro RS-88; Metzger/McGuire
  3. Euclid QuikJoint 200 (Grey Only); Euclid Chemical Company
- I. Dye: A penetrating dye that chemically combines with cured concrete to produce permanent, variegated or translucent color effects. All concrete dye to be mixed using Ameripolish "ColorSolve" solvent carrier. Provide 9 colors as selected by Architect from manufacturer's standard colors. See Finish Legend Type GPCD-1 through GPCD-9.
  1. Ameripolish Classic (Solvent-based) Concrete Dye; Ameripolish, Inc.
  2. Consolideck GemTone Stain (Dye); PROSOCO, Inc.
  3. Scofield Formula One Dye; L.M. Scofield Co.
- J. Penetrating Stain Guard: Protection from debris and contaminants
  1. Ameripolish 3D SP; Ameripolish, Inc.
  2. Consolideck LS Guard; PROSOCO, Inc.
  3. SASE SPR3-WB; SASE Company, Inc.
- K. Stain Resistor/Inhibitor: Additional protection for food service areas.
  1. Ameripolish SR2 Stain Resistor; Ameripolish, Inc.
  2. Consolideck Polish Guard; PROSOCO, Inc.
  3. SASE SPR3 Oil, Water & Stain Inhibitor; SASE Company, Inc.
- L. Diamond Impregnated Burnishing Pads
  1. Trifecta Pads; SASE Company, Inc.

2. Twister Pads; HTC

**PART 3 - EXECUTION**

**3.01 EXAMINATION**

- A. Verify that floor surfaces are acceptable to receive the work of this section.
- B. Examine the areas and conditions under which work of this section will be provided and the correct conditions detrimental to the timely and proper completion of the work. Do not proceed until unsatisfactory conditions are resolved.
- C. Verify that base slab meet finish and surface profile requirements listed in Section 03 3000 - Cast-in-Place Concrete and indicated herein.
- D. Verify that concrete slab is adequately cured to receive the work of this Section.
- E. Verify that required floor-mounted utilities are in correct location.

**3.02 PREPARATION**

- A. Provide floor clean of materials and debris.
- B. Protect adjacent surfaces as required to prevent damage by the concrete polishing procedure.
- C. Setup grinding machine, dust extraction system, tooling, and generator in accord with equipment manufacturer's recommendations.

**3.03 POLISHED CONCRETE APPLICATION**

- A. Fill construction joints and cracks with filler products as specified in accordance with manufacturers instructions colored to match (or contrast) with concrete color as specified by architect. All control joint and decorative saw cut filling must be performed prior to grinding application.
- B. Grind the concrete floor to within 2 -3 inches of wall with 40 grit metal, 80 grit metal and 150 grit metal or QuickCut transitional diamonds removing construction debris, floor slab imperfections and until there is a uniform scratch pattern and desired concrete aggregate exposure is achieved. Each subsequent grind shall be at 90 degrees from each previous grind and remove all the scratches from the previous grind. Vacuum the floor thoroughly using a squeegee vacuum attachment. Utilize the least aggressive diamond tooling necessary to remove all debris and to achieve uniform scratch pattern. Final surface finish to be salt and pepper.
- C. Grind the edges with 50 and 100 grit metal grinding pads, prior to grinding the floor with each step on the larger diamond grinder, removing all of the scratches from the previous grit. Vacuum the floor thoroughly after each grind, using a squeegee vacuum attachment.
- D. Polish the floor with resin bonded diamond grits of 100, 200, 400, first polishing the edges with pads of the same grit and then the field of the floor, removing all scratches from the previous grit. After each polish, clean the floor thoroughly using a vacuum with a squeegee attachment. After the 400 grit polishing step thoroughly clean the floor with a mop or auto-scrubber to prepare for dye.
- E. Apply dye color per Manufacturer's recommendations. Apply 2 coats of dye to achieve desired coloration.
- F. Apply densifying impregnator undiluted in accord with manufacturer's recommendations. Cover the entire work area liberally and allow to sit for 10 minutes. Apply again to areas where the densifying impregnator has soaked in and allow to sit for an additional 30 minutes. Squeegee excess material off of floor.
- G. Polish the floor with resin bonded diamond grit of 800, first polishing the edges with pads of the same grit and then the field of the floor, removing all scratches from the previous grit. After polishing, clean the floor thoroughly using clean water and an auto-scrubber or a mop and a wet vacuum.
- H. Apply Penetrating Stain Guard with a microfiber applicator and burnish with a fine, 800 grit, or very fine, 1500 grit, diamond impregnated burnishing pad.

- I. Where required, apply Stain Resistor/Inhibitor with a microfiber applicator and burnish with a fine, 800 grit, or very fine, 1500 grit, diamond impregnated burnishing pad.

### **3.04 PROTECTION**

- A. General Contractor to apply Skudo LT (Light Traffic), Ram Board or Econo-Cover temporary surface protection.
- B. Do not allow any trade to park any vehicles on the inside slab. If necessary to complete their scope of work, drop cloths will be placed under vehicles at all times.
- C. Diaper all hydraulic powered equipment to avoid staining of the concrete.
- D. Protect slab after completion of polishing and dyeing work with Ram Board floor protection cover, Econo-Cover or equal. Overlap and tape seams.
- E. Place no steel on interior slab to avoid rust stains and gouges. If construction dictates necessity of this, interior slab will be protected with 1/2-inch plyboard.
- F. Do not allow acids and acidic detergents to come into contact with slab.
- G. Inform all trades that the slab must be protected at all times.
- H. Protect finished work until fully cured in accordance with manufacturer's recommendations.
- I. Protect completed floor from damage until Substantial Completion.
  1. Do not allow vehicle and pedestrian traffic on unprotected floor.
  2. Do not allow construction materials, equipment, and tools on unprotected floor.
- J. Immediately remove mortar splatter, spilled liquids, oil, grease, paint, coatings, and other surface contaminants which could adversely affect completed floor.
- K. Protect floor from traffic for at least 24 hours and from water for at least 72 hours after completion of polishing and dyeing.

### **3.05 SCHEDULES**

- A. Sheen:
  1. Polished Concrete Level 2 - 800 grit (Medium Gloss Finish):
    - a. At a distance of 30 to 50 feet, the floor will reveal moderate light reflection.
      - 1) Yield an average gloss reading of 40-60, as measured by a Horiba Gloss Meter.
- B. Exposed Aggregate:
  1. Minimal exposure, Salt and Pepper
- C. Color:
  1. Dye Color: See Finish Schedule.

**END OF SECTION**

**SECTION 03 4500**  
**PRECAST ARCHITECTURAL CONCRETE**

**PART 1 GENERAL**

**1.01 SECTION INCLUDES**

- A. Architectural precast concrete caps at signage structure, Sheet A003.
- B. Supports, anchors, and attachments.
- C. Grouting under panels.

**1.02 RELATED REQUIREMENTS**

- A. Section 03 3000 - Cast-in-Place Concrete: Admixtures.
- B. Section 07 9200 - Joint Sealants: Sealing perimeter and intermediate joints.

**1.03 REFERENCE STANDARDS**

- A. ACI 301 - Specifications for Structural Concrete; 2010 (Errata 2012).
- B. ACI 318 - Building Code Requirements for Structural Concrete and Commentary; 2011.
- C. ASTM A36/A36M - Standard Specification for Carbon Structural Steel; 2014.
- D. ASTM A123/A123M - Standard Specification for Zinc (Hot-Dip Galvanized) Coatings on Iron and Steel Products; 2017.
- E. ASTM A153/A153M - Standard Specification for Zinc Coating (Hot-Dip) on Iron and Steel Hardware; 2016a.
- F. ASTM A615/A615M - Standard Specification for Deformed and Plain Carbon-Steel Bars for Concrete Reinforcement; 2018, with Editorial Revision (2018).
- G. ASTM A1064/A1064M - Standard Specification for Carbon-Steel Wire and Welded Wire Reinforcement, Plain and Deformed, for Concrete; 2017.
- H. ASTM C1602/C1602M - Standard Specification for Mixing Water Used in the Production of Hydraulic Cement Concrete; 2012.
- I. ASTM C33/C33M - Standard Specification for Concrete Aggregates; 2013.
- J. ASTM C150/C150M - Standard Specification for Portland Cement; 2018.
- K. ASTM C260/C260M - Standard Specification for Air-Entraining Admixtures for Concrete; 2010a.
- L. ASTM C618 - Standard Specification for Coal Fly Ash and Raw or Calcined Natural Pozzolan for Use in Concrete; 2015.
- M. ASTM C979/C979M - Standard Specification for Pigments for Integrally Colored Concrete; 2016.
- N. ASTM C989/C989M - Standard Specification for Slag Cement for Use in Concrete and Mortars; 2014.
- O. ASTM C1240 - Standard Specification for Silica Fume Used in Cementitious Mixtures; 2014.
- P. AWS D1.1/D1.1M - Structural Welding Code - Steel; 2015, with Errata (2016).
- Q. IAS AC157 - Accreditation Criteria for Fabricator Inspection Programs for Reinforced and Precast/Prestressed Concrete; 2010.
- R. PCI MNL-117 - Manual for Quality Control for Plants and Production of Architectural Precast Concrete Products; 2007.
- S. PCI MNL-120 - PCI Design Handbook - Precast and Prestressed Concrete; 2010, Seventh Edition.
- T. PCI MNL-122 - Architectural Precast Concrete; 2007, Third Edition.
- U. PCI MNL-123 - Design and Typical Details of Connections for Precast and Prestressed Concrete; 1988, Second Edition.



- V. PCI MNL-135 - Tolerance Manual for Precast and Prestressed Concrete Construction; 2000.

#### **1.04 ADMINISTRATIVE REQUIREMENTS**

- A. Coordination: Coordinate connection devices including supports, anchors and connection devices with supporting structural framework.
- B. Preinstallation Meeting: Convene one week prior to commencing work of this section.

#### **1.05 SUBMITTALS**

- A. See Section 01 3000 - Administrative Requirements, for submittal procedures.
- B. Product Data: Manufacturer's information on accessory products, including pigments, admixtures, inserts, plates, etc.
- C. Shop Drawings: Indicate layout, unit locations, configuration, unit identification marks, reinforcement, integral insulation, insulated panel system connectors, connection details, support items, location of lifting devices, dimensions, openings, and relationship to adjacent materials. Provide erection drawings.
1. Include details of mix designs.
  2. Include structural design calculations.
- D. Samples: Submit two sample panels, 8 by 8 inch in size, illustrating surface finish, color and texture.
- E. Fabricator's Qualification Statement: Provide documentation showing precast concrete fabricator is accredited under IAS AC157.
- F. Maintenance Data: Indicate surface cleaning instructions.

#### **1.06 QUALITY ASSURANCE**

- A. Fabricator Qualifications:
1. Firm having at least 5 years of documented experience in production of precast concrete of the type required.
  2. Plant certified under Precast/Prestressed Concrete Institute Plant Certification Program; product group and category A1 - Architectural Precast Concrete.
  3. Plant certified under Architectural Precast Association Plant Certification Program for production of architectural precast concrete.
  4. Fabricator Qualifications: Precast concrete fabricator accredited by IAS according to IAS AC157.

#### **1.07 DELIVERY, STORAGE, AND HANDLING**

- A. Handling: Lift and support precast units only from support points.
- B. Blocking and Lateral Support During Transport and Storage: Use materials that are clean, non-staining, and non-harmful to exposed surfaces. Provide temporary lateral support to prevent bowing and warping.
- C. Protect units to prevent staining, chipping, or spalling of concrete.
- D. Mark units with date of production in location that will be concealed after installation.

### **PART 2 PRODUCTS**

#### **2.01 MANUFACTURERS**

- A. Architectural Precast Concrete:
1. Any manufacturer holding a PCI Group A Plant Certification for the types of products specified; see [www.pci.org/#sle](http://www.pci.org/#sle).
  2. Substitutions: See Section 01 6000 - Product Requirements.

#### **2.02 PRECAST UNITS, GENERAL**

- A. Precast Architectural Concrete Units: Comply with PCI MNL-120, PCI MNL-122, PCI MNL-123, PCI MNL-135, and ACI 318.

1. Concrete Face Mix: Minimum 5000 psi, 28 day strength, air entrained to 5 to 7 percent; comply with ACI 301.
  2. Design Loads: Static loads, anticipated dynamic loading, including positive and negative wind loads, thermal movement loads, and erection forces as defined by applicable code.
  3. Calculate structural properties of units in accordance with ACI 318.
  4. Accommodate construction tolerances, deflection of building structural members, and clearances of intended openings.
  5. Provide connections that accommodate building movement and thermal movement and adjust to misalignment of structure without unit distortion or damage.
- B. Finish Type A: Ensure exposed-to-view finish surfaces of precast units are uniform in color and appearance. Match color and texture of standard cast stone units specified in Section 04 2000 - Unit Masonry and custom cast stone units specified in Section 04 7200 - Cast Stone Masonry.

### **2.03 REINFORCEMENT**

- A. Reinforcing Steel: ASTM A615/A615M, Grade 40 (40,000 psi).
1. Deformed billet-steel bars.
  2. Unfinished.
- B. Steel Welded Wire Reinforcement (WWR): Plain type, ASTM A1064/A1064M.
1. Form: Flat Sheets.
  2. WWR Style: 6 by 12-W12 by W5.

### **2.04 CONCRETE MATERIALS**

- A. Cement: ASTM C150/C150M, Type I - Normal Portland type.
- B. Other Cementitious Materials:
1. Fly Ash or Natural Pozzolans: Comply with ASTM C618.
  2. Ground Granulated Blast Furnace Slag: ASTM C989/C989M.
  3. Silica Fume: Comply with ASTM C1240.
- C. Fine and Coarse Structural Aggregates: ASTM C33/C33M.
- D. Color Additives: Pure, concentrated mineral pigments specifically intended for mixing into concrete and complying with ASTM C979/C979M.
1. Concentration: Base dosage rates on weight of Portland cement, fly ash, silica fume, and other cementitious materials but not aggregate or sand.
  2. Color(s): To match Architect's sample(s) when incorporated into specified mix design(s).
- E. Water: ASTM C1602/C1602M; clean, potable, and not detrimental to concrete.
- F. Air Entrainment Admixture: ASTM C260/C260M.
- G. Grout:
1. Non-shrink, non-metallic, minimum 10,000 psi, 28 day strength.

### **2.05 FORM LINERS**

- A. Material: Glass fiber reinforced polyester, Acrylonitrile butadiene styrene, Polyvinyl chloride, Polystyrene, or Polyurethane.
- B. Configuration: As indicated on Drawings.

### **2.06 SUPPORT DEVICES**

- A. Connecting and Support Devices; Anchors and Inserts: ASTM A36/A36M steel; hot-dip galvanized in accordance with ASTM A153/A153M.
1. Clean surfaces of rust, scale, grease, and foreign matter.
  2. Galvanize after fabrication in accordance with requirements of ASTM A123/A123M.
- B. Primer: Zinc rich type.

### **2.07 FABRICATION**

- A. Fabricate in compliance with PCI MNL-117 and PCI MNL-135.

- B. Maintain plant records and quality control program during production of precast units. Make records available upon request.
- C. Use rigid molds, constructed to maintain precast unit uniform in shape, size, and finish.
- D. Use form liners in accordance with manufacturer's instructions.
- E. Place thin brick in form liner in accordance with manufacturer's instructions. Mix bricks from several cartons for uniform distribution of color variations.
- F. Maintain consistent quality during manufacture.
- G. Fabricate connecting devices, plates, angles, items fit to steel framing members, inserts, bolts, and accessories. Fabricate to permit initial placement and final attachment.
- H. Embed reinforcing steel, anchors, inserts plates, angles, and other cast-in items.
- I. Locate hoisting devices to permit removal after erection.
- J. Cure units to develop concrete quality, and to minimize appearance blemishes such as non-uniformity, staining, or surface cracking.
- K. Minor patching in plant is acceptable, providing structural adequacy and appearance of units is not impaired.

## **2.08 FABRICATION TOLERANCES**

- A. Comply with PCI MNL-117 and PCI MNL-135, except as specifically amended below.
  - 1. Maximum Variation From Nominal Face Dimensions: Plus or minus 3/32 in.
  - 2. Maximum Variation From Square or Designated Skew: Plus or minus 1/8 inch in 10 feet.
  - 3. Maximum Variation from Thickness: Plus or minus 1/8 in.
  - 4. Maximum Misalignment of Anchors, Inserts, Openings: Plus or minus 1/8 inch.
  - 5. Maximum Bowing of Members: Plus or minus length/360.

## **2.09 SOURCE QUALITY CONTROL**

- A. Provide testing and analysis of concrete mix.
- B. Quality-Control Testing: Test and inspect precast concrete according to PCI MNL 117 requirements. If using self-consolidating concrete also test and inspect according to PCI TR-6 "Interim Guidelines for the Use of Self-Consolidating Concrete" and ASTM C 1611/C 1611M, ASTM C 1712, ASTM C 1610/1610M, and ASTM C 1621/C 1621M.

## **PART 3 EXECUTION**

### **3.01 EXAMINATION**

- A. Verify that building structure, anchors, devices, and openings are ready to receive work of this section.

### **3.02 PREPARATION**

- A. Provide for erection procedures and induced loads during erection. Maintain temporary bracing in place until final support is provided.

### **3.03 ERECTION**

- A. Erect units without damage to shape or finish. Replace or repair damaged panels.
- B. Erect units level and plumb within allowable tolerances.
- C. Align and maintain uniform horizontal and vertical joints as erection progresses.
- D. When units require adjustment beyond design or tolerance criteria, discontinue affected work; advise Architect.
- E. Weld units in place. Perform welding in accordance with AWS D1.1/D1.1M.
- F. Provide non-combustible shields during welding operations.
- G. Touch-up field welds and scratched or damaged primed painted surfaces.

- H. Set vertical units dry, without grout, attaining joint dimension with lead or plastic spacers. Pack grout to base of unit.
- I. Exposed Joint Dimension: 1/2 inch. Adjust units so that joint dimensions are within tolerances.

#### **3.04 TOLERANCES**

- A. Erect members level and plumb within allowable tolerances. Comply with PCI MNL-135, except as specifically amended below.
  - 1. Plan Location from Building Grid Datum: Plus or minus 3/8 in.
  - 2. Top Elevation from Nominal Top Elevation: Plus or minus 3/8 inch.
  - 3. Maximum Plumb Variation Over Height of Structure or 100 ft (whichever is less): Plus or minus 1/2 inch.
  - 4. Exposed Joint Dimension: Plus or minus 3/16 inch.
  - 5. Maximum Jog in Alignment of Matching Faces or Edges: Plus or minus 3/16 inch.
  - 6. Differential Bowing or Camber as Erected Between Similar Adjacent Members: Plus or minus 3/16 inch.

**END OF SECTION**

**SECTION 04 2000**  
**UNIT MASONRY**

**PART 1 GENERAL**

**1.01 SECTION INCLUDES**

- A. Concrete block.
- B. Split-faced concrete block.
- C. Concrete building brick.
- D. Mortar and grout.
  - 1. Premixed colored mortar.
  - 2. Premixed non-colored mortar.
  - 3. Site-mixed grout
- E. Reinforcement and anchorage.
- F. Flashings.
- G. Accessories.

**1.02 RELATED REQUIREMENTS**

- A. Section 03 2000 - Concrete Reinforcing: Reinforcing steel for grouted masonry.
- B. Section 05 5000 - Metal Fabrications: Loose steel lintels.
- C. Section 06 1000 - Rough Carpentry: Nailing strips built into masonry.
- D. Section 07 1113 - Bituminous Dampproofing: Dampproofing masonry surfaces.
- E. Section 07 2100 - THERMAL INSULATION: Insulation for cavity spaces.
- F. Section 07 2500 - Weather Barriers: Water-resistive barriers or air barriers applied to the exterior face of the backing sheathing or masonry.
- G. Section 07 8400 - Firestopping: Firestopping at penetrations of fire-rated masonry and at top of fire-rated walls.
- H. Section 07 9200 - Joint Sealants: Sealing control and expansion joints.
- I. Section 09 9123 - Interior Painting; Interior concrete masonry units.
- J. Section 09 9600 - High Performance Coatings; Exterior concrete masonry units.

**1.03 REFERENCE STANDARDS**

- A. ACI 530/530.1/ERTA - Building Code Requirements and Specification for Masonry Structures and Related Commentaries; 2011.
- B. ASTM A153/A153M - Standard Specification for Zinc Coating (Hot-Dip) on Iron and Steel Hardware; 2016a.
- C. ASTM A641/A641M - Standard Specification for Zinc-Coated (Galvanized) Carbon Steel Wire; 2009a (Reapproved 2014).
- D. ASTM A951/A951M - Standard Specification for Steel Wire for Masonry Joint Reinforcement; 2016.
- E. ASTM A1064/A1064M - Standard Specification for Carbon-Steel Wire and Welded Wire Reinforcement, Plain and Deformed, for Concrete; 2017.
- F. ASTM C55 - Standard Specification for Concrete Building Brick; 2017.
- G. ASTM C90 - Standard Specification for Loadbearing Concrete Masonry Units; 2016a.
- H. ASTM C91/C91M - Standard Specification for Masonry Cement; 2012.
- I. ASTM C129 - Standard Specification for Nonloadbearing Concrete Masonry Units; 2017.
- J. ASTM C140/C140M - Standard Test Methods of Sampling and Testing Concrete Masonry Units and Related Units; 2017a.

- K. ASTM C150/C150M - Standard Specification for Portland Cement; 2018.
- L. ASTM C207 - Standard Specification for Hydrated Lime for Masonry Purposes; 2006 (Reapproved 2011).
- M. ASTM C270 - Standard Specification for Mortar for Unit Masonry; 2014a.
- N. ASTM C404 - Standard Specification for Aggregates for Masonry Grout; 2011.
- O. ASTM C476 - Standard Specification for Grout for Masonry; 2018.
- P. ASTM C780 - Standard Test Method for Preconstruction and Construction Evaluation of Mortars for Plain and Reinforced Unit Masonry; 2018a.
- Q. ASTM C1072 - Standard Test Method for Measurement of Masonry Flexural Bond Strength; 2013, with Editorial Revision (2014).
- R. ASTM C1148 - Standard Test Method for Measuring the Drying Shrinkage of Masonry Mortar; 1992a (Reapproved 2014).
- S. ASTM C1314 - Standard Test Method for Compressive Strength of Masonry Prisms; 2016.
- T. ASTM C1634 - Standard Specification for Concrete Facing Brick; 2017.
- U. ASTM C1714/C1714M - Standard Specification for Preblended Dry Mortar Mix for Unit Masonry; 2016.
- V. ASTM D226/D226M - Standard Specification for Asphalt-Saturated Organic Felt Used in Roofing and Waterproofing; 2017.
- W. ASTM E514/E514M - Standard Test Method for Water Penetration and Leakage Through Masonry; 2014a.
- X. BIA Technical Notes No. 7 - Water Penetration Resistance – Design and Detailing; 2017.
- Y. BIA Technical Notes No. 28B - Brick Veneer/Steel Stud Walls; 2005.
- Z. BIA Technical Notes No. 46 - Maintenance of Brick Masonry; 2017.
- AA. TMS 402/602 - Building Code Requirements and Specification for Masonry Structures; 2016.
- AB. IMIAWC (CW) - Recommended Practices & Guide Specifications for Cold Weather Masonry Construction; International Masonry Industry All-Weather Council; 1993.
- AC. IMIAWC (HW) - Recommended Practices & Guide Specifications for Hot Weather Masonry Construction; International Masonry Industry All-Weather Council; current edition.
- AD. UL (FRD) - Fire Resistance Directory; Current Edition.

#### **1.04 ADMINISTRATIVE REQUIREMENTS**

- A. Preinstallation Meeting: Convene a preinstallation meeting one week before starting work of this section; require attendance by all relevant installers.

#### **1.05 SUBMITTALS**

- A. See Section 01 3000 - Administrative Requirements, for submittal procedures.
- B. Product Data: Provide data for masonry units, fabricated wire reinforcement, mortar, masonry accessories, and water repellent products.
- C. Shop Drawings: Indicate pertinent dimensions, materials, anchorage, size and type of fasteners, and accessories for brickwork support system.
- D. Samples: Submit four samples of facing brick units to illustrate color, texture, and extremes of color range.
- E. Manufacturer's Certificate: Certify that masonry units meet or exceed specified requirements.
- F. Manufacturer's Certificate: Certify that water repellent admixture manufacturer has certified masonry unit manufacturer as an approved user of water repellent admixture in the manufacture of concrete block.

- G. Test Reports: Concrete masonry manufacturer's test reports for units with integral water repellent admixture.

#### **1.06 QUALITY ASSURANCE**

- A. Comply with provisions of ACI 530/530.1/ERTA, except where exceeded by requirements of Contract Documents.
  - 1. ACI 530/530.1/ERTA
- B. Fire Rated Assemblies: Conform to adopted code for applicable requirements for fire rated masonry construction.
- C. Manufacturer Qualifications: Company specializing in manufacturing the type of products specified in this section with minimum five years of documented experience.
- D. Installer Qualifications: Company specializing in performing work of the type specified and with at least five years of documented experience and approved by manufacturer.
- E. Special Inspections - Masonry: See Section 01 4533 - Code-Required Special Inspections and Procedures.
- F. Colored mortars: Provide only factory pre-mixed mortar mixes for color uniformity.

#### **1.07 MOCK-UP**

- A. Construct a masonry wall as a mock-up panel sized 8 feet long by 6 feet high; include mortar, accessories, structural backup, and flashings (with lap joint, corner, and end dam) in mock-up.
- B. Coordinate with other Sections including Section 08 4313 - Aluminum Framed Storefronts, Section 08 4413 - Glazed Aluminum Curtain Walls and Section 08 8000 - Glazing for related elements to be included in mock-up.
- C. Locate where directed.
- D. Mock-up may remain as part of the Work.
- E. Verify mock-up requirements with Architect prior to proceeding.

#### **1.08 DELIVERY, STORAGE, AND HANDLING**

- A. Deliver, handle, and store masonry units by means that will prevent mechanical damage and contamination by other materials.
- B. Store Mixing and Liquid materials in clean dry area in accordance with manufacturer's instructions.
- C. Keep Mixing and Liquid materials away from head and open flame.

### **PART 2 PRODUCTS**

#### **2.01 CONCRETE MASONRY UNITS**

- A. Concrete Block: Comply with referenced standards and as follows:
  - 1. Size: Standard units with nominal face dimensions of 16 by 8 inches and nominal depths as indicated on drawings for specific locations.
  - 2. Special Shapes: Provide non-standard blocks configured for corners, lintels, headers, control joint edges, radius outside corner blocks, and other detailed conditions. Provide 8 x 16 inch deep lintel blocks where indicated.
  - 3. Load-Bearing Units: ASTM C90, normal weight.
    - a. Hollow block, as indicated.
    - b. Exposed Faces: Manufacturer's standard color and texture where indicated.
  - 4. Non-Loadbearing Units: ASTM C129.
    - a. Hollow block, as indicated.
    - b. Exposed Faces: Manufacturer's standard color and texture where indicated.
    - c. Normal weight.
- B. Split-Faced CMU Units:
  - 1. Load-Bearing Units: ASTM C 90, normal weight.

2. Size: Nomial face dimensions of 16 x 8 inches (400 x 200 mm) and nominal depths as indicated on Drawings for specific locations.
  3. Pattern: Split face.
  4. Colors: Manufacturer's standard gray for paint finish..
  5. Special Shapes: Provide non-standard blocks configured for corners, lintels, headers, control joint edges,, and other detailed conditions.
  6. Provide integral water repellent at exterior exposed masonry assemblies.
  7. Manufacturer: Decra-Stone Split Face as manufactured by Div 2-4.
  8. Other acceptable manufacturers:
    - a. Block USA, Birmingham, Alabama: [www.specblockusa.com](http://www.specblockusa.com).
    - b. Superock Block Company, Birmingham, Alabama.
    - c. Substitutions: See Section 01600 - Product Requirements.
- C. Units with Integral Water Repellent: Concrete block units as specified in this section with polymeric liquid admixture added to concrete masonry units at the time of manufacture.
1. Performance of Units with Integral Water Repellent:
    - a. Water Permeance: When tested per ASTM E514/E514M and for a minimum of 72 hours.
      - 1) No water visible on back of wall above flashing at the end of 24 hours.
      - 2) No flow of water from flashing equal to or greater than 0.032 gallons per hour at the end of 24 hours.
      - 3) No more than 25 percent of wall area above flashing visibly damp at end of test.
    - b. Flexural Bond Strength: ASTM C1072; minimum 10 percent increase.
    - c. Compressive Strength: ASTM C1314; maximum 5 percent decrease.
    - d. Drying Shrinkage: ASTM C1148; maximum 5 percent increase in shrinkage.
  2. Use only in combination with mortar that also has integral water repellent admixture.
  3. Use water repellent admixtures for masonry units and mortar by a single manufacturer.
  4. Manufacturers:
    - a. ACM Chemistries Inc; RainBloc Integral Water Repellent System: [www.acmchem.com](http://www.acmchem.com).
    - b. GCP Applied Technologies; Dry-Block Mortar Admixture: [www.gcpat.com](http://www.gcpat.com).
    - c. BASF Construction Chemicals; Rheapel Plus or Rheapel WR: [www.basf.com](http://www.basf.com).
    - d. Substitutions: See Section 01 6000 - Product Requirements.
- D. Concrete Brick:
1. Size: As required.
  2. Concrete Building Brick: ASTM C55; lightweight, solid, for interior or concealed use.
  3. Concrete Facing Brick: ASTM C1634; solid, lightweight; for architectural, paver, and below grade use.
    - a. Exposed Faces: Color and texture to be selected from manufacturer's standard range.

## 2.02 MORTAR AND GROUT MATERIALS

- A. Masonry Cement: ASTM C91/C91M, Type N.
  1. Colored Mortar: Premixed cement as required to match Architect's color sample.
- B. Portland Cement: ASTM C150/C150M, Type I; color as required to produce approved color sample.
  1. Not more than 0.60 percent alkali.
- C. Hydrated Lime: ASTM C207, Type S.
- D. Grout Aggregate: ASTM C404.
- E. Water: Clean and potable.
- F. Accelerating Admixture: Nonchloride type for use in cold weather.



- G. Integral Water Repellent Admixture for Mortar: Polymeric liquid admixture added to mortar at the time of manufacture.
  - 1. Use only in combination with masonry units manufactured with integral water repellent admixture.
  - 2. Use only water repellent admixture for mortar from the same manufacturer as water repellent admixture in masonry units.
  - 3. Meet or exceed performance specified for water repellent admixture used in masonry units.
- H. Packaged Dry Material for Mortar for Unit Masonry: Premixed Portland cement, hydrated lime, and sand; complying with ASTM C1714/C1714M and capable of producing mortar of the specified strength in accordance with ASTM C270 with the addition of water only.
  - 1. Type: Types as scheduled in this section.
  - 2. Color: Mineral pigments added as required to produce approved color sample.
    - a. Provide colors as selected by Architect from manufacturer's standard offerings.
  - 3. Water-repellent mortar for use with water repellent masonry units at exterior locations.
  - 4. Manufacturers:
    - a. Amerimix, an Oldcastle brand; AMX 410: [www.amerimix.com/#sle](http://www.amerimix.com/#sle).
    - b. Spec Mix; Portland Lime and Sand Mortar: [www.specmix.com](http://www.specmix.com).
    - c. Cemex; Custom Colored Masonry Cement: [www.cemexusa.com](http://www.cemexusa.com).
    - d. Holcim; Rainbow Mortamix Custom Color Masonry Cement: [www.holcim.us](http://www.holcim.us).
    - e. Substitutions: See Section 01 6000 - Product Requirements.
- I. Packaged Dry Material for Grout for Masonry: Premixed cementitious materials and dried aggregates; capable of producing grout of the specified strength in accordance with ASTM C476 with the addition of water only.
  - 1. Type: Fine.

### **2.03 REINFORCEMENT AND ANCHORAGE**

- A. Manufacturers:
  - 1. Dur-O-Wall: [www.dur-o-wall.com](http://www.dur-o-wall.com).
  - 2. Hohmann & Barnard, Inc: [www.h-b.com/#sle](http://www.h-b.com/#sle).
  - 3. WIRE-BOND [www.wirebond.com/#sle](http://www.wirebond.com/#sle).
  - 4. Substitutions: See Section 01 6000 - Product Requirements.
- B. Reinforcing Steel: Type specified in Section 03300; size as indicated on drawings; uncoated finish.
- C. Single Wythe Joint Reinforcement: ASTM A951/A951M.
  - 1. Type: Truss or ladder.
  - 2. Material: ASTM A1064/A1064M steel wire, mill galvanized to ASTM A641/A641M, Class 3.
  - 3. Size: 0.1483 inch side rods with 0.1483 inch cross rods; width as required to provide not less than 5/8 inch of mortar coverage on each exposure.
- D. Adjustable Multiple Wythe Joint Reinforcement: ASTM A951/A951M.
  - 1. Type: Truss or ladder, with adjustable ties or tabs spaced at 16 in on center.
  - 2. Material: ASTM A1064/A1064M steel wire, hot dip galvanized after fabrication to ASTM A153/A153M, Class B.
  - 3. Size: 0.1875 inch side rods with 0.1483 inch cross rods and adjustable components of 0.1875 inch wire, width of components as required to provide not less than 5/8 inch of mortar coverage from each masonry face.
  - 4. Vertical adjustment: Not more than 1 1/4 inches.
  - 5. Insulation Clips: Provide clips at tabs or ties designed to secure insulation against outer face of inner wythe of masonry.

- E. Strap Anchors: Bent steel shapes, 1-1/2 inch width, 0.105 inch thick, 24 inch length, with 1-1/2 inch long, 90 degree bend at each end to form a U or Z shape or with cross pins, hot dip galvanized to ASTM A153/A153M, Class B.
- F. Flexible Anchors: 2-piece anchors that permit differential movement between masonry and building frame, sized to provide not less than 5/8 inch of mortar coverage from masonry face.
  - 1. Concrete frame: Dovetail anchors of bent steel strap, nominal 1 inch width x 0.024 inch thick, with trapezoidal wire ties 0.1875 inch thick, hot dip galvanized to ASTM A 153/A 153M, Class B.
  - 2. Steel frame: Crimped wire anchors for welding to frame, 0.25 inch thick, with trapezoidal wire ties 0.1875 inch thick, hot dip galvanized to ASTM A 153/A 153M, Class B.
- G. Two-Piece Wall Ties: Formed steel wire, 0.1875 inch thick, adjustable, eye and pintle type, hot dip galvanized to ASTM A 153/A 153M, Class B, sized to provide not less than 5/8 inch of mortar coverage from masonry face and to allow vertical adjustment of up to 1-1/4 in.
- H. Metal-to-Metal Fasteners: Self-drilling, self-tapping screws; corrosion resistant finish or hot dip galvanized to ASTM A153/A153M.
- I. Reinforcing Bar Positioners: Wire units designed to fit into mortar bed joints spanning masonry unit cells with loops for holding reinforcing bars in center of cells. Units are formed from 0.187-inch (4.8 mm) steel wire, hot dip galvanized after fabrication.
  - 1. Provide units with number of loops corresponding to number of bars required to be held.
  - 2. Product:
    - a. D/A 811; Dur-O-Wall, Inc.
    - b. D/A 816; Dur-O-Wall, Inc.
    - c. No. 376 Rebar Positioner; Heckman Building Products, Inc.
    - d. #RB Rebar Positioner; Hohmann & Barnard, Inc.
    - e. #RB-Twin Rebar Positioner; Hohmann & Barnard, Inc.
    - f. O-Ring Rebar Positioner; Masonry Reinforcing Corporation of America.
    - g. Double O-Ring Rebar Positioner; Masonry Reinforcing Corporation of America.

#### 2.04 FLASHINGS

- A. Copper/Polymer Film or Fabric Flashing: 3 oz/sq ft copper sheet laminated between two sheets of polymer or fiberglass fiber-reinforced film.
  - 1. Manufacturers:
    - a. Advanced Building Products, Inc.; Copper Sealtite 2000: [www.advancedbuildingproducts.com/#sle](http://www.advancedbuildingproducts.com/#sle).
    - b. Hohmann & Barnard, Inc; Copper-Fabric NA: [www.h-b.com/#sle](http://www.h-b.com/#sle).
    - c. York Manufacturing, Inc; Multi-Flash 500 Series: [www.yorkmfg.com/#sle](http://www.yorkmfg.com/#sle).
    - d. Wirebond; Copper Seal No.4140: [www.wirebond.com](http://www.wirebond.com).
    - e. Substitutions: See Section 01 6000 - Product Requirements.
- B. Copper/Polymer Film or Fabric Flashing - Self-Adhering: 3 oz/sq ft copper sheet bonded on inward facing side to a sheet of polymer or fiberglass fabric that has a clear adhesive with a removable release liner.
  - 1. Manufacturers:
    - a. Hohmann & Barnard, Inc; Copper-Fabric SA: [www.h-b.com/#sle](http://www.h-b.com/#sle).
    - b. Sandell Construction Solutions; Copper-Seal Self-Adhering Flashing: [www.sandellmfg.com](http://www.sandellmfg.com).
    - c. Substitutions: See Section 01 6000 - Product Requirements.
- C. Flashing Sealant/Adhesives: Silicone, polyurethane, or silyl-terminated polyether/polyurethane or other type required or recommended by flashing manufacturer; type capable of adhering to type of flashing used.

#### 2.05 ACCESSORIES

- A. Preformed Control Joints: Rubber material. Provide with corner and tee accessories, fused joints.

1. Manufacturers:
  - a. Blok-Lok Limited; RS Series: [www.blok-lok.com](http://www.blok-lok.com).
  - b. Dur-O-Wal; Product D/A 2005: [www.dur-o-wal.com](http://www.dur-o-wal.com).
  - c. Hohmann & Barnard, Inc (including Dur-O-Wal brand); RS Series: [www.h-b.com](http://www.h-b.com).
  - d. Masonry Reinforcing Corporation of America; Product 2902: [www.wirebond.com](http://www.wirebond.com).
  - e. Substitutions: See Section 01 6000 - Product Requirements.
- B. Joint Filler: Closed cell polyvinyl chloride; oversized 50 percent to joint width; self expanding; 1/2 inch wide by maximum lengths available.
  1. Manufacturers:
    - a. Dur-O-Wal: [www.dur-o-wal.com](http://www.dur-o-wal.com).
    - b. Hohmann & Barnard, Inc (including Dur -O-Wal brand): [www.h-b.com](http://www.h-b.com).
    - c. WIRE-BOND; \_\_\_\_\_: [www.wirebond.com/#sle](http://www.wirebond.com/#sle).
    - d. Substitutions: See Section 01 6000 - Product Requirements.
- C. Cavity Mortar Control: Semi-rigid polyethylene or polyester mesh panels, sized to thickness of wall cavity, and designed to prevent mortar droppings from clogging weeps and cavity vents and allow proper cavity drainage.
  1. Mortar Diverter: Semi-rigid mesh designed for installation at flashing locations.
    - a. Manufacturers:
      - 1) Advanced Building Products Inc; Mortar Break: [www.advancedflashing.com/#sle](http://www.advancedflashing.com/#sle).
      - 2) Mortar Net USA, Ltd: [www.mortarnet.com](http://www.mortarnet.com).
- D. Building Paper: ASTM D226/D226M, Type I ("No.15") asphalt felt.
- E. Nailing Strips: Softwood lumber, preservative treated; as specified in Section 06 1000.
- F. Termination Bars: Aluminum or stainless steel; compatible with membrane and adhesives.
- G. Drip Edge: Stainless steel; compatible with membrane and adhesives.
- H. Lap Sealants and Tapes: As recommended by flashing manufacturer; compatible with membrane and adhesives.
- I. Weeps:
  1. Type: Molded PVC grilles, insect resistant.
  2. Manufacturers:
    - a. Blok-Lok Limited; Cellvent: [www.blok-lok.com](http://www.blok-lok.com).
    - b. Dur-O-Wal; Product D/A 1005: [www.dur-o-wal.com](http://www.dur-o-wal.com).
    - c. Hohmann & Barnard, Inc; Quadro-Vent: [www.h-b.com](http://www.h-b.com).
    - d. WIRE-BOND; Cell Vent 6301: [www.wirebond.com](http://www.wirebond.com).
    - e. Substitutions: See Section 01 6000 - Product Requirements.
- J. Cleaning Solution: Non-acidic, not harmful to masonry work or adjacent materials or surrounding plant life.
  1. Obtain brick manufacturer's and cleaning agent manufacturer's recommendations for masonry cleaning products prior to proceeding.
  2. Job-mixed Detergent Solution: Solution of 1/2 cup (0.14-L) dry measure tetrasodium Phosphate and 1/2 cup (0.14-L) dry measure laundry detergent dissolved in 1 gallon (4 L) of water.

## 2.06 MORTAR AND GROUT MIXING

- A. Mortar for Unit Masonry: ASTM C 270, using the Proportion Specification. Unless otherwise indicated on Drawings, provide the following types.
  1. Masonry below grade and in contact with earth: Type S.
  2. Exterior, loadbearing masonry: Type N.
  3. Exterior, non-loadbearing masonry: Type N.
  4. Interior, loadbearing masonry: Type N.
  5. Interior, non-loadbearing masonry: Type O.

6. Masonry below grade and in contact with earth: Type S.
  7. Exterior, loadbearing masonry: Type S.
  8. Exterior, non-loadbearing masonry: Type N.
  9. Interior, loadbearing masonry: Type S.
  10. Interior, non-loadbearing masonry: Type N.
  11. Masonry Veneer: Type N.
- B. Colored Mortar: Use preblended colored mortar or proportion selected pigments and other ingredients to match Architect's sample, without exceeding manufacturer's recommended pigment-to-cement ratio.
- C. Colored Mortar: Use preblended colored mortar to match Architect's sample. Site mixed mortar will not be acceptable.
- D. Grout: ASTM C476; consistency required to fill completely volumes indicated for grouting; fine grout for spaces with smallest horizontal dimension of 2 inches or less; coarse grout for spaces with smallest horizontal dimension greater than 2 inches.
- E. Admixtures: Add to mixture at manufacturer's recommended rate and in accordance with manufacturer's instructions; mix uniformly.
- F. Mixing: Use mechanical batch mixer and comply with referenced standards.

### **PART 3 EXECUTION**

#### **3.01 EXAMINATION**

- A. Verify that field conditions are acceptable and are ready to receive masonry.
- B. Verify that related items provided under other sections are properly sized and located.
- C. Verify that built-in items are in proper location, and ready for roughing into masonry work.

#### **3.02 PREPARATION**

- A. Direct and coordinate placement of metal anchors supplied for installation under other sections.
- B. Provide temporary bracing during installation of masonry work. Maintain in place until building structure provides permanent bracing.

#### **3.03 COLD AND HOT WEATHER REQUIREMENTS**

- A. Comply with requirements of ACI 530/530.1/ERTA or applicable building code, whichever is more stringent.

#### **3.04 COURSING**

- A. Establish lines, levels, and coursing indicated. Protect from displacement.
- B. Maintain masonry courses to uniform dimension. Form vertical and horizontal joints of uniform thickness.
- C. Concrete Masonry Units:
  1. Bond: Running and stack bond where indicated on Drawings.
  2. Coursing: One unit and one mortar joint to equal 8 inches.
  3. Mortar Joints: Concave. Provide flush joints where masonry acts as substrate for cement plastering.
- D. Brick Units:
  1. Bond: Running.
  2. Coursing: Three units and three mortar joints to equal 8 inches.
  3. Mortar Joints: Concave.

#### **3.05 PLACING AND BONDING**

- A. Lay hollow masonry units with face shell bedding on head and bed joints.
- B. Buttering corners of joints or excessive furrowing of mortar joints is not permitted.
- C. Remove excess mortar and mortar smears as work progresses.

- D. Remove excess mortar with water repellent admixture promptly. Do not use acids, sandblasting or high pressure cleaning methods.
- E. Interlock intersections and external corners, except for units laid in stack bond.
- F. Do not shift or tap masonry units after mortar has achieved initial set. Where adjustment must be made, remove mortar and replace.
- G. Perform job site cutting of masonry units with proper tools to provide straight, clean, unchipped edges. Prevent broken masonry unit corners or edges.
- H. Cut mortar joints flush where wall tile is scheduled or resilient base is scheduled.
- I. Isolate masonry partitions from vertical structural framing members with a control joint as indicated.
- J. Isolate top joint of non-bearing masonry partitions from horizontal structural framing members and slabs or decks with compressible joint filler.

### **3.06 WEEPS**

- A. Install open head joint type weeps in veneer and cavity walls at 24 inches on center horizontally above through-wall flashing, above shelf angles and lintels, and at bottom of walls.

### **3.07 CAVITY MORTAR CONTROL**

- A. Do not permit mortar to drop or accumulate into cavity air space or to plug weep/cavity vents.
- B. For cavity walls, build inner wythe ahead of outer wythe to accommodate accessories.
- C. Install cavity mortar diverter at base of cavity and at other flashing locations as recommended by manufacturer to prevent mortar droppings from blocking weep/cavity vents.

### **3.08 REINFORCEMENT AND ANCHORAGE - GENERAL, SINGLE WYTHE MASONRY, AND CAVITY WALL MASONRY**

- A. Unless otherwise indicated on drawings or specified under specific wall type, install horizontal joint reinforcement 16 inches on center.
- B. Place masonry joint reinforcement in first and second horizontal joints above and below openings. Extend minimum 16 inches each side of opening.
- C. Place continuous joint reinforcement in first and second joint below top of walls.
- D. Lap joint reinforcement ends minimum 6 inches.
- E. Reinforce stack bonded unit joint corners and intersections with strap anchors 16 inches on center.
- F. Fasten anchors to structural framing and embed in masonry joints as masonry is laid. Unless otherwise indicated on drawings or closer spacing is indicated under specific wall type, space anchors at maximum of 36 inches horizontally and 24 inches vertically.

### **3.09 REINFORCEMENT AND ANCHORAGE - SINGLE WYTHE MASONRY**

- A. Install horizontal joint reinforcement 16 inches on center unless otherwise noted.
- B. Place masonry joint reinforcement in first and second horizontal joints above and below openings. Extend minimum 16 inches each side of opening.
- C. Place continuous joint reinforcement in first and second joint below top of walls.
- D. Lap joint reinforcement ends minimum 6 inches.
- E. Reinforce stack bonded unit joint corners and intersections with strap anchors 16 inches on center.

### **3.10 REINFORCEMENT AND ANCHORAGES - MULTIPLE WYTHE UNIT MASONRY**

- A. Install horizontal joint reinforcement 16 inches on center.
- B. Place masonry joint reinforcement in first and second horizontal joints above and below openings. Extend minimum 16 inches each side of opening.

- C. Place continuous joint reinforcement in first and second joint below top of walls.
- D. Lap joint reinforcement ends minimum 6 inches.
- E. Support and secure reinforcing bars from displacement. Maintain position within 1/2 inch of dimensioned position.
- F. Reinforce stack bonded unit joint corners and intersections with strap anchors 16 inches on center.

### **3.11 MASONRY FLASHINGS**

- A. Whether or not specifically indicated, install masonry flashing to divert water to exterior at all locations where downward flow of water will be interrupted.
  - 1. Extend flashings full width at such interruptions and at least 4 inches into adjacent masonry. Turn up at least 4 inches to form watertight pan at all flashing terminations.
  - 2. Remove or cover protrusions or sharp edges that could puncture flashings.
  - 3. Seal lapped ends and penetrations of flashing before covering with mortar.
- B. Extend metal flashings through exterior face of masonry and terminate in an angled drip with hemmed edge. Install joint sealer below drip edge to prevent moisture migration under flashing.
- C. Extend membrane flashings to within 1/4 inch of exterior face of masonry.
- D. Terminate membrane flashing with stainless steel drip edge. Lap flashing over drip edge and seal with flashing sealant/adhesive. Set drip edge in continuous bead of sealant.
- E. Lap end joints of flashings at least 6 inches, minimum, and seal watertight with flashing sealant/adhesive.
- F. Maintain a watershed condition by lapping dampproofing or waterproofing membrane over top edge of masonry flashings.

### **3.12 LINTELS**

- A. Install loose steel lintels over openings.
- B. Install reinforced unit masonry lintels over openings where steel or precast concrete lintels are not scheduled.
  - 1. See Structural Drawings for reinforcing and other structural requirements.
  - 2. Support and secure reinforcing bars from displacement. Maintain position within 1/2 inch of dimensioned position.
  - 3. See schedule on Drawings for reinforcing.
  - 4. Place and consolidate grout fill without displacing reinforcing.
  - 5. Allow masonry lintels to attain specified strength before removing temporary supports.
- C. Maintain minimum 8 inch bearing on each side of opening.

### **3.13 GROUTED COMPONENTS**

- A. See Structural Drawings for additional requirements.
- B. Support and secure reinforcing bars from displacement. Maintain position within 1/2 inch of dimensioned position.
- C. Place and consolidate grout fill without displacing reinforcing.
- D. At bearing locations, fill masonry cores with grout for a minimum 12 inches either side of opening.

### **3.14 CONTROL AND EXPANSION JOINTS**

- A. General: Install control and expansion joint materials in unit masonry as masonry progresses and where indicated on the Drawings. Do not allow materials to span control and expansion joints without provision to allow for in-plane wall or partition movement.
  - 1. If not indicated, locate control joints at the lesser of the following:
    - a. A distance of 25 feet on center.
    - b. A distance equal to 1-1/2 times the height of the wall.

2. Do not form a continuous span through movement joints unless provisions are made to prevent in-plane restraint of wall or partition movement.
3. In addition to the above requirements and unless otherwise indicated on the drawings, provide vertical control joints in masonry walls as follows:
  - a. Within 10 feet of wall corners and intersections,
  - b. Adjacent to and over openings:
    - 1) On one side of openings less than 6'-0".
    - 2) On both sides of openings 6'-0" wide and greater.
  - c. Changes in wall height or wall thickness, such as at pipe and duct chases and pilasters.
  - d. At movement construction joints in foundations, in roofs, and in floors.
- B. Form control joints in concrete masonry using one of the following methods:
  1. Install preformed control-joint gaskets designed to fit standard sash block.
  2. Install preformed control joint device in continuous lengths. Seal butt and corner joints in accordance with manufacturer's instructions.
  3. Provide fully grouted cells with one #4 vertical bar on both sides of the control joint.
  4. Form open joint 3/8 inch unless otherwise indicated for installation of sealant and backer rod specified in Section 07900 - Joint Sealants. Maintain joint free and clear of mortar.
- C. Form expansion joints in brick made from clay or shale as follows:
  1. Build up expansion joint in brick with accurately aligned head joints. Utilize temporary wood form where necessary to maintain alignment.
  2. Build in compressible joint fillers where indicated.
  3. 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 Section 07900 - Joint Sealants unless otherwise required.
    - a. Provide horizontal, pressure-relieving joints by 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.
- D. Do not continue horizontal joint reinforcement through control and expansion joints except at bond beams where reinforcing shall be continuous.
- E. Install preformed control joint device in continuous lengths. Seal butt and corner joints in accordance with manufacturer's instructions.
- F. Size control joints as indicated on drawings; if not indicated, 3/4 inch wide and deep.
- G. Form expansion joint as detailed on drawings.

### **3.15 BUILT-IN WORK**

- A. As work progresses, install built-in metal door frames and glazed frames and other items to be built into the work and furnished under other sections.
- B. Install built-in items plumb, level, and true to line.
- C. Bed anchors of metal door and glazed frames in adjacent mortar joints. Fill frame voids solid with grout.
  1. Fill adjacent masonry cores with grout minimum 12 inches from framed openings.
- D. Do not build into masonry construction organic materials that are subject to deterioration.

### **3.16 TOLERANCES**

- A. Maximum Variation from Alignment of Columns: 1/4 inch.
- B. Maximum Variation From Unit to Adjacent Unit: 1/16 inch.
- C. Maximum Variation from Plane of Wall: 1/4 inch in 10 ft and 1/2 inch in 20 ft or more.

- D. Maximum Variation from Plumb: 1/4 inch per story non-cumulative; 1/2 inch in two stories or more.
- E. Maximum Variation from Level Coursing: 1/8 inch in 3 ft and 1/4 inch in 10 ft; 1/2 inch in 30 ft.
- F. Maximum Variation of Mortar Joint Thickness: Head joint, minus 1/4 inch, plus 3/8 inch.
- G. Maximum Variation from Cross Sectional Thickness of Walls: 1/4 inch.

### **3.17 CUTTING AND FITTING**

- A. Cut and fit for chases, pipes, conduit, sleeves, and grounds. Coordinate with other sections of work to provide correct size, shape, and location.
- B. Obtain approval prior to cutting or fitting masonry work not indicated or where appearance or strength of masonry work may be impaired.

### **3.18 FIELD QUALITY CONTROL**

- A. Concrete Masonry Unit Tests: Test each variety of concrete unit masonry in accordance with ASTM C140/C140M for compliance with requirements of this specification.
- B. Mortar Tests: Test each type of mortar in accordance with ASTM C780, testing with same frequency as masonry samples.
- C. See Structural Drawings Sheet S1.1 for special inspections.

### **3.19 CLEANING**

- A. Test Area: Test a minimum 4 ft. by 4 ft. area on each type of masonry. Use manufacturer's application instructions. Let test area dry 3 to 7 days before inspection. Keep test panels available for comparison throughout masonry cleaning.
- B. Remove excess mortar and mortar droppings.
- C. Replace defective mortar. Match adjacent work.
- D. Clean soiled surfaces with cleaning solution. Strictly comply with manufacturer directions and cleaning recommendations. Clean masonry work daily.
- E. Use non-metallic tools in cleaning operations.
- F. Do not use pressure washers to clean masonry work.

### **3.20 PROTECTION**

- A. Without damaging completed work, provide protective boards at exposed external corners that are subject to damage by construction activities.

**END OF SECTION**



**SECTION 04 2001**  
**MASONRY VENEER**

**PART 1 GENERAL**

**1.01 SECTION INCLUDES**

- A. Concrete block.
- B. Split-faced concrete block.
- C. Mortar.
  - 1. Premixed colored mortar.
  - 2. Premixed non-colored mortar.
- D. Reinforcement and anchorage.
- E. Flashings.
- F. Accessories.

**1.02 RELATED REQUIREMENTS**

- A. Section 04 2000 - Unit Masonry.
- B. Section 05 4000 - Cold-Formed Metal Framing: Steel stud backup for masonry veneer.
- C. Section 05 5000 - Metal Fabrications: Loose steel lintels.
- D. Section 07 9200 - Joint Sealants: Sealing control and expansion joints.
- E. Section 09 9123 - Interior Painting: Painted concrete masonry units.
- F. Section 09 9600 - High Performance Coatings: Painted exterior concrete masonry.

**1.03 REFERENCE STANDARDS**

- A. ASTM A153/A153M - Standard Specification for Zinc Coating (Hot-Dip) on Iron and Steel Hardware; 2016a.
- B. ASTM A615/A615M - Standard Specification for Deformed and Plain Carbon-Steel Bars for Concrete Reinforcement; 2018, with Editorial Revision (2018).
- C. ASTM A641/A641M - Standard Specification for Zinc-Coated (Galvanized) Carbon Steel Wire; 2009a (Reapproved 2014).
- D. ASTM A951/A951M - Standard Specification for Steel Wire for Masonry Joint Reinforcement; 2016.
- E. ASTM A1064/A1064M - Standard Specification for Carbon-Steel Wire and Welded Wire Reinforcement, Plain and Deformed, for Concrete; 2017.
- F. ASTM C1072 - Standard Test Method for Measurement of Masonry Flexural Bond Strength; 2013, with Editorial Revision (2014).
- G. ASTM C1314 - Standard Test Method for Compressive Strength of Masonry Prisms; 2016.
- H. ASTM C1148 - Standard Test Method for Measuring the Drying Shrinkage of Masonry Mortar; 1992a (Reapproved 2014).
- I. ASTM C1714/C1714M - Standard Specification for Preblended Dry Mortar Mix for Unit Masonry; 2016.
- J. ASTM C91/C91M - Standard Specification for Masonry Cement; 2012.
- K. ASTM C129 - Standard Specification for Nonloadbearing Concrete Masonry Units; 2017.
- L. ASTM C270 - Standard Specification for Mortar for Unit Masonry; 2014a.
- M. ASTM E514/E514M - Standard Test Method for Water Penetration and Leakage Through Masonry; 2014a.
- N. BIA Technical Notes No. 7 - Water Penetration Resistance – Design and Detailing; 2017.
- O. BIA Technical Notes No. 28B - Brick Veneer/Steel Stud Walls; 2005.

- P. BIA Technical Notes No. 46 - Maintenance of Brick Masonry; 2017.
- Q. TMS 402/602 - Building Code Requirements and Specification for Masonry Structures; 2016.

#### **1.04 ADMINISTRATIVE REQUIREMENTS**

- A. Preinstallation Meeting: Convene one week before starting work of this section.

#### **1.05 SUBMITTALS**

- A. See Section 01 3000 - Administrative Requirements, for submittal procedures.
- B. Product Data: Provide data for masonry units, fabricated wire reinforcement, mortar, and masonry accessories including flashing.
- C. Samples: Submit four samples of each color of decorative block units to illustrate color, texture, and extremes of color range.
- D. Manufacturer's Certificate: Certify that masonry units meet or exceed specified requirements.
- E. Manufacturer's Certificate: Certify that water repellent admixture manufacturer has certified masonry unit manufacturer as an approved user of water repellent admixture in the manufacture of concrete block.
- F. Test Reports: Concrete masonry manufacturer's test reports for units with integral water repellent admixture.

#### **1.06 QUALITY ASSURANCE**

- A. Comply with provisions of ACI 530/530.1/ERTA, except where exceeded by requirements of Contract Documents.
  - 1. Maintain one copy of each document on project site.
- B. Manufacturer Qualifications: Company specializing in manufacturing the type of products specified in this section with minimum five years of documented experience.
- C. Installer Qualifications: Company specializing in performing work of the type specified and with at least five years of documented experience and approved by manufacturer.
- D. Fire Rated Assemblies: Conform to [adopted] code for [applicable] requirements for fire rated masonry construction.
- E. Special Inspections - Masonry: See Section 01 4533 - Code-Required Special Inspections and Procedures.
- F. Colored mortars: Provide only factory pre-mixed mortar mixes for color uniformity.

#### **1.07 MOCK-UP**

- A. Construct a masonry wall as a mock-up panel sized 8 feet long by 6 feet high; include mortar and accessories, structural backup, wall openings, flashings, and wall insulation in mock-up.
- B. Coordinate with other Sections including Section 08 4313 - Aluminum Framed Storefronts and Section 08 8000 - Glazing for related elements to be included in mock-up.
- C. Locate where directed.
- D. Mock-up may remain as part of the Work.
- E. Verify mock-up requirements with Architect prior to proceeding.

#### **1.08 DELIVERY, STORAGE, AND HANDLING**

- A. Deliver, handle, and store masonry units by means that will prevent mechanical damage and contamination by other materials.
- B. Store Mixing and Liquid materials in clean dry area in accordance with manufacturer's instructions.
- C. Keep Mixing and Liquid materials away from head and open flame.

## 1.09 FIELD CONDITIONS

- A. Cold and Hot Weather Requirements: Comply with requirements of ACI 530/530.1/ERTA or applicable building code, whichever is more stringent.

## PART 2 PRODUCTS

### 2.01 CONCRETE MASONRY UNITS

- A. Concrete Block: Comply with referenced standards and as follows:
1. Size: Standard units with nominal face dimensions of 16 by 8 inches and nominal depth of 4 inches.
  2. Non-Loadbearing Units: ASTM C129.
    - a. Both hollow and solid block, as indicated.
    - b. Normal weight.
- B. Split-Faced CMU Units:
1. Non-Load-Bearing Units: ASTM C129, normal weight.
  2. Size: Nomial face dimensions of 16 x 8 inches (400 x 200 mm) and nominal depths as indicated on Drawings for specific locations.
  3. Pattern: Split face.
  4. Colors: Standard gray block suitable for paint finish.
  5. Special Shapes: Provide non-standard blocks configured for corners, lintels, headers, control joint edges,, and other detailed conditions.
  6. Manufacturer: Decra-Stone Split Face as manufactured by Div 2-4.
  7. Other acceptable manufacturers:
    - a. Block USA, Birmingham, Alabama: [www.specblockusa.com](http://www.specblockusa.com).
    - b. Superock Block Company, Birmingham, Alabama.
    - c. Kirkpatrick Concrete, Birmingham, Alabama.
    - d. Substitutions: See Section 01600 - Product Requirements.
- C. Units with Integral Water Repellent: Concrete block units as specified in this section with polymeric liquid admixture added to concrete masonry units at the time of manufacture.
1. Performance of Units with Integral Water Repellent:
    - a. Water Permeance: When tested per ASTM E514/E514M and for a minimum of 72 hours.
      - 1) No water visible on back of wall above flashing at the end of 24 hours.
      - 2) No flow of water from flashing equal to or greater than 0.032 gallons per hour at the end of 24 hours.
      - 3) No more than 25 percent of wall area above flashing visibly damp at end of test.
    - b. Flexural Bond Strength: ASTM C1072; minimum 10 percent increase.
    - c. Compressive Strength: ASTM C1314; maximum 5 percent decrease.
    - d. Drying Shrinkage: ASTM C1148; maximum 5 percent increase in shrinkage.
  2. Use only in combination with mortar that also has integral water repellent admixture.
  3. Use water repellent admixtures for masonry units and mortar by a single manufacturer.
  4. Manufacturers:
    - a. ACM Chemistries Inc; RainBloc Integral Water Repellent System: [www.acmchem.com](http://www.acmchem.com).
    - b. GCP Applied Technologies; Dry-Block Mortar Admixture: [www.gcpat.com](http://www.gcpat.com).
    - c. BASF Construction Chemicals; Rheopel Plus or Rheopel WR: [www.basf.com](http://www.basf.com).
    - d. Substitutions: See Section 01 6000 - Product Requirements.

### 2.02 MORTAR MATERIALS

- A. Masonry Cement: ASTM C91/C91M Type N.
1. Colored Mortar: Premixed cement as required to match Architect's color sample.
- B. Mortar Cement: ASTM C 1329, Type N and Type S.
1. Use Type S mortar on all exterior walls. See Structural Drawings Sheet S1.1.

2. Colored mortar Type: Premixed colored cement, Up to 3 colors as selected by Architect.
  3. Standard mortar: Premixed standard mortar.
- C. Water: Clean and potable.
- D. Packaged Dry Material for Mortar for Unit Masonry: Premixed Portland cement, hydrated lime, and sand; complying with ASTM C1714/C1714M and capable of producing mortar of the specified strength in accordance with ASTM C270 with the addition of water only.
1. Type: Types as scheduled in this section.
  2. Color: Mineral pigments added as required to produce approved color sample.
    - a. Provide 3 colors as selected by Architect from manufacturer's standard offerings.
  3. Water-repellent mortar for use with water repellent masonry units at exterior locations.
  4. Manufacturers:
    - a. Amerimix, an Oldcastle brand; AMX 410: [www.amerimix.com/#sle](http://www.amerimix.com/#sle).
    - b. Spec Mix; Portland Lime and Sand Mortar: [www.specmix.com](http://www.specmix.com).
    - c. Cemex; Custom Colored Masonry Cement: [www.cemexusa.com](http://www.cemexusa.com).
    - d. Holcim; Rainbow Mortamix Custom Color Masonry Cement: [www.holcim.us](http://www.holcim.us).
    - e. Substitutions: See Section 01 6000 - Product Requirements.
- E. Integral Water Repellent Admixture for Mortar: Polymeric liquid admixture added to mortar at the time of manufacture.
1. Use only in combination with masonry units manufactured with integral water repellent admixture.
  2. Use only water repellent admixture for mortar from the same manufacturer as water repellent admixture in masonry units.
    - a. Substitutions: See Section 01 6000 - Product Requirements.

### **2.03 REINFORCEMENT AND ANCHORAGE**

- A. Reinforcing Steel: ASTM A615/A615M, Grade 60 (60,000 psi) yield strength, deformed billet bars; galvanized.
- B. Joint Reinforcement Standard: ASTM A951/A951M.
1. Type: Truss.
  2. Material: ASTM A1064/A1064M steel wire, mill galvanized to ASTM A641/A641M, Class 3.
  3. Size: 0.1483 inch side rods with 0.1483 inch cross rods; width as required to provide not less than 5/8 inch of mortar coverage on each exposure.
  4. Manufacturers:
    - a. Blok-Lok Limited: [www.blok-lok.com/#sle](http://www.blok-lok.com/#sle).
    - b. Hohmann & Barnard, Inc: [www.h-b.com/#sle](http://www.h-b.com/#sle).
    - c. WIRE-BOND: [www.wirebond.com/#sle](http://www.wirebond.com/#sle).
    - d. Substitutions: See Section 01 6000 - Product Requirements.
- C. Masonry Veneer Anchors: 2-piece anchors that permit differential movement between masonry veneer and structural backup, hot dip galvanized to ASTM A 153/A 153M, Class B.
1. Anchor plates: Not less than 0.075 inch thick, designed for fastening to structural backup through sheathing by two fasteners; provide design with legs that penetrate sheathing and insulation to provide positive anchorage.
  2. Wire ties: Manufacturer's standard shape, 0.1875 inch thick.
  3. Vertical adjustment: Not less than 3-1/2 inches.
- D. Metal-to-Metal Fasteners: Self-drilling, self-tapping screws; corrosion resistant finish or hot dip galvanized to ASTM A153/A153M.

### **2.04 FLASHINGS**

- A. Combination Non-Asphaltic Flashing Materials - Copper:
1. Copper/Polymer Film or Fabric Flashing: 3 oz/sq ft copper sheet laminated between two sheets of polymer or fiberglass fiber-reinforced film.
    - a. Manufacturers:

- 1) Advanced Building Products, Inc; Copper Sealtite 2000: [www.advancedbuildingproducts.com/#sle](http://www.advancedbuildingproducts.com/#sle).
  - 2) Hohmann & Barnard, Inc; Copper-Fabric NA: [www.h-b.com/#sle](http://www.h-b.com/#sle).
  - 3) Wirebond; Copper Seal No. 4140: [www.wirebond.com](http://www.wirebond.com).
  - 4) York Manufacturing, Inc; Multi-Flash 500 Series: [www.yorkmfg.com/#sle](http://www.yorkmfg.com/#sle).
  - 5) Substitutions: See Section 01 6000 - Product Requirements.
2. Copper/Polymer Film or Fabric Flashing - Self-Adhering: 3 oz/sq ft copper sheet bonded on inward facing side to a sheet of polymer or fiberglass fabric that has a clear adhesive with a removable release liner.
- a. Manufacturers:
    - 1) Hohmann & Barnard, Inc; Copper-Fabric SA: [www.h-b.com/#sle](http://www.h-b.com/#sle).
    - 2) Sandell Construction Solutions; Copper Seal Self-Adhering Flashing: [www.sandellmfg.com](http://www.sandellmfg.com).
    - 3) Substitutions: See Section 01 6000 - Product Requirements.
  - B. Flashing Sealant/Adhesives: Silicone, polyurethane, or silyl-terminated polyether/polyurethane, or other type required or recommended by flashing manufacturer; type capable of adhering to type of flashing used.
  - C. Termination Bars: Stainless steel or aluminum; compatible with membrane and adhesives.
  - D. Drip Edge: Stainless steel; compatible with membrane and adhesives.
    1. Manufacturers:
      - a. Mortar Net Solutions; Metal Drip Edges: [www.mortarnet.com/#sle](http://www.mortarnet.com/#sle).
      - b. Substitutions: See Section 01 6000 - Product Requirements.
  - E. Lap Sealants and Tapes: As recommended by flashing manufacturer; compatible with membrane and adhesives.

## **2.05 ACCESSORIES**

- A. Weeps:
1. Type: Extruded propylene with honeycomb design.
  2. Color(s): As selected by Architect from manufacturer's full range.
  3. Manufacturers:
    - a. Blok-Lok Limited; Cellvent: [www.blok-lok.com/#sle](http://www.blok-lok.com/#sle).
    - b. Hohmann & Barnard, Inc; Quadro-vent: [www.h-b.com/#sle](http://www.h-b.com/#sle).
    - c. WIRE-BOND; Cell-Vent 6301: [www.wirebond.com/#sle](http://www.wirebond.com/#sle).
    - d. Substitutions: See Section 01 6000 - Product Requirements.
- B. Cavity Vents:
1. Type: Polyester mesh.
- C. Cavity Mortar Control: Semi-rigid polyethylene or polyester mesh panels, sized to thickness of wall cavity, and designed to prevent mortar droppings from clogging weeps and cavity vents and allow proper cavity drainage.
1. Mortar Diverter: Panels installed at flashing locations.
- D. Cleaning Solution: Non-acidic, not harmful to masonry work or adjacent materials.

## **PART 3 EXECUTION**

### **3.01 EXAMINATION**

- A. Verify that field conditions are acceptable and are ready to receive masonry.
- B. Verify that related items provided under other sections are properly sized and located.
- C. Verify that built-in items are in proper location, and ready for roughing into masonry work.

### **3.02 COURSING**

- A. Establish lines, levels, and coursing indicated. Protect from displacement.

- B. Maintain masonry courses to uniform dimension. Form vertical and horizontal joints of uniform thickness.
- C. Concrete Masonry Units:
  - 1. Bond: Running.
  - 2. Coursing: One unit and one mortar joint to equal 8 inches.
  - 3. Mortar Joints: Concave.

### **3.03 PLACING AND BONDING**

- A. Lay solid masonry units in full bed of mortar, with full head joints, uniformly jointed with other work.
- B. Lay hollow masonry units with face shell bedding on head and bed joints.
- C. Buttering corners of joints or excessive furrowing of mortar joints is not permitted.
- D. Remove excess mortar as work progresses.
- E. Interlock intersections and external corners, except for units laid in stack bond.
- F. Do not shift or tap masonry units after mortar has achieved initial set. Where adjustment must be made, remove mortar and replace.
- G. Perform job site cutting of masonry units with proper tools to provide straight, clean, unchipped edges. Prevent broken masonry unit corners or edges.
- H. Isolate top joint of masonry veneer from horizontal structural framing members or support angles with compressible joint filler.

### **3.04 WEEPS/CAVITY VENTS**

- A. Install weeps in veneer walls at 24 inches on center horizontally on top of through-wall flashing above shelf angles and lintels and at bottom of walls.
- B. Install cavity vents in veneer walls at 32 inches on center horizontally below shelf angles and lintels and at top of walls.

### **3.05 CAVITY MORTAR CONTROL**

- A. Do not permit mortar to drop or accumulate into cavity air space or to plug weep/cavity vents.
- B. For cavity walls, build inner wythe ahead of outer wythe to accommodate accessories.
- C. Install cavity mortar diverter at base of cavity and at other flashing locations as recommended by manufacturer to prevent mortar droppings from blocking weep/cavity vents.

### **3.06 REINFORCEMENT AND ANCHORAGE - MASONRY VENEER**

- A. Install horizontal joint reinforcement 16 inches on center.
- B. Place masonry joint reinforcement in first and second horizontal joints above and below openings. Extend minimum 16 inches each side of opening.
- C. Place continuous joint reinforcement in first and second joint below top of walls.
- D. Embed longitudinal wires of joint reinforcement in mortar joint with at least 5/8 inch mortar cover on each side.
- E. Lap joint reinforcement ends minimum 6 inches.
- F. Stud Back-Up: Secure veneer anchors to stud framed back-up and embed into masonry veneer at maximum 16 inches on center vertically and 24 inches on center horizontally. Place additional anchors at perimeter of openings and ends of panels, so maximum spacing of anchors is 8 inches on center.

### **3.07 MASONRY FLASHINGS**

- A. Whether or not specifically indicated, install masonry flashing to divert water to exterior at all locations where downward flow of water will be interrupted.

1. Extend flashings full width at such interruptions and at least 6 inches, minimum, into adjacent masonry or turn up at least 1 inch, minimum, to form watertight pan at non-masonry construction.
  2. Remove or cover protrusions or sharp edges that could puncture flashings.
  3. Seal lapped ends and penetrations of flashing before covering with mortar.
- B. Terminate flashing up 8 inches minimum on vertical surface of backing:
1. Install vertical leg of flashing over fluid-applied or self-adhered air/vapor barriers over backing or per manufacturer's directions.
  2. Anchor vertical leg of flashing into backing with a termination bar and sealant.
- C. Install flashing in accordance with manufacturer's instructions and BIA Technical Notes No. 7.
- D. Extend metal flashings through exterior face of masonry and terminate in an angled drip with hemmed edge. Install joint sealer below drip edge to prevent moisture migration under flashing.
- E. Support flexible flashings across gaps and openings.
- F. Extend plastic, laminated, EPDM, and other flexible flashings to within 1/2 inch of exterior face of masonry and adhere to top of stainless steel angled drip with hemmed edge.
- G. Lap end joints of flashings at least 6 inches, minimum, and seal watertight with flashing sealant/adhesive.

### **3.08 CONTROL AND EXPANSION JOINTS**

- A. Do not continue horizontal joint reinforcement through control or expansion joints.
- B. Size control joints as indicated on drawings; if not indicated, 3/4 inch wide and deep.
- C. Form expansion joint as detailed on drawings.

### **3.09 TOLERANCES**

- A. Install masonry within the site tolerances found in TMS 402/602.

### **3.10 CUTTING AND FITTING**

- A. Cut and fit for pipes and conduit. Coordinate with other sections of work to provide correct size, shape, and location.
- B. Obtain approval prior to cutting or fitting masonry work not indicated or where appearance or strength of masonry work may be impaired.

### **3.11 CLEANING**

- A. Remove excess mortar and mortar smears as work progresses.
- B. Replace defective mortar. Match adjacent work.
- C. Clean soiled surfaces with cleaning solution.
- D. Use non-metallic tools in cleaning operations.

### **3.12 PROTECTION**

- A. Without damaging completed work, provide protective boards at exposed external corners that are subject to damage by construction activities.

**END OF SECTION**

**SECTION 05 4000**  
**COLD-FORMED METAL FRAMING**

**PART 1 GENERAL**

**1.01 SECTION INCLUDES**

- A. Formed steel stud exterior wall framing.
- B. Exterior wall board insulation and sheathing.
- C. Formed steel joist and purlin framing and bridging.

**1.02 RELATED REQUIREMENTS**

- A. Section Section 05 1200 - Structural Steel Framing: Structural building framing.
- B. Section 04 2001 - Masonry Veneer: Veneer masonry supported by wall stud metal framing.
- C. Section 06 1000 - Rough Carpentry: Wood blocking and miscellaneous framing.
- D. Section 07 2100 - THERMAL INSULATION: Insulation within framing members.
- E. Section 07 2500 - Weather Barriers: Weather barrier over sheathing.
- F. Section 07 9200 - Joint Sealants.
- G. Section 09 2116 - Gypsum Board Assemblies: Lightweight, non-load bearing metal stud framing.
- H. Section 07 9005 - Joint Sealers.
- I. Section 09 2400 - Cement Plastering.
- J. Section 09 5100 - Acoustical Ceilings: Ceiling suspension system.

**1.03 REFERENCE STANDARDS**

- A. AISI S100-12 - North American Specification for the Design of Cold-Formed Steel Structural Members; 2012.
- B. AISI SG02-1 - North American Specification for the Design of Cold-Formed Steel Structural Members; American Iron and Steel Institute; 2001 with 2004 supplement. (replaced SG-971)
- C. ASTM A153/A153M - Standard Specification for Zinc Coating (Hot-Dip) on Iron and Steel Hardware; 2016a.
- D. ASTM A653/A653M - Standard Specification for Steel Sheet, Zinc-Coated (Galvanized) or Zinc-Iron Alloy-Coated (Galvannealed) by the Hot-Dip Process; 2018.
- E. ASTM C955 - Standard Specification for Cold-Formed Steel Structural Framing Members; 2018.
- F. ASTM C1007 - Standard Specification for Installation of Load Bearing (Transverse and Axial) Steel Studs and Related Accessories; 2011a (Reapproved 2015).
- G. ASTM C1177/C1177M - Standard Specification for Glass Mat Gypsum Substrate for Use as Sheathing; 2013.
- H. ASTM D3273 - Standard Test Method for Resistance to Growth of Mold on the Surface of Interior Coatings in an Environmental Chamber; 2016.
- I. AWS D1.1/D1.1M - Structural Welding Code - Steel; 2015, with Errata (2016).
- J. PS 1 - Structural Plywood; 2009.
- K. SSPC-Paint 15 - Steel Joist Shop Primer/Metal Building Primer; 1999 (Ed. 2004).
- L. SSPC-Paint 20 - Zinc-Rich Primers (Type I, "Inorganic," and Type II, "Organic"); 2002 (Ed. 2004).



#### **1.04 ADMINISTRATIVE REQUIREMENTS**

- A. Coordinate with work of other sections that is to be installed in or adjacent to the metal framing system, including but not limited to structural anchors, cladding anchors, utilities, insulation, and firestopping.
  - 1. Verify that wall deflection limitation is acceptable to cladding manufacturer(s).

#### **1.05 SUBMITTALS**

- A. See Section 01 3000 - Administrative Requirements, for submittal procedures.
- B. Product Data: Provide data on standard framing members; describe materials and finish, product criteria, limitations.
- C. Product Data: Provide manufacturer's data on factory-made framing connectors, showing compliance with requirements.
- D. Shop Drawings: Indicate component details, framed openings, bearing, anchorage, loading, welds, type and location of fasteners, and deflection of systems, and accessories or items required of related work.
  - 1. Indicate stud layout.
  - 2. Describe method for securing studs to tracks and for bolted framing connections.
  - 3. Design data:
    - a. Shop drawings signed and sealed by a professional structural engineer.
  - 4. Calculations for loadings and stresses of specially fabricated framing, signed and sealed by a professional structural engineer.
  - 5. Details and calculations for factory-made framing connectors, signed and sealed by a professional structural engineer.
- E. Manufacturer's Installation Instructions: Indicate special procedures, conditions requiring special attention .
- F. Designer's Qualification Statement.
- G. Manufacturer's Qualification Statement.

#### **1.06 QUALITY ASSURANCE**

- A. Designer Qualifications: Design framing system under direct supervision of a Professional Structural Engineer experienced in design of this work and licensed in the State in which the Project is located.
- B. Manufacturer Qualifications: Company specializing in manufacturing the types of products specified in this section, and with minimum five years of documented experience.
- C. Installer Qualifications: Company specializing in performing the work of this section with minimum five years documented experience and approved by manufacturer.

#### **1.07 MOCK-UP**

- A. Mock-up sheet will be issued during construction. Coordinate mock-up construction to provide complete systems including indicated substrate(s), masonry finishes, mortar and accessories, air barriers, flashings, sealants and all other applicable systems to provide complete assemblies.
- B. Provide mock-up of exterior framed wall, including components specified elsewhere, such as insulation, window frame, door frame, exterior wall finish, and interior wall finish.
- C. Mock-Up Size: As instructed by Architect during construction.
- D. Location: As directed.
- E. Mock-up may not remain as part of the Work.

### **PART 2 PRODUCTS**

#### **2.01 MANUFACTURERS**

- A. Metal Framing:

1. CEMCO: [www.cemcosteel.com](http://www.cemcosteel.com).
  2. ClarkDietrich Building Systems: [www.clarkdietrich.com](http://www.clarkdietrich.com).
  3. Marino: [www.marinoware.com](http://www.marinoware.com).
  4. The Steel Network, Inc: [www.SteelNetwork.com](http://www.SteelNetwork.com).
  5. Substitutions: See Section 01 6000 - Product Requirements.
- B. Framing Connectors and Accessories:
1. Same manufacturer as metal framing.
  2. Simpson Strong Tie; \_\_\_\_: [www.strongtie.com/#sle](http://www.strongtie.com/#sle).
  3. Substitutions: See Section 01 6000 - Product Requirements.

## 2.02 FRAMING SYSTEM

- A. Design Requirements: Provide completed framing system having the following characteristics:
1. Design: Calculate structural characteristics of cold-formed steel framing members according to AISI S100-12.
  2. Structural Performance: Design, engineer, fabricate, and erect to withstand specified design loads for project conditions within required limits.
  3. Design Loads: In accordance with applicable codes.
  4. Live load deflection meeting the following, unless otherwise indicated:
    - a. Floors: Maximum vertical deflection under live load of 1/480 of span.
    - b. Roofs: Maximum vertical deflection under live load of 1/240 of span.
    - c. Exterior Walls: Maximum horizontal deflection under wind load of 1/360 of span.
    - d. Design non-axial loadbearing framing to accommodate not less than 1/2 in vertical deflection.
  5. Able to tolerate movement of components without damage, failure of joint seals, undue stress on fasteners, or other detrimental effects when subject to seasonal or cyclic day/night temperature ranges.
  6. Able to accommodate construction tolerances, deflection of building structural members, and clearances of intended openings.

## 2.03 FRAMING MATERIALS

- A. Studs and Track: ASTM C955; studs formed to channel, "C", or "Sigma" shape with punched web; U-shaped track in matching nominal width and compatible height.
1. Gage and Depth: As required to meet specified performance levels.
  2. Galvanized in accordance with ASTM A653/A653M, G90/Z275 coating.
- B. Joists and Purlins: Fabricated from ASTM A653/A653M steel sheet, with G90/Z275 hot dipped galvanized coating.
1. Base Metal: Structural Steel (SS), Grade 33/230.
  2. Gage and Depth: As required to meet specified performance levels.
- C. Framing Connectors: Factory-made, formed steel sheet.
1. Material: ASTM A653/A653M SS Grade 33 and 40 (minimum), with G90/Z275 hot dipped galvanized coating for base metal thickness less than 10 gage, 0.1345 inch, and factory punched holes and slots.
  2. Structural Performance: Maintain load and movement capacity required by applicable code, when evaluated in accordance with AISI S100-12.
  3. Movement Connections: Provide mechanical anchorage devices that accommodate movement using slotted holes, shouldered screws or screws and anti-friction or stepped bushings, while maintaining structural performance of framing. Provide movement connections where indicated on drawings.
    - a. Where top of stud wall terminates below structural floor or roof, connect studs to structure in manner allowing vertical and horizontal movement of slab without affecting studs; allow for minimum movement of 1/2 inch.
    - b. Provide top track with long leg track and head of wall movement connectors; minimum track length of 10 feet.

4. Fixed Connections: Provide non-movement connections for tie-down to foundation, floor-to-floor tie-down, roof-to-wall tie-down, joist hangers, gusset plates, and stiffeners.
5. Wall Stud Bridging Connections: Provide mechanical load-transferring devices that accommodate wind load torsion and weak axis buckling induced by axial compression loads. Provide bridging connections where indicated on the drawings.

#### **2.04 FASTENERS**

- A. Self-Drilling, Self-Tapping Screws, Bolts, Nuts and Washers: Hot dip galvanized per ASTM A153/A153M.
- B. Anchorage Devices: Powder actuated.
- C. Welding: Comply with AWS D1.1/D1.1M.

#### **2.05 WALL SHEATHING**

- A. Wall Sheathing: Plywood; PS 1, Grade C-D, Exposure I.
- B. Exterior Sheathing Board: Sizes to minimize joints in place; ends square cut.
  1. Application: Exterior sheathing, unless otherwise indicated.
  2. Mold Resistance: Score of 10, when tested in accordance with ASTM D3273.
  3. Glass Mat Faced Sheathing: Glass mat faced gypsum substrate as defined in ASTM C1177/C1177M.
  4. At Assemblies Indicated with Fire-Rating: Use type required by indicated tested assembly; if no tested assembly is indicated, use Type X board, UL or WH listed.
  5. Core Type: Regular and Type X, as indicated.
  6. Type X Thickness: 5/8 inch.
  7. Regular Board Thickness: 5/8 inch.
  8. Edges: Square.
  9. Glass Mat Faced Products:
    - a. American Gypsum Company; M-Glass Exterior Sheathing Type X.
    - b. American Gypsum Company; M-Glass Exterior Sheathing.
    - c. Continental Building Products; Weather Defense Platinum Exterior Sheathing.
    - d. Continental Building Products; Weather Defense Platinum Sheathing Type X.
    - e. Georgia-Pacific Gypsum; DensGlass Sheathing.
    - f. Georgia-Pacific Gypsum; DensGlass Fireguard Sheathing.
    - g. National Gypsum Company; Gold Bond eXP Sheathing.
    - h. Substitutions: See Section 01 6000 - Product Requirements.

#### **2.06 ACCESSORIES**

- A. Bracing, Furring, Bridging: Formed sheet steel, thickness determined for conditions encountered; finish to match framing components.
- B. Shop and Touch-Up Primer: SSPC-Paint 15, complying with VOC limitations of authorities having jurisdiction.
- C. Touch-Up Primer for Galvanized Surfaces: SSPC-Paint 20, Type I - Inorganic, complying with VOC limitations of authorities having jurisdiction.
- D. Water-Resistive Barrier: As specified in Section 07 2500.

### **PART 3 EXECUTION**

#### **3.01 EXAMINATION**

- A. Verify that substrate surfaces are ready to receive work.
- B. Verify field measurements and adjust installation as required.

#### **3.02 INSTALLATION OF STUDS**

- A. Install components in accordance with manufacturers' instructions and ASTM C1007 requirements.

- B. Align floor and ceiling tracks; locate to wall layout. Secure in place with fasteners at maximum 24 inches on center. Coordinate installation of sealant with floor and ceiling tracks.
- C. Place studs at 16 inches on center; not more than 2 inches from abutting walls and at each side of openings. Connect studs to tracks using fastener or welding method.
- D. Construct corners using minimum of three studs. Install double studs at wall openings, door and window jambs.
- E. Install load bearing studs full length in one piece. Splicing of studs is not permitted.
- F. Install load bearing studs, brace, and reinforce to develop full strength and achieve design requirements.
- G. Coordinate placement of insulation in multiple stud spaces made inaccessible after erection.
- H. Install intermediate studs above and below openings to align with wall stud spacing.
- I. Provide deflection allowance in stud track, directly below horizontal building framing at non-load bearing framing.
- J. Attach cross studs to studs for attachment of fixtures anchored to walls.
- K. Install framing between studs for attachment of mechanical and electrical items, and to prevent stud rotation.
- L. Touch-up field welds and damaged galvanized surfaces with primer.

### **3.03 INSTALLATION OF JOISTS AND PURLINS**

- A. Install framing components in accordance with manufacturer's instructions.
- B. Make provisions for erection stresses. Provide temporary alignment and bracing.

### **3.04 INSTALLATION OF WALL SHEATHING**

- A. Install wall sheathing with long dimension perpendicular to wall studs, with ends over firm bearing and staggered, using self-tapping screws.

### **3.05 TOLERANCES**

- A. Maximum Variation from True Position: 1/8 inch.
- B. Maximum Variation of any Member from Plane: 1/8 inch.

**END OF SECTION**

**SECTION 05 5000**  
**METAL FABRICATIONS**

**PART 1 GENERAL**

**1.01 SECTION INCLUDES**

- A. Shop fabricated steel and aluminum items.
- B. Decorative cast metal elements.
- C. Ballet barre and brackets.
- D. Downspout boots.

**1.02 RELATED REQUIREMENTS**

- A. Section 03 3000 - Cast-in-Place Concrete: Placement of metal fabrications in concrete.
- B. Section 04 2000 - Unit Masonry: Placement of metal fabrications in masonry.
- C. Section 05 5213 - Pipe and Tube Railings.
- D. Section 09 9113 - Exterior Painting: Paint finish.
- E. Section 09 9123 - Interior Painting: Paint finish.

**1.03 REFERENCE STANDARDS**

- A. AAMA 2605 - Voluntary Specification, Performance Requirements and Test Procedures for Superior Performing Organic Coatings on Aluminum Extrusions and Panels (with Coil Coating Appendix); 2017a.
- B. ASTM A36/A36M - Standard Specification for Carbon Structural Steel; 2014.
- C. ASTM A48/A48M - Standard Specification for Gray Iron Castings; 2003 (Reapproved 2016).
- D. ASTM A53/A53M - Standard Specification for Pipe, Steel, Black and Hot-Dipped, Zinc-Coated, Welded and Seamless; 2012.
- E. ASTM A123/A123M - Standard Specification for Zinc (Hot-Dip Galvanized) Coatings on Iron and Steel Products; 2017.
- F. ASTM A283/A283M - Standard Specification for Low and Intermediate Tensile Strength Carbon Steel Plates; 2013.
- G. ASTM A501/A501M - Standard Specification for Hot-Formed Welded and Seamless Carbon Steel Structural Tubing; 2014.
- H. ASTM B210/B210M - Standard Specification for Aluminum and Aluminum-Alloy Drawn Seamless Tubes; 2019.
- I. ASTM B211/B211M - Standard Specification for Aluminum and Aluminum-Alloy Rolled or Cold Finished Bar, Rod, and Wire; 2019.
- J. ASTM B209 - Standard Specification for Aluminum and Aluminum-Alloy Sheet and Plate; 2014.
- K. ASTM B209M - Standard Specification for Aluminum and Aluminum-Alloy Sheet and Plate (Metric); 2014.
- L. ASTM B221 - Standard Specification for Aluminum and Aluminum-Alloy Extruded Bars, Rods, Wire, Profiles, and Tubes; 2014.
- M. ASTM B221M - Standard Specification for Aluminum and Aluminum-Alloy Extruded Bars, Rods, Wire, Profiles, and Tubes (Metric); 2013.
- N. ASTM F3125/F3125M - Standard Specification for High Strength Structural Bolts, Steel and Alloy Steel, Heat Treated, 120 ksi (830 MPa) and 150 ksi (1040 MPa) Minimum Tensile Strength, Inch and Metric Dimensions; 2015a.
- O. AWS A2.4 - Standard Symbols for Welding, Brazing, and Nondestructive Examination; 2012.
- P. AWS D1.1/D1.1M - Structural Welding Code - Steel; 2015, with Errata (2016).

- Q. AWS D1.2/D1.2M - Structural Welding Code - Aluminum; 2008.
- R. IAS AC172 - Accreditation Criteria for Fabricator Inspection Programs for Structural Steel; International Accreditation Service, Inc; 2017.
- S. SSPC-Paint 15 - Steel Joist Shop Primer/Metal Building Primer; 1999 (Ed. 2004).
- T. SSPC-Paint 20 - Zinc-Rich Primers (Type I, "Inorganic," and Type II, "Organic"); 2002 (Ed. 2004).
- U. SSPC-SP 2 - Hand Tool Cleaning; 1982 (Ed. 2004).

#### **1.04 SUBMITTALS**

- A. See Section 01 3000 - Administrative Requirements, for submittal procedures.
- B. Shop Drawings: Indicate profiles, sizes, connection attachments, reinforcing, anchorage, size and type of fasteners, and accessories. Include erection drawings, elevations, and details where applicable.
  - 1. Indicate welded connections using standard AWS A2.4 welding symbols. Indicate net weld lengths.
- C. Welders' Certificates: Submit certification for welders employed on the project, verifying AWS qualification within the previous 12 months.
- D. Designer's Qualification Statement.
- E. Fabricator's Qualification Statement: Provide documentation showing steel fabricator is accredited under IAS AC172.

#### **1.05 QUALITY ASSURANCE**

- A. Design load-bearing elements under direct supervision of a Professional structural Engineer experienced in design of this Work and licensed in the State in which the Project is located.
- B. Fabricator Qualifications: A qualified steel fabricator that is accredited by IAS AC172.

### **PART 2 PRODUCTS**

#### **2.01 MATERIALS - STEEL**

- A. Steel Sections: ASTM A36/A36M.
- B. Steel Tubing: ASTM A501/A501M hot-formed structural tubing.
- C. Plates: ASTM A283/A283M.
- D. Pipe: ASTM A53/A53M, Grade B Schedule 40, black finish.
- E. Bolts, Nuts, and Washers: ASTM F3125/F3125M, Type 1, plain.
- F. Welding Materials: AWS D1.1/D1.1M; type required for materials being welded.
- G. Shop and Touch-Up Primer: SSPC-Paint 15, complying with VOC limitations of authorities having jurisdiction.
- H. Touch-Up Primer for Galvanized Surfaces: SSPC-Paint 20, Type I - Inorganic, complying with VOC limitations of authorities having jurisdiction.

#### **2.02 MATERIALS - ALUMINUM**

- A. Extruded Aluminum: ASTM B221 (ASTM B221M), 6063 alloy, T6 temper.
- B. Sheet Aluminum: ASTM B209 (ASTM B209M), 5052 alloy, H32 or H22 temper.
- C. Aluminum-Alloy Drawn Seamless Tubes: ASTM B210/B210M, 6063 alloy, T6 temper.
- D. Aluminum-Alloy Bars: ASTM B211/B211M, 6061 alloy, T6 temper.
- E. Bolts, Nuts, and Washers: Stainless steel.
- F. Welding Materials: AWS D1.2/D1.2M; type required for materials being welded.

#### **2.03 FABRICATION**

- A. Fit and shop assemble items in largest practical sections, for delivery to site.

- B. Fabricate items with joints tightly fitted and secured.
- C. Continuously seal joined members by continuous welds.
- D. Grind exposed joints flush and smooth with adjacent finish surface. Make exposed joints butt tight, flush, and hairline. Ease exposed edges to small uniform radius.
- E. Exposed Mechanical Fastenings: Flush countersunk screws or bolts; unobtrusively located; consistent with design of component, except where specifically noted otherwise.
- F. Supply components required for anchorage of fabrications. Fabricate anchors and related components of same material and finish as fabrication, except where specifically noted otherwise.

#### **2.04 FABRICATED ITEMS**

- A. Bollards: Steel pipe, concrete filled, crowned cap, as detailed; prime paint finish.
- B. Ledge Angles, Shelf Angles, Channels, and Plates Not Attached to Structural Framing: For support of metal decking; galvanized finish.
- C. Lintels: As detailed; galvanized finish.
- D. Sill Angles for Tempered Glass Railing Assemblies: ASTM A36/A36M steel angles with anchoring devices and sizes as indicated in shop drawings for railing assembly, drilled and tapped for fastener types, sizes, and spacing indicated, prime paint finish.
- E. Door Frames for Overhead Door Openings and Wall Openings: Channel sections; prime paint finish.
- F. Elevator Hoistway Beams: Beam sections; prime paint finish.
- G. Toilet Partition Suspension Members: Steel channel sections; prime paint finish.
- H. Slotted Channel Framing: Fabricate channels and fittings from structural steel complying with the referenced standards; factory-applied, rust-inhibiting thermoset acrylic enamel finish.

#### **2.05 DOWNSPOUT BOOTS**

- A. Downspout Boots: Smooth interior without boxed corners or choke points; include integral lug slots, integral cleanout, cleanout cover, and tamper proof fasteners.
  - 1. Configuration: As required. See Drawings.
  - 2. Length: Provide length as required; up to 24 inch above grade.
  - 3. Material: Cast iron; ASTM A48/A48M; casting thickness 3/8 inch (9.5 mm), minimum.
  - 4. Finish: Manufacturer's standard factory applied powder coat finish.
  - 5. Color: To be selected by Architect from manufacturer's standard range.
  - 6. Accessories: Manufacturer's standard stainless steel fasteners, stainless steel building wall anchors, integral neoprene gaskets, rubber coupling, and cleanout.
  - 7. Manufacturers:
    - a. Downspoutboots.com, a division of J. R. Hoe & Sons: [www.downspoutboots.com](http://www.downspoutboots.com).
    - b. J.R. Smith Manufacturing Company: [www.jrsmith.com](http://www.jrsmith.com).
    - c. Neenah Foundry, a division of Neenah Enterprises, Inc: [www.nfco.com](http://www.nfco.com).
    - d. Barry Manufacturing Company: [www.barrycraft.com](http://www.barrycraft.com).
    - e. Substitutions: See Section 01 6000 - Product Requirements.

#### **2.06 CAST IRON COLUMN BASES:**

- A. Material: Cast iron; ASTM A48/A48M, Class 35 B (heavy duty).
- B. Size: To fit 6 inch pipe column.
- C. Manufacturers:
  - 1. Lawler Foundry: [www.lawlerfoundry.com](http://www.lawlerfoundry.com).
    - a. Product: Column Base No. 8393.
    - b. Product: Column Base No. 8394.
  - 2. Architectural Iron Company: [www.architecturaliron.com](http://www.architecturaliron.com).

- a. Product: Column Base No. AIC 8393.
- b. Product: Column Base No. AIC 8394.
3. Substitutions: See Section 01 6000 - Product Requirements

## **2.07 BALLET BARRE BRACKETS AND RAILS**

- A. Brackets: Powder coated steel spaced at maximum 48 inches o.c..
- B. Rail: 1-1/2 to 1-7/8 inch diameter ashe or maple wood, sanded smooth.
- C. Bracket Color: Black.
- D. Basis of Design Manufacturer:
  1. Vita Vibe LLC: BW15 mounting bracket, 1-1/2 by 4 inches tall; ashe wood rail: [www.vitavibe.com](http://www.vitavibe.com).
- E. Other acceptable manufacturers:
  1. Custom Barres LLC: [www.custombarres.com](http://www.custombarres.com).
  2. Harlequin Floors: [www.harlequinfloors.com](http://www.harlequinfloors.com).
  3. Alvas BFM: [www.alvasbfm.com](http://www.alvasbfm.com).
  4. Substitutions: See Section 01 6000 - Product Requirements

## **2.08 FINISHES - STEEL**

- A. Prime paint steel items.
  1. Exceptions: Galvanize other items as indicated on Drawings.
  2. Exceptions: Do not prime surfaces in direct contact with concrete, where field welding is required, and items to be covered with sprayed fireproofing.
- B. Prepare surfaces to be primed in accordance with SSPC-SP2.
- C. Clean surfaces of rust, scale, grease, and foreign matter prior to finishing.
- D. Prime Painting: One coat.
- E. Galvanizing of Structural Steel Members: Galvanize after fabrication to ASTM A123/A123M requirements.
- F. Galvanizing of Non-structural Items: Galvanize after fabrication to ASTM A123/A123M requirements.

## **2.09 FINISHES - ALUMINUM**

- A. Superior Performance Organic Coating System: AAMA 2605 multiple coat, thermally cured polyvinylidene fluoride system; color as indicated.
- B. Apply one coat of bituminous paint to concealed aluminum surfaces in contact with cementitious or dissimilar materials.

## **2.10 FABRICATION TOLERANCES**

- A. Squareness: 1/8 inch maximum difference in diagonal measurements.
- B. Maximum Offset Between Faces: 1/16 inch.
- C. Maximum Misalignment of Adjacent Members: 1/16 inch.
- D. Maximum Bow: 1/8 inch in 48 inches.
- E. Maximum Deviation From Plane: 1/16 inch in 48 inches.

## **PART 3 EXECUTION**

### **3.01 EXAMINATION**

- A. Verify that field conditions are acceptable and are ready to receive work.

### **3.02 PREPARATION**

- A. Clean and strip primed steel items to bare metal where site welding is required.
- B. Supply setting templates to the appropriate entities for steel items required to be cast into concrete or embedded in masonry.



### **3.03 INSTALLATION**

- A. Install items plumb and level, accurately fitted, free from distortion or defects.
- B. Provide for erection loads, and for sufficient temporary bracing to maintain true alignment until completion of erection and installation of permanent attachments.
- C. Field weld components as indicated on drawings.
- D. Perform field welding in accordance with AWS D1.1/D1.1M.
- E. Obtain approval prior to site cutting or making adjustments not scheduled.
- F. After erection, prime welds, abrasions, and surfaces not shop primed or galvanized, except surfaces to be in contact with concrete.

### **3.04 TOLERANCES**

- A. Maximum Variation From Plumb: 1/4 inch per story, non-cumulative.
- B. Maximum Offset From True Alignment: 1/4 inch.
- C. Maximum Out-of-Position: 1/4 inch.

**END OF SECTION**

**SECTION 05 5213**  
**PIPE AND TUBE RAILINGS**

**PART 1 GENERAL**

**1.01 SECTION INCLUDES**

- A. Wall mounted handrails.
- B. Free-standing railings at steps.

**1.02 RELATED REQUIREMENTS**

- A. Section 03 3000 - Cast-in-Place Concrete: Placement of anchors in concrete.
- B. Section 04 2000 - Unit Masonry: Placement of anchors in masonry.
- C. Section 09 2116 - Gypsum Board Assemblies: Placement of backing plates in stud wall construction.
- D. Section 09 9113 - Exterior Painting: Paint finish.
- E. Section 09 9123 - Interior Painting: Paint finish.

**1.03 REFERENCE STANDARDS**

- A. AISC 201 - AISC Certification Program for Structural Steel Fabricators, Standard for Steel Building Structures; 2006.
- B. ASTM A53/A53M - Standard Specification for Pipe, Steel, Black and Hot-Dipped, Zinc-Coated, Welded and Seamless; 2012.
- C. ASTM A123/A123M - Standard Specification for Zinc (Hot-Dip Galvanized) Coatings on Iron and Steel Products; 2017.
- D. ASTM A500/A500M - Standard Specification for Cold-Formed Welded and Seamless Carbon Steel Structural Tubing in Rounds and Shapes; 2018.
- E. ASTM A501/A501M - Standard Specification for Hot-Formed Welded and Seamless Carbon Steel Structural Tubing; 2014.
- F. ASTM E935 - Standard Test Methods for Performance of Permanent Metal Railing Systems and Rails for Buildings; 2013, with Editorial Revision.
- G. AWS A2.4 - Standard Symbols for Welding, Brazing, and Nondestructive Examination; 2012.
- H. SSPC-Paint 15 - Steel Joist Shop Primer/Metal Building Primer; 1999 (Ed. 2004).
- I. SSPC-Paint 20 - Zinc-Rich Primers (Type I, "Inorganic," and Type II, "Organic"); 2002 (Ed. 2004).

**1.04 SUBMITTALS**

- A. See Section 01 3000 - Administrative Requirements, for submittal procedures.
- B. Shop Drawings: Indicate profiles, sizes, connection attachments, anchorage, size and type of fasteners, and accessories.
  - 1. Indicate welded connections using standard AWS A2.4 welding symbols. Indicate net weld lengths.
  - 2. Include the design engineer's seal and signature on each sheet of shop drawings.
- C. Samples: Submit two, 12 inch long samples of handrail. Submit two samples of elbow, wall bracket, and end stop.
- D. Designer's Qualification Statement.
- E. Fabricator's Qualification Statement.

**1.05 QUALITY ASSURANCE**

- A. Structural Designer Qualifications: Professional Structural Engineer experienced in design of this work and licensed in the State in which the Project is located, or personnel under direct supervision of such an engineer.

- B. Welder Qualifications: Show certification of welders employed on the Work, verifying AWS qualification within the previous 12 months.
- C. Fabricator Qualifications:
  - 1. A qualified steel fabricator that is certified by the American Institute for Steel Construction (AISC) under AISC 201.

## **PART 2 PRODUCTS**

### **2.01 RAILINGS - GENERAL REQUIREMENTS**

- A. Design, fabricate, and test railing assemblies in accordance with the most stringent requirements of applicable local code.
- B. Distributed Loads: Design railing assembly, wall rails, and attachments to resist distributed force of 75 pounds per linear foot applied to the top of the assembly and in any direction, without damage or permanent set. Test in accordance with ASTM E 935.
- C. Concentrated Loads: Design railing assembly, wall rails, and attachments to resist a concentrated force of 200 pounds applied at any point on the top of the assembly and in any direction, without damage or permanent set. Test in accordance with ASTM E 935.
- D. Design railing assembly, wall rails, and attachments to resist lateral force of 75 lbs at any point without damage or permanent set. Test in accordance with ASTM E 935.
- E. Allow for expansion and contraction of members and building movement without damage to connections or members.
- F. Dimensions: See drawings for configurations and heights.
  - 1. Top Rails and Wall Rails: 1-1/4 inches diameter, round.
  - 2. Intermediate Rails: 1-1/4 inches diameter, round.
  - 3. Posts: 1-1/2 inches diameter, round.
  - 4. Balusters: 3/4 inch square solid bar.
- G. Provide anchors and other components as required to attach to structure, made of same materials as railing components unless otherwise indicated; where exposed fasteners are unavoidable provide flush countersunk fasteners.
- H. Provide slip-on non-weld mechanical fittings to join lengths, seal open ends, and conceal exposed mounting bolts and nuts, including but not limited to elbows, T-shapes, splice connectors, flanges, escutcheons, and wall brackets.

### **2.02 STEEL RAILING SYSTEM**

- A. Steel Tube: ASTM A500/A500M, Grade B cold-formed structural tubing.
- B. Steel Pipe: ASTM A 53/A 53M, Grade B Schedule 40, black finish.
- C. Non-Weld Mechanical Fittings: Slip-on, galvanized malleable iron castings, for Schedule 40 pipe, with flush setscrews for tightening by standard hex wrench, no bolts or screw fasteners.
- D. Fittings: Elbows, T-shapes, wall brackets, escutcheons; cast steel.
- E. Mounting:
  - 1. Mount self-supporting railings in pipe sleeves oversized 3/4" I.D. See Drawings.
  - 2. Mounting in existing concrete: Core drill and grout in place. See Drawings.
- F. Exposed Fasteners: Flush countersunk screws or bolts; consistent with design of railing.
- G. Straight Splice Connectors: Steel concealed spigots.
- H. Galvanizing: In accordance with requirements of ASTM A123/A123M.
  - 1. Touch-Up Primer for Galvanized Surfaces: SSPC-Paint 20, Type I - Inorganic.
- I. Shop and Touch-Up Primer: SSPC-Paint 15, complying with VOC limitations of authorities having jurisdiction.
- J. Apply one coat of bituminous paint to concealed aluminum and steel surfaces in contact with cementitious or dissimilar materials.

### **2.03 GROUT AND ANCHORING CEMENT**

- A. Nonshrink, Nonmetallic Grout: Premixed, factory packaged, nonstaining, noncorrosive nongaseous grout complying with ASTM C 1107. Provide grout specifically recommended by manufacturer for interior and exterior applications.

### **2.04 FABRICATION**

- A. Accurately form components to suit specific project conditions and for proper connection to building structure.
- B. Fit and shop assemble components in largest practical sizes for delivery to site.
- C. Fabricate components with joints tightly fitted and secured. Provide spigots and sleeves to accommodate site assembly and installation.
- D. Provide anchors and plates required for connecting railings to structure.
- E. Exposed Mechanical Fastenings: Provide flush countersunk screws or bolts; unobtrusively located; consistent with design of component, except where specifically noted otherwise.
- F. Supply components required for anchorage of fabrications. Fabricate anchors and related components of same material and finish as fabrication, except where specifically noted otherwise.
- G. Exterior Components: Continuously seal joined pieces by continuous welds. Drill condensate drainage holes at bottom of members at locations that will not encourage water intrusion.
- H. Interior Components: Continuously seal joined pieces by continuous welds.
- I. Grind exposed joints flush and smooth with adjacent finish surface. Make exposed joints butt tight, flush, and hairline. Ease exposed edges to small uniform radius.
- J. Accurately form components to suit specific project conditions and for proper connection to building structure.
- K. Accommodate for expansion and contraction of members and building movement without damage to connections or members.

## **PART 3 EXECUTION**

### **3.01 EXAMINATION**

- A. Verify that field conditions are acceptable and are ready to receive work.

### **3.02 PREPARATION**

- A. Clean and strip primed steel items to bare metal where site welding is required.
- B. Supply items required to be cast into concrete or embedded in masonry with setting templates, for installation as work of other sections.
- C. Apply one coat of bituminous paint to concealed aluminum or steel surfaces that will be in contact with cementitious or dissimilar materials.
  - 1. Coat portion to be embedded with bituminous paint to a point 3/8 inches above finish concrete. Seal inside and outside of pipe. After setting in grout, seal around pipe with urethane sealant, color to match paint.

### **3.03 INSTALLATION**

- A. Install in accordance with manufacturer's instructions.
- B. Install components plumb and level, accurately fitted, free from distortion or defects, with tight joints.
- C. Anchor railings securely to structure.
  - 1. Anchor using methods indicated on drawings.
- D. Field weld anchors as indicated on drawings. Touch-up welds with primer. Grind welds smooth.

- E. Conceal anchor bolts and screws whenever possible. Where not concealed, use flush countersunk fastenings.
- F. Assemble with spigots and sleeves to accommodate tight joints and secure installation.
- G. Existing Concrete: Core-drill holes not less than 6 inches (150 mm) deep and 3/4 inch (20 mm) larger than outside diameter of post for installing posts in concrete. Clean holes of loose material, insert posts and fill annular space between post and concrete with grout, mixed and placed to comply with anchoring material manufacturer's written instructions.

#### **3.04 TOLERANCES**

- A. Maximum Variation From Plumb: 1/4 inch per floor level, non-cumulative.
- B. Maximum Offset From True Alignment: 1/4 inch.
- C. Maximum Out-of-Position: 1/4 inch.

**END OF SECTION**

**SECTION 06 1000**  
**ROUGH CARPENTRY**

**PART 1 GENERAL**

**1.01 SECTION INCLUDES**

- A. Preservative treated wood materials.
- B. Fire retardant treated wood materials.
- C. Communications and electrical room mounting boards.
- D. Concealed wood blocking, nailers, and supports.
- E. Miscellaneous wood nailers, furring, and grounds.

**1.02 RELATED REQUIREMENTS**

- A. Section 07 2500 - Weather Barriers: Water-resistive barrier over sheathing.

**1.03 REFERENCE STANDARDS**

- A. ASTM A153/A153M - Standard Specification for Zinc Coating (Hot-Dip) on Iron and Steel Hardware; 2016a.
- B. ASTM A653/A653M - Standard Specification for Steel Sheet, Zinc-Coated (Galvanized) or Zinc-Iron Alloy-Coated (Galvannealed) by the Hot-Dip Process; 2018.
- C. ASTM C557 - Standard Specification for Adhesives for Fastening Gypsum Wallboard to Wood Framing; 2003 (Reapproved 2017).
- D. ASTM D2898 - Standard Test Methods for Accelerated Weathering of Fire-Retardant-Treated Wood for Fire Testing; 2010 (Reapproved 2017).
- E. ASTM D3498 - Standard Specification for Adhesives for Field-Gluing Wood Structural Panels (Plywood or Oriented Strand Board) to Wood Based Floor System Framing; 2018a.
- F. ASTM E84 - Standard Test Method for Surface Burning Characteristics of Building Materials; 2018b.
- G. AWPA U1 - Use Category System: User Specification for Treated Wood; 2017.
- H. PS 1 - Structural Plywood; 2009.
- I. PS 20 - American Softwood Lumber Standard; 2015.
- J. SPIB (GR) - Grading Rules; 2014.

**1.04 SUBMITTALS**

- A. See Section 01 3000 - Administrative Requirements, for submittal procedures.
- B. Product Data: Provide technical data on wood preservative materials, application instructions, and fire retardant treatments.
- C. Manufacturer's Certificate: Certify that wood products supplied for rough carpentry meet or exceed specified requirements.
- D. Warranty: Submit manufacturer warranty and ensure that forms have been completed in Owner's name and registered with manufacturer.

**1.05 DELIVERY, STORAGE, AND HANDLING**

- A. General: Cover wood products to protect against moisture. Support stacked products to prevent deformation and to allow air circulation.
- B. Fire Retardant Treated Wood: Prevent exposure to precipitation during shipping, storage, or installation.

**1.06 WARRANTY**

- A. See Section 01 7800 - Closeout Submittals, for additional warranty requirements.
- B. Correct defective Work within a five year period after Date of Substantial Completion.

## **PART 2 PRODUCTS**

### **2.01 GENERAL REQUIREMENTS**

- A. Dimension Lumber: Comply with PS 20 and requirements of specified grading agencies.
  - 1. Species: Southern Pine, unless otherwise indicated.
  - 2. If no species is specified, provide any species graded by the agency specified; if no grading agency is specified, provide lumber graded by any grading agency meeting the specified requirements.
  - 3. Grading Agency: Any grading agency whose rules are approved by the Board of Review, American Lumber Standard Committee ([www.alsc.org](http://www.alsc.org)) and who provides grading service for the species and grade specified; provide lumber stamped with grade mark unless otherwise indicated.
  - 4. Lumber of other species or grades is acceptable provided structural and appearance characteristics are equivalent to or better than products specified.

### **2.02 DIMENSION LUMBER FOR CONCEALED APPLICATIONS**

- A. Grading Agency: Southern Pine Inspection Bureau, Inc; SPIB (GR).
- B. Sizes: Nominal sizes as indicated on drawings, S4S.
- C. Moisture Content: S-dry or MC19.
- D. Miscellaneous Framing, Blocking, Nailers, Grounds, and Furring:
  - 1. Lumber: S4S, No. 2 or Standard Grade.
  - 2. Boards: Standard or No. 3.

### **2.03 CONSTRUCTION PANELS**

- A. Underlayment: APA Underlayment; plywood, Exterior exposure class, 3/4 inch thick.
- B. Wall Sheathing: Plywood, PS 1, Grade C-C, Exterior Exposure.
- C. Communications and Electrical Room Mounting Boards: PS 1 A-D plywood, or medium density fiberboard; 3/4 inch thick; flame spread index of 25 or less, smoke developed index of 450 or less, when tested in accordance with ASTM E84.
- D. Other Applications:
  - 1. Plywood Concealed From View But Located Within Exterior Enclosure: PS 1, C-C Plugged or better, Exterior grade.
  - 2. Plywood Exposed to View But Not Exposed to Weather: PS 1, A-D, or better.
  - 3. Other Locations: PS 1, C-D Plugged or better.

### **2.04 ACCESSORIES**

- A. Fasteners and Anchors:
  - 1. Metal and Finish: Hot-dipped galvanized steel complying with ASTM A153/A153M for high humidity and preservative-treated wood locations, unfinished steel elsewhere.
  - 2. Drywall Screws: Bugle head, hardened steel, power driven type, length three times thickness of sheathing.
- B. Die-Stamped Connectors: Hot dipped galvanized steel, sized to suit framing conditions.
  - 1. For contact with preservative treated wood in exposed locations, provide minimum G185 galvanizing complying with ASTM A653/A653M.
- C. Joist Hangers: Hot dipped galvanized steel, sized to suit framing conditions.
  - 1. For contact with preservative treated wood in exposed locations, provide minimum G185 galvanizing complying with ASTM A653/A653M.
- D. Sill Gasket on Top of Foundation Wall: 1/4 inch thick, plate width, closed cell plastic foam from continuous rolls.
- E. Construction Adhesives: Adhesives complying with ASTM C557 or ASTM D3498.
  - 1. Manufacturers:

- a. Franklin International, Inc; Titebond Fast Set Polyurethane Construction Adhesive:  
[www.titebond.com/#sle](http://www.titebond.com/#sle).
  - b. Substitutions: See Section 01 6000 - Product Requirements.
- F. Water-Resistive Barrier: As specified in Section 07 2500.
- G. Building Paper: Water resistant Kraft paper.

## **2.05 FACTORY WOOD TREATMENT**

- A. Treated Lumber and Plywood: Comply with requirements of AWPA U1 - Use Category System for wood treatments determined by use categories, expected service conditions, and specific applications.
1. Fire-Retardant Treated Wood: Mark each piece of wood with producer's stamp indicating compliance with specified requirements.
  2. Preservative-Treated Wood: Provide lumber and plywood marked or stamped by an ALSC-accredited testing agency, certifying level and type of treatment in accordance with AWPA standards.
- B. Fire Retardant Treatment:
1. Exterior Type: AWPA U1, Category UCFB, Commodity Specification H, chemically treated and pressure impregnated; capable of providing a maximum flame spread index of 25 when tested in accordance with ASTM E84, with no evidence of significant combustion when test is extended for an additional 20 minutes both before and after accelerated weathering test performed in accordance with ASTM D2898.
    - a. Kiln dry wood after treatment to a maximum moisture content of 19 percent for lumber and 15 percent for plywood.
    - b. Do not use treated wood in direct contact with the ground.
  2. Interior Type A: AWPA U1, Use Category UCFA, Commodity Specification H, low temperature (low hygroscopic) type, chemically treated and pressure impregnated; capable of providing a maximum flame spread index of 25 when tested in accordance with ASTM E84, with no evidence of significant combustion when test is extended for an additional 20 minutes.
    - a. Kiln dry wood after treatment to a maximum moisture content of 19 percent for lumber and 15 percent for plywood.
    - b. All interior rough carpentry items are to be fire retardant treated.
    - c. Treat rough carpentry items as indicated .
    - d. Do not use treated wood in applications exposed to weather or where the wood may become wet.

## **PART 3 EXECUTION**

### **3.01 PREPARATION**

- A. Where wood framing bears on cementitious foundations, install full width sill flashing continuous over top of foundation, lap ends of flashing minimum of 4 inches and seal.
- B. Install sill gasket under sill plate of framed walls bearing on foundations; puncture gasket cleanly to fit tightly around protruding anchor bolts.
- C. Coordinate installation of rough carpentry members specified in other sections.

### **3.02 INSTALLATION - GENERAL**

- A. Select material sizes to minimize waste.
- B. Reuse scrap to the greatest extent possible; clearly separate scrap for use on site as accessory components, including: shims, bracing, and blocking.
- C. Where treated wood is used on interior, provide temporary ventilation during and immediately after installation sufficient to remove indoor air contaminants.



### **3.03 BLOCKING, NAILERS, AND SUPPORTS**

- A. Provide framing and blocking members as indicated or as required to support finishes, fixtures, specialty items, and trim.
- B. In framed assemblies that have concealed spaces, provide solid wood fireblocking as required by applicable local code, to close concealed draft openings between floors and between top story and roof/attic space; other material acceptable to code authorities may be used in lieu of solid wood blocking.
- C. In walls, provide blocking attached to studs as backing and support for wall-mounted items, unless item can be securely fastened to two or more studs or other method of support is explicitly indicated.
- D. Where ceiling-mounting is indicated, provide blocking and supplementary supports above ceiling, unless other method of support is explicitly indicated.

### **3.04 ROOF-RELATED CARPENTRY**

- A. Coordinate installation of roofing carpentry with deck construction, framing of roof openings, and roofing assembly installation.
- B. Provide wood curb at all roof openings except where specifically indicated otherwise. Form corners by alternating lapping side members.

### **3.05 INSTALLATION OF CONSTRUCTION PANELS**

- A. Wall Sheathing: Secure with long dimension perpendicular to wall studs, with ends over firm bearing and staggered, using nails, screws, or staples.
  - 1. Use plywood at building corners, for not less than 96 inches, measured horizontally.
  - 2. Provide inlet diagonal bracing at corners.
- B. Communications and Electrical Room Mounting Boards: Secure with screws to studs with edges over firm bearing; space fasteners at maximum 24 inches on center on all edges and into studs in field of board.
  - 1. At fire-rated walls, install board over wall board indicated as part of the fire-rated assembly.
  - 2. Where boards are indicated as full floor-to-ceiling height, install with long edge of board parallel to studs.
  - 3. Install adjacent boards without gaps.

### **3.06 SITE APPLIED WOOD TREATMENT**

- A. Apply preservative treatment compatible with factory applied treatment at site-sawn cuts, complying with manufacturer's instructions.
- B. Allow preservative to dry prior to erecting members.

### **3.07 TOLERANCES**

- A. Framing Members: 1/4 inch from true position, maximum.
- B. Surface Flatness of Floor: 1/8 inch in 10 feet maximum, and 1/4 inch in 30 feet maximum.
- C. Variation from Plane (Other than Floors): 1/4 inch in 10 feet maximum, and 1/4 inch in 30 feet maximum.

### **3.08 CLEANING**

- A. Waste Disposal: Comply with the requirements of Section 01 7419 - Construction Waste Management and Disposal.
  - 1. Comply with applicable regulations.
  - 2. Do not burn scrap on project site.
  - 3. Do not burn scraps that have been pressure treated.
  - 4. Do not send materials treated with pentachlorophenol, CCA, or ACA to co-generation facilities or "waste-to-energy" facilities.
- B. Do not leave any wood, shavings, sawdust, etc. on the ground or buried in fill.

- C. Prevent sawdust and wood shavings from entering the storm drainage system.

**END OF SECTION**

**SECTION 06 4100**  
**ARCHITECTURAL WOOD CASEWORK**

**PART 1 GENERAL**

**1.01 SECTION INCLUDES**

- A. Specially fabricated cabinet units.
- B. Hardware.
- C. Miscellaneous cabinetry.
- D. Window stools.
- E. Factory finishing.

**1.02 RELATED REQUIREMENTS**

- A. Section 06 1000 - Rough Carpentry: Support framing, grounds, and concealed blocking.
- B. Section 12 3600 - Countertops.

**1.03 REFERENCE STANDARDS**

- A. ANSI A208.1 - American National Standard for Particleboard; 2009.
- B. ANSI A135.4 - American National Standard for Basic Hardboard; 2012.
- C. ANSI A208.2 - American National Standard for Medium Density Fiberboard for Interior Use; 2009.
- D. AWI/AWMAC/WI (AWS) - Architectural Woodwork Standards; 2014.
- E. AWMAC/WI (NAAWS) - North American Architectural Woodwork Standards, U.S. Version 3.0; 2016.
- F. BHMA A156.9 - American National Standard for Cabinet Hardware; 2015.
- G. NEMA LD 3 - High-Pressure Decorative Laminates; 2005.
- H. UL (DIR) - Online Certifications Directory; current listings at [database.ul.com](http://database.ul.com).
- I. ANSI A208.2 - American National Standard for Medium Density Fiberboard for Interior Use; 2009.
- J. PS 1 - Structural Plywood; 2009.
- K. PS 20 - American Softwood Lumber Standard; National Institute of Standards and Technology (Department of Commerce); 2005.

**1.04 ADMINISTRATIVE REQUIREMENTS**

- A. Preinstallation Meeting: Convene a preinstallation meeting not less than one week before starting work of this section; require attendance by all affected installers.

**1.05 SUBMITTALS**

- A. See Section 01 3000 - Administrative Requirements, for submittal procedures.
- B. Shop Drawings: Indicate materials, component profiles, fastening methods, jointing details, and accessories.
  - 1. Scale of Drawings: 1-1/2 inch to 1 foot, minimum.
  - 2. Provide the information required by AWI/AWMAC/WI (AWS) or AWMAC/WI (NAAWS).
  - 3. Include certification program label.
- C. Product Data: Provide data for hardware accessories.
- D. Samples: Submit actual samples of architectural cabinet construction, minimum 12 inches square, illustrating proposed cabinet, countertop, and shelf unit substrate and finish.
- E. Samples: Submit actual sample items of proposed pulls, hinges, shelf standards, and locksets, demonstrating hardware design, quality, and finish.

### **1.06 QUALITY ASSURANCE**

- A. Fabricator Qualifications: Company specializing in fabricating the products specified in this section with minimum five years of documented experience.
  - 1. Company with at least one project in the past 5 years with value of woodwork within 20 percent of cost of woodwork for this Project.
  - 2. Accredited participant in the specified certification program prior to the commencement of fabrication and throughout the duration of the project.

### **1.07 MOCK-UP**

- A. Provide mock-up of typical base cabinet, wall cabinet, and countertop, including hardware, finishes, and plumbing accessories.
- B. Locate where directed.
- C. Mock-up may remain as part of the Work.

### **1.08 PRE-INSTALLATION MEETING**

- A. Convene not less than one week before starting work of this section.

### **1.09 DELIVERY, STORAGE, AND HANDLING**

- A. Protect units from moisture damage.

### **1.10 FIELD CONDITIONS**

- A. During and after installation of custom cabinets, maintain temperature and humidity conditions in building spaces at same levels planned for occupancy.

## **PART 2 PRODUCTS**

### **2.01 MANUFACTURERS**

- A. Single Source Responsibility: Provide and install this work from single fabricator.

### **2.02 CABINETS**

- A. Quality Standard: Custom Grade, in accordance with AWI/AWMAC/WI (AWS) or AWMAC/WI (NAAWS), unless noted otherwise.
- B. Cabinets:
  - 1. Finish - Exposed Exterior Surfaces: Decorative laminate.
  - 2. Finish - Exposed Interior Surfaces: Decorative laminate.
  - 3. Finish - Concealed Surfaces: Laminate cabinet liner.
  - 4. Door and Drawer Front Edge Profiles: As indicated on Drawings.
  - 5. Door and Drawer Front Retention Profiles: Fixed panel.
  - 6. Casework Construction Type: Type B - Face-frame.
  - 7. Interface Style for Cabinet and Door: Style 1 - Overlay; reveal overlay.
  - 8. Cabinet Design Series: As indicated on drawings.
  - 9. Adjustable Shelf Loading: 50 lbs. per sq. ft.
    - a. Deflection: L/144.
  - 10. Cabinet Style: Flush overlay.
  - 11. Drawer Construction Technique: Dovetail joints.

### **2.03 WOOD-BASED COMPONENTS**

- A. Wood fabricated from old growth timber is not permitted.

### **2.04 SHEET MATERIALS**

- A. Particleboard: ANSI A208.1; Composed of wood chips, sawdust, or flakes of medium density, made with waterproof resin binders; of grade to suit application; sanded faces.
- B. Hardboard: ANSI A135.4; Pressed wood fiber with resin binder, Class 1 - Tempered, 1/4 inch thick, smooth one side (S1S).

- C. Pegboard: Pressed wood fiber with resin binder, standard grade; 1/8 inch thick, with holes spaced at 1 inch on center in both directions.
- D. Medium Density Fiberboard for Supporting Substrate: ANSI A208.2.

## 2.05 LAMINATE MATERIALS

- A. Manufacturers:
  - 1. Formica Corporation: [www.formica.com/#sle](http://www.formica.com/#sle).
  - 2. Panolam Industries International, Inc; Nevamar: [www.nevamar.com](http://www.nevamar.com).
  - 3. Panolam Industries International, Inc\Pionite: [www.pionitelaminates.com](http://www.pionitelaminates.com).
  - 4. Wilsonart, LLC: [www.wilsonart.com](http://www.wilsonart.com).
  - 5. Substitutions: See Section 01 6000 - Product Requirements.
- B. High Pressure Decorative Laminate (HPDL): NEMA LD 3, types as recommended for specific applications.
- C. Provide specific types as indicated.
  - 1. Horizontal Surfaces: HGS, 0.048 inch nominal thickness, through color, color as selected, finish as selected.
  - 2. Vertical Surfaces: VGS, 0.028 inch nominal thickness, through color, color as selected, finish as indicated.
  - 3. Cabinet Liner: CLS, 0.020 inch nominal thickness, through color, color as selected, finish as selected.
  - 4. Laminate Backer: BKL, 0.020 inch nominal thickness, undecorated; for application to concealed backside of panels faced with high pressure decorative laminate.

## 2.06 COUNTERTOPS

- A. Countertops are specified in Section 12 3600.
- B. Plastic Laminate Countertops: Medium density fiberboard substrate covered with HPDL, conventionally fabricated and self-edge banded.

## 2.07 SOLID SURFACING

- A. Solid Surfacing Assemblies: Solid surfacing sheet or plastic resin casting over continuous substrate.
  - 1. Flat Sheet Thickness: 1/4 inch, minimum.
  - 2. Solid Surfacing Sheet and Plastic Resin Castings: Complying with ISFA-2 and NEMA LD 3; acrylic or polyester resin, mineral filler, and pigments; homogenous, non-porous and capable of being worked and repaired using standard woodworking tools; no surface coating; color and pattern consistent throughout thickness.
    - a. Surface Burning Characteristics: Flame spread 25, maximum; smoke developed 450, maximum; when tested in accordance with ASTM E84.
    - b. NSF approved for food contact.
    - c. Finish on Exposed Surfaces: Semi-gloss, gloss rating of 25 to 50.
    - d. Color and Pattern: As indicated on drawings.
    - e. Manufacturers:
      - 1) Dupont : [www.corian.com](http://www.corian.com).
      - 2) Formica Corporation : [www.formica.com](http://www.formica.com).
      - 3) Avonite Surfaces : [www.avonitesurfaces.com](http://www.avonitesurfaces.com).
      - 4) Wilsonart International, Inc : [www.wilsonart.com](http://www.wilsonart.com).
      - 5) Substitutions: See Section 01 6000 - Product Requirements.

## 2.08 ACCESSORIES

- A. Adhesive: Type recommended by fabricator to suit application.
- B. Fasteners: Size and type to suit application.

- C. Bolts, Nuts, Washers, Lags, Pins, and Screws: Of size and type to suit application; galvanized or chrome-plated finish in concealed locations and stainless steel or chrome-plated finish in exposed locations.
- D. Concealed Joint Fasteners: Threaded steel.
- E. Grommets: Standard plastic or rubber grommets for cut-outs, in color to match adjacent surface.

## **2.09 HARDWARE**

- A. Hardware: BHMA A156.9, types as recommended by fabricator for quality grade specified.
- B. Adjustable Shelf Supports: Standard side-mounted system using multiple holes for pin supports and coordinated self rests, polished chrome finish, for nominal 1 inch spacing adjustments.
- C. Drawer Pulls: Steel bar handle, stainless steel look finish, 96 mm centers.
  - 1. Product: No 101.20.729 manufactured by Hafele America Company; [www.hafele.com](http://www.hafele.com).
- D. Sliding Door Pulls: Circular shape for recessed installation, aluminum with satin finish.
- E. Cabinet Locks: Keyed cylinder, two keys per lock, master keyed, steel with chrome finish steel with satin finish.
- F. Catches: Magnetic.
- G. Drawer Slides:
  - 1. Type: Extension types as required.
  - 2. Static Load Capacity: Commercial grade.
  - 3. Mounting: Side mounted.
  - 4. Stops: Integral type.
  - 5. Features: Provide self closing/stay closed type.
  - 6. Manufacturers:
    - a. Accuride International, Inc: [www accuride.com](http://www accuride.com).
    - b. Grass America Inc: [www.grassusa.com](http://www.grassusa.com).
    - c. Hettich America, LP: [www.hettichamerica.com](http://www.hettichamerica.com).
    - d. Knappe & Vogt Manufacturing Company: [www.knapeandvogt.com](http://www.knapeandvogt.com).
    - e. Substitutions: See Section 01 6000 - Product Requirements.
- H. Hinges: European style concealed self-closing type, BHMA No. B01602 or B01612 as applicable, steel with polished finish.
  - 1. Manufacturers:
    - a. Grass America Inc: [www.grassusa.com](http://www.grassusa.com).
    - b. Hardware Resources: [www.hardwareresources.com](http://www.hardwareresources.com).
    - c. Hettich America, LP: [www.hettich.com/sle](http://www.hettich.com/sle).
    - d. Julius Blum, Inc: [www.blum.com](http://www.blum.com).
    - e. Substitutions: See Section 01 6000 - Product Requirements.

## **2.10 SHOP TREATMENT OF WOOD MATERIALS**

- A. Provide UL (DIR) listed and approved identification on fire retardant treated material.
- B. Deliver fire retardant treated materials cut to required sizes. Minimize field cutting.

## **2.11 SITE FINISHING MATERIALS**

- A. Stain, Shellac, Varnish, and Finishing Materials: In compliance with AWI/AWMAC/WI (AWS) or AWMAC/WI (NAAWS), unless noted otherwise.

## **2.12 FABRICATION**

- A. Assembly: Shop assemble cabinets for delivery to site in units easily handled and to permit passage through building openings.
- B. Edging: Fit shelves, doors, and exposed edges with specified edging. Do not use more than one piece for any single length.

- C. Fitting: When necessary to cut and fit on site, provide materials with ample allowance for cutting. Provide matching trim for scribing and site cutting.
- D. Plastic Laminate: Apply plastic laminate finish in full uninterrupted sheets consistent with manufactured sizes. Fit corners and joints hairline; secure with concealed fasteners. Slightly bevel arises. Locate counter butt joints minimum 2 feet from sink cut-outs.
  - 1. Apply laminate backing sheet to reverse side of plastic laminate finished surfaces.
  - 2. Cap exposed plastic laminate finish edges with material of same finish and pattern.
- E. Mechanically fasten back splash to countertops as recommended by laminate manufacturer at 16 inches on center.
- F. Provide cutouts for plumbing fixtures. Verify locations of cutouts from on-site dimensions. Seal cut edges.

### **2.13 SHOP FINISHING**

- A. Sand work smooth and set exposed nails and screws.
- B. For opaque finishes, apply wood filler in exposed nail and screw indentations and sand smooth.
- C. On items to receive transparent finishes, use wood filler matching or blending with surrounding surfaces and of types recommended for applied finishes.
- D. Finish work in accordance with AWI/AWMA/WI (AWS) or AWMA/WI (NAAWS), Section 5 - Finishing for grade specified and as follows:

## **PART 3 EXECUTION**

### **3.01 EXAMINATION**

- A. Verify adequacy of backing and support framing.
- B. Verify location and sizes of utility rough-in associated with work of this section.

### **3.02 INSTALLATION**

- A. Install work in accordance with AWI/AWMA/WI (AWS) or AWMA/WI (NAAWS) requirements for grade indicated.
- B. Set and secure custom cabinets in place, assuring that they are rigid, plumb, and level.
- C. Use fixture attachments in concealed locations for wall mounted components.
- D. Use concealed joint fasteners to align and secure adjoining cabinet units and countertops.
- E. Carefully scribe casework abutting other components, with maximum gaps of 1/32 inch. Do not use additional overlay trim for this purpose.
- F. Secure cabinets and counter bases to floor using appropriate angles and anchorages.
- G. Countersink anchorage devices at exposed locations. Conceal with solid wood plugs of species to match surrounding wood; finish flush with surrounding surfaces.

### **3.03 ADJUSTING**

- A. Adjust installed work.
- B. Adjust moving or operating parts to function smoothly and correctly.

### **3.04 CLEANING**

- A. Clean casework, counters, shelves, hardware, fittings, and fixtures.

### **3.05 SCHEDULES**

- A. See Finish Schedule bound into Project Manual at end of Division 9.

**END OF SECTION**

**SECTION 07 0553**  
**FIRE AND SMOKE ASSEMBLY IDENTIFICATION**

**PART 1 GENERAL**

**1.01 SECTION INCLUDES**

- A. Identification markings for fire and smoke rated partitions, and fire rated walls.

**1.02 RELATED REQUIREMENTS**

- A. Section 09 9123 - Interior Painting: Paint finish.

**1.03 REFERENCE STANDARDS**

- A. ICC (IBC) - International Building Code; 2015.

**1.04 SUBMITTALS**

- A. See Section 01 3000 - Administrative Requirements, for submittal procedures.
- B. Schedule: Completely define scope of proposed marking, and indicate location of affected walls and partitions, and number of markings.
- C. Samples: Submit two samples of each type of marking proposed for use, of size similar to that required for project, illustrating font, wording, and method of application.

**1.05 QUALITY ASSURANCE**

- A. Manufacturer Qualifications: Company specializing in manufacturing the products specified in this section with minimum five years of documented experience.

**1.06 FIELD CONDITIONS**

- A. Do not install painted markings when ambient temperature is lower than recommended by coating manufacturer.

**PART 2 PRODUCTS**

**2.01 FIRE AND SMOKE ASSEMBLY IDENTIFICATION**

- A. Regulatory Requirements: Comply with "Marking and Identification" requirements of "Fire-Resistance Ratings and Fire Tests" chapter of ICC (IBC).
- B. Applied Fire and Smoke Assembly Identification: Identification markings applied to partition with paint and a code compliant stencil. See Section 09 9123 for products.
- C. Languages: Provide all markings in English.

**PART 3 EXECUTION**

**3.01 EXAMINATION**

- A. Verify that substrate surfaces are ready to receive work.

**3.02 PREPARATION**

- A. See Section 09 9123 for substrate preparation for painted markings.

**3.03 INSTALLATION**

- A. Locate markings as required by ICC (IBC).
- B. Install applied markings in accordance with Section 09 9123.
- C. Install neatly, with horizontal edges level.
- D. Protect from damage until Date of Substantial Completion; repair or replace damaged markings.

**END OF SECTION**



**SECTION 07 1400**  
**FLUID-APPLIED WATERPROOFING**

**PART 1 GENERAL**

**1.01 SECTION INCLUDES**

- A. Fluid-Applied Waterproofing:
  - 1. Polyurethane waterproofing.

**1.02 RELATED REQUIREMENTS**

- A. Section 03 3000 - Cast-in-Place Concrete: Concrete substrate.
- B. Section 04 2000 - Unit Masonry: Masonry joints prepared to receive flashings.
- C. Section 07 9200 - Joint Sealants: Sealing moving joints in waterproofed surfaces that are not part of work in this section.
- D. Section 22 1006 - Plumbing Piping Specialties: Roof drain and plumbing vent flashing flanges.

**1.03 ABBREVIATIONS**

- A. NRCA - National Roofing Contractors Association.

**1.04 REFERENCE STANDARDS**

- A. ASTM C836/C836M - Standard Specification for High Solids Content, Cold Liquid-Applied Elastomeric Waterproofing Membrane for Use with Separate Wearing Course; 2018.
- B. ASTM D412 - Standard Test Methods for Vulcanized Rubber and Thermoplastic Elastomers--Tension; 2006a (Reapproved 2013).
- C. ASTM D746 - Standard Test Method for Brittleness Temperature of Plastics and Elastomers by Impact; 2014.
- D. ASTM D1621 - Standard Test Method for Compressive Properties Of Rigid Cellular Plastics; 2016.
- E. ASTM D2240 - Standard Test Method for Rubber Property--Durometer Hardness; 2015.
- F. ASTM D4541 - Standard Test Method for Pull-Off Strength of Coatings Using Portable Adhesion Testers; 2017.
- G. ASTM E96/E96M - Standard Test Methods for Water Vapor Transmission of Materials; 2016.
- H. NRCA (WM) - The NRCA Waterproofing Manual; 2005.

**1.05 SUBMITTALS**

- A. See Section 01 3000 - Administrative Requirements, for submittal procedures.
- B. Product Data: Provide data for membrane, surface conditioner, flexible flashings, joint cover sheet, and joint and crack sealants.
- C. Shop Drawings: Indicate special joint or termination conditions and conditions of interface with other materials.
- D. Certificate: Certify that products meet or exceed specified requirements.
- E. Manufacturer's Installation Instructions: Indicate special procedures, perimeter conditions requiring special attention, and acceptable installation temperatures.
- F. Manufacturer's Qualification Statement.
- G. Installer's Qualification Statement.
- H. Warranty:
  - 1. Submit manufacturer warranty and ensure that forms have been completed in Owner's name and registered with manufacturer.
  - 2. Submit installer's certification that installation complies with warranty conditions for the waterproofing membrane.

### **1.06 QUALITY ASSURANCE**

- A. Manufacturer Qualifications: Company specializing in manufacturing products specified in this section, with not less than five years documented experience.
- B. Installer Qualifications: Company specializing in performing work of the type specified and with at least five years of documented experience and approved by manufacturer.

### **1.07 MOCK-UP**

- A. Construct mock-up consisting of 100 sq ft of horizontal waterproofed panel; to represent finished work including internal and external corners, drainage panel, base flashings, control joints, expansion joints, counterflashings, and protective cover.
- B. Locate where directed.
- C. Mock-up may remain as part of this Work.

### **1.08 FIELD CONDITIONS**

- A. Maintain ambient temperatures above 40 degrees F for 24 hours before and during application and until cured.

### **1.09 WARRANTY**

- A. See Section 01 7800 - Closeout Submittals, for additional warranty requirements.
- B. Contractor shall correct defective Work within a five year period after Date of Substantial Completion; remove and replace materials concealing waterproofing at no cost to Owner.
- C. Provide five year manufacturer warranty for waterproofing failing to resist penetration of water, except where such failures are the result of structural failures of building. Hairline cracking of concrete due to temperature change or shrinkage is not considered a structural failure.

## **PART 2 PRODUCTS**

### **2.01 MANUFACTURERS**

- A. Polyurethane Waterproofing:
  - 1. AVM Industries, Inc; Aussie Membrane 520: [www.avmindustries.com/#sle](http://www.avmindustries.com/#sle).
  - 2. Carlisle Coatings & Waterproofing, Inc; CCW-703: [www.carlisleccw.com/#sle](http://www.carlisleccw.com/#sle).
  - 3. Gaco Western; GacoFlex LM60: [www.gaco.com/#sle](http://www.gaco.com/#sle).
  - 4. Karnak Corporation; 192 One-Kote: [www.karnakcorp.com/#sle](http://www.karnakcorp.com/#sle).
  - 5. Tremco Commercial Sealants & Waterproofing; TREMproof 250GC: [www.tremcosealants.com/#sle](http://www.tremcosealants.com/#sle).
  - 6. Substitutions: See Section 01 6000 - Product Requirements.

### **2.02 WATERPROOFING APPLICATIONS**

- A. Polyurethane Waterproofing:
  - 1. Location: Foundation waterproofing as indicated on Drawings.
  - 2. Cover with protection board.

### **2.03 FLUID APPLIED WATERPROOFING MATERIALS**

- A. Polyurethane Waterproofing: Cold-applied one or two component polyurethane, complying with ASTM C836/C836M.
  - 1. Cured Thickness: 60 mils, 0.060 inch, minimum.
  - 2. Suitable for installation over concrete substrates.
  - 3. VOC Content: None.
  - 4. Tensile Strength: 400 psi, measured in accordance with ASTM D412.
  - 5. Ultimate Elongation: 180 percent, measured in accordance with ASTM D412.
  - 6. Durometer Hardness, Type A: 30, minimum, in accordance with ASTM D2240.
  - 7. Permeance: 0.073 perms, measured in accordance with ASTM E96/E96M.
  - 8. Adhesion: Greater than 150 psi, measured in accordance with ASTM D4541.

9. Brittleness Temperature: Based on minus 50 degrees F, measured in accordance with ASTM D746.

## 2.04 ACCESSORIES

- A. Sealant for Joints and Cracks in Substrate: Type compatible with waterproofing material and as recommended by waterproofing manufacturer.
- B. Protection Board: Provide type capable of preventing damage to waterproofing due to backfilling and construction traffic.
1. Polystyrene foam board, 1 inch thick.
  2. Recycled or reclaimed closed-cell foam plastic with non-woven filter fabric cover; 1 inch thick.
  3. Semi-rigid glass fiber board; unaffected by water, freeze-thaw, fungus, or soil bacteria; containing no formaldehyde, phenol, acrylic, or artificial color; 3/4 inch thick, nominal.
  4. Manufacturers:
    - a. Mar-flex Waterproofing & Building Products; Shockwave: [www.mar-flex.com/#sle](http://www.mar-flex.com/#sle).
    - b. Substitutions: See Section 01 6000 - Product Requirements.
- C. Protection Mat: Polyester mat at 14 oz/sq yd to protect vertical or horizontal waterproofing membranes.
1. Thickness: 100 mils, 0.10 inch, minimum.
  2. Width: 40 inch.
  3. Manufacturers:
    - a. Tremco Commercial Sealants & Waterproofing; Tremco Protection Mat: [www.tremcosealants.com/#sle](http://www.tremcosealants.com/#sle).
    - b. Substitutions: See Section 01 6000 - Product Requirements.
- D. Drainage Panel: Drainage layer with geotextile filter fabric on earth side.
1. Composition: Dimpled polyethylene or polypropylene core; polypropylene or polyester filter fabric.
  2. Thickness: 1/4 inch, minimum.
  3. Core Compressive Strength: 15,000 psf, minimum, in accordance with ASTM D1621
  4. Manufacturers:
    - a. Advanced Building Products, Inc; ABP AdvancedDrain, 0.25 inch: [www.advancedbuildingproducts.com/#sle](http://www.advancedbuildingproducts.com/#sle).
    - b. American Hydrotech, Inc; Hydrodrain 1000: [www.hydrotechusa.com/#sle](http://www.hydrotechusa.com/#sle).
    - c. Epro Services, Inc; ECODRAIN-S: [www.eproserv.com/#sle](http://www.eproserv.com/#sle).
    - d. Mar-flex Waterproofing & Building Products; Geomat +: [www.mar-flex.com/#sle](http://www.mar-flex.com/#sle).
    - e. Tremco Commercial Sealants & Waterproofing; TREMDrain: [www.tremcosealants.com/#sle](http://www.tremcosealants.com/#sle).
    - f. Substitutions: See Section 01 6000 - Product Requirements.
- E. Cant Strips: Premolded composition material.
- F. Counterflashings: As recommended by membrane and protection board manufacturer.

## PART 3 EXECUTION

### 3.01 EXAMINATION

- A. Verify existing conditions before starting work.
- B. Verify substrate surfaces are free of frozen matter, dampness, loose particles, cracks, pits, projections, penetrations, or foreign matter detrimental to adhesion or application of waterproofing system.
- C. Verify that substrate surfaces are smooth, free of honeycomb or pitting, and not detrimental to full contact bond of waterproofing materials.
- D. Verify items that penetrate surfaces to receive waterproofing are securely installed.

### **3.02 PREPARATION**

- A. Protect adjacent surfaces from damage not designated to receive waterproofing.
- B. Clean and prepare surfaces to receive waterproofing in accordance with manufacturer's instructions; vacuum substrate clean.
- C. Do not apply waterproofing to surfaces unacceptable to waterproofing manufacturer.
- D. Fill non-moving joints and cracks with a filler compatible with waterproofing materials.
- E. Seal moving cracks with sealant and non-rigid filler, using procedures recommended by sealant and waterproofing manufacturers.
- F. Prepare building expansion joints at locations as indicated on drawings.
- G. Install cant strips at inside corners.

### **3.03 INSTALLATION**

- A. Install waterproofing to specified minimum thickness in accordance with manufacturers instructions and NRCA (WM) applicable requirements.
- B. Apply primer or surface conditioner at a rate recommended by manufacturer, and protect conditioner from rain or frost until dry.
- C. At joints and cracks less than 1/2 inch in width including joints between horizontal and vertical surfaces, apply 12 inch wide strip of joint cover sheet.
- D. At joints from 1/2 inch to 1 inch in width, loop joint cover sheet down into joint between 1-1/4 inch to 1-3/4 inch, and extend sheet at least 6 inches on either side of expansion joint.
- E. Center joint cover sheet over joints, roll sheet into 1/8 inch thick coating of waterproofing material and apply second coat over sheet extending at least 6 inches beyond sheet edges.
- F. Extend membrane over cants and up intersecting surfaces at membrane perimeter minimum 6 inches above horizontal surface for first ply and \_\_\_\_ inches at subsequent plies laid in shingle fashion.
- G. Apply extra thickness of waterproofing material at corners, intersections, and angles.
- H. Flexible Flashings: Seal items watertight that penetrate through waterproofing membrane with flexible flashings.
- I. Extend waterproofing material and flexible flashing into drain clamp flange, apply adequate coating of liquid membrane to ensure clamp ring seal, and coordinate with drain installation requirements specified in Section 22 1006.
- J. Seal membrane and flashings to adjoining surfaces.
  - 1. Install termination bar along edges.
  - 2. Install counterflashing over exposed edges.

### **3.04 INSTALLATION - DRAINAGE PANEL AND PROTECTION BOARD**

- A. Place drainage panel directly against membrane, butt joints, place to encourage drainage downward, and scribe and cut boards around projections, penetrations, and interruptions.
- B. Place protection board directly against drainage panel; butt joints, and scribe and cut boards around projections, penetrations, and interruptions.
- C. Adhere protection board to substrate with compatible adhesive.

### **3.05 PROTECTION**

- A. Protect waterproofing system from damage until backfill is complete.

**END OF SECTION**

## **SECTION 07 2100 THERMAL INSULATION**

### **PART 1 GENERAL**

#### **1.01 SECTION INCLUDES**

- A. Board insulation at metal stud wall inboard of structural girts.
- B. Batt or low expansion foam insulation for filling perimeter window and door shim spaces and crevices in exterior wall and roof.
- C. Acoustic Insulation.

#### **1.02 RELATED REQUIREMENTS**

- A. Section 04 2000 - Unit Masonry.
- B. Section 05 4000 - Cold-Formed Metal Framing: Continuous board insulation at light gage metal framing.
- C. Section 07 8400 - Firestopping: Insulation as part of fire-rated through-penetration assemblies.
- D. Section 09 2116 - Gypsum Board Assemblies: Acoustic insulation inside walls and partitions.
- E. Section 13 3419 - Metal Building Systems: Thermal insulation and vapor barrier as part of metal building system.

#### **1.03 REFERENCE STANDARDS**

- A. ASTM C665 - Standard Specification for Mineral-Fiber Blanket Thermal Insulation for Light Frame Construction and Manufactured Housing; 2017.
- B. ASTM E84 - Standard Test Method for Surface Burning Characteristics of Building Materials; 2018b.

#### **1.04 SUBMITTALS**

- A. See Section 01 3000 - Administrative Requirements, for submittal procedures.
- B. Product Data: Provide data on product characteristics, performance criteria, and product limitations.
- C. Manufacturer's Installation Instructions: Include information on special environmental conditions required for installation and installation techniques.

#### **1.05 QUALITY ASSURANCE**

- A. Provide full thick batts at all insulated stud conditions.

#### **1.06 FIELD CONDITIONS**

- A. Do not install insulation adhesives when temperature or weather conditions are detrimental to successful installation.

#### **1.07 SEQUENCING**

- A. Sequence work to ensure fireproofing and firestop materials are in place before beginning work of this section.

#### **1.08 COORDINATION**

- A. Coordinate the work with Section 07 2500 for installation of vapor retarder.

### **PART 2 PRODUCTS**

#### **2.01 APPLICATIONS**

- A. Insulation in Metal Framed Walls behind gypsum board: Batt insulation with no vapor retarder. Provide mineral fiber batt.
- B. Acoustical Insulation: Mineral wool batt or semi-rigid mineral wool board insulation.
- C. Insulation where indicated on Drawings.

## 2.02 BATT INSULATION MATERIALS

- A. Mineral Fiber Batt Insulation for thermal or acoustic uses: Flexible preformed batt or blanket, complying with ASTM C 665; friction fit; unfaced flame spread index of 0 (zero) when tested in accordance with ASTM E 84.
  - 1. Flame Spread Index: 25 or less, when tested in accordance with ASTM E84.
  - 2. Smoke Developed Index: 0 (zero), when tested in accordance with ASTM E84.
  - 3. Thermal Resistance: R-value of 4.3 degrees F hr sq ft/Btu per inch at 75 degrees F, minimum, when tested according to ASTM C518.
  - 4. Density: 2 pounds per cubic foot, nominal.
  - 5. Thickness: As indicated on Drawings. If not indicated otherwise, provide full thickness of cavity, stud or rafter.
    - a. Thickness at acoustic partitions: 3-1/2 inches.
    - b. Thickness at exterior walls: 6 inches.
  - 6. Manufacturers: Subject to requirements, provide product of one of the following manufacturers.
    - a. Johns Manville: [www.jm.com](http://www.jm.com).
    - b. Thermafiber, Inc: [www.thermafiber.com/#sle](http://www.thermafiber.com/#sle).
    - c. Rockwool Group, Inc: [www.rockwool.com](http://www.rockwool.com).
    - d. Industrial Insulation Group LLC: [www.iig-llc.com](http://www.iig-llc.com).
    - e. Substitutions: See Section 01 6000 - Product Requirements.

## 2.03 ACCESSORIES

- A. Insulation Fasteners: Lengths of unfinished, 13 gage, 0.072 inch high carbon spring steel with chisel or mitered tips, held in place by tension, length to suit insulation thickness and substrate, capable of securely supporting insulation in place.
- B. Foam Crack and Crevice Insulation: Low expansion single component polyurethane foam insulation.
  - 1. Products:
    - a. Great Stuff Pro Gap and Crack Insulation Foam Sealant manufactured by Dow Chemical Company: [www.greatstuff.dow.com](http://www.greatstuff.dow.com).
    - b. 627720 Insulating Foam Sealant manufactured by Owens Corning: [www.insulation.owenscorning.com](http://www.insulation.owenscorning.com).
    - c. CRC Minimal Expansion Foam Sealant manufactured by CRC Industries Inc: [www.crcindustries.com](http://www.crcindustries.com).
    - d. Substitutions: See Section 01 6000 - Product Requirements.

## PART 3 EXECUTION

### 3.01 EXAMINATION

- A. Verify that substrate, adjacent materials, and insulation materials are dry and that substrates are ready to receive insulation.
- B. Verify substrate surfaces are flat, free of honeycomb, fins, irregularities, or materials or substances that may impede adhesive bond.

### 3.02 BATT INSTALLATION

- A. Install insulation in accordance with manufacturer's instructions.
- B. Install in exterior wall spaces without gaps or voids. Do not compress insulation.
- C. Install in roof truss spaces suspended on wire mesh. Install without gaps or voids. Do not compress insulation.
- D. Install acoustic insulation in partition spaces and above ceilings without gaps or voids.
- E. Trim insulation neatly to fit spaces. Insulate miscellaneous gaps and voids.
- F. Fit insulation tightly in cavities and tightly to exterior side of mechanical and electrical services within the plane of the insulation.

- G. Install with factory applied vapor retarder membrane facing warm side of building spaces. Lap ends and side flanges of membrane over framing members.
- H. Tape exposed insulation batts in place with matching tape.
- I. Retain insulation batts in place with wire mesh secured to framing members.
- J. Tape seal butt ends, lapped flanges, and tears or cuts in membrane.

**3.03 PROTECTION**

- A. Do not permit installed insulation to be damaged prior to its concealment. Replace damaged units.

**END OF SECTION**

**SECTION 07 2500**  
**WEATHER BARRIERS**

**PART 1 GENERAL**

**1.01 SECTION INCLUDES**

- A. Air Barriers: Materials that form a system to stop passage of air through exterior walls, joints between exterior walls and roof, and joints around frames of openings in exterior walls.

**1.02 RELATED REQUIREMENTS**

- A. Section 03 3000 - Cast-in-Place Concrete: Vapor retarder under concrete slabs on grade.
- B. Section 07 2400 - Exterior Insulation and Finish Systems: Water-resistive barrier under exterior insulation.
- C. Section 07 5400 - Thermoplastic Membrane Roofing: Vapor retarder installed as part of roofing system.
- D. Section 07 6200 - Sheet Metal Flashing and Trim: Metal flashings installed in conjunction with weather barriers.
- E. Section 07 9200 - Joint Sealants: Sealing building expansion joints.

**1.03 DEFINITIONS**

- A. Weather Barrier: Assemblies that form either water-resistive barriers, air barriers, or vapor retarders.
- B. Air Barrier: Air tight barrier made of material that is relatively air impermeable but water vapor permeable, both to the degree specified, with sealed seams and with sealed joints to adjacent surfaces. Note: For the purposes of this specification, vapor impermeable air barriers are classified as vapor retarders.
- C. Vapor Retarder: Air tight barrier made of material that is relatively water vapor impermeable, to the degree specified, with sealed seams and with sealed joints to adjacent surfaces.
  - 1. Water Vapor Permeance: For purposes of conversion,  $57.2 \text{ ng}/(\text{Pa s sq m}) = 1 \text{ perm}$ .
- D. Water-Resistive Barrier: Water-shedding barrier made of material that is moisture resistant, to the degree specified, intended to be installed to shed water without sealed seams.

**1.04 REFERENCE STANDARDS**

- A. AATCC Test Method 127 - Water Resistance: Hydrostatic Pressure Test; 2018.
- B. ASTM D226/D226M - Standard Specification for Asphalt-Saturated Organic Felt Used in Roofing and Waterproofing; 2017.
- C. ASTM D412 - Standard Test Methods for Vulcanized Rubber and Thermoplastic Elastomers--Tension; 2006a (Reapproved 2013).
- D. ASTM D1970/D1970M - Standard Specification for Self-Adhering Polymer Modified Bituminous Sheet Materials Used as Steep Roofing Underlayment for Ice Dam Protection; 2019.
- E. ASTM E2357 - Standard Test Method for Determining Air Leakage of Air Barrier Assemblies; 2017.
- F. ASTM E84 - Standard Test Method for Surface Burning Characteristics of Building Materials; 2018b.
- G. ASTM E96/E96M - Standard Test Methods for Water Vapor Transmission of Materials; 2016.
- H. ASTM E2178 - Standard Test Method for Air Permeance of Building Materials; 2013.
- I. ICC-ES AC38 - Acceptance Criteria for Water-Resistive Barriers; 2016.
- J. ICC-ES AC212 - Acceptance Criteria for Water-Resistive Coatings Used as Water-Resistive Barriers over Exterior Sheathing; 2015.
- K. NFPA 285 - Standard Fire Test Method for Evaluation of Fire Propagation Characteristics of Exterior Non-Load-Bearing Wall Assemblies Containing Combustible Components; 2019.



### **1.05 SUBMITTALS**

- A. See Section 01 3000 - Administrative Requirements, for submittal procedures.
- B. Product Data: Provide data on material characteristics, performance criteria, limitations, and special procedures.
- C. Shop Drawings: Provide drawings of special joint conditions.
- D. Manufacturer's Installation Instructions: Indicate preparation, installation methods, storage and handling criteria, and special conditions requiring extra attention.
- E. ABAA Manufacturer Qualification: Submit documentation of current evaluation of proposed manufacturer and materials.

### **1.06 QUALITY ASSURANCE**

- A. Air Barrier Association of America (ABAA) Evaluated Materials Program (EAP); [www.airbarrier.org/#sle](http://www.airbarrier.org/#sle): Use evaluated materials from a single manufacturer regularly engaged in air barrier material manufacture, and use secondary materials approved in writing by primary material manufacturer.
  - 1. Provide products conforming to performance levels in accord with ASTM E2357.

### **1.07 FIELD CONDITIONS**

- A. Maintain temperature and humidity recommended by the materials manufacturers before, during and after installation.

## **PART 2 PRODUCTS**

### **2.01 WEATHER BARRIER ASSEMBLIES**

- A. Water-Resistive Barrier: Provide on exterior walls under exterior cladding where indicated on Drawings.
  - 1. Under Portland cement stucco, use two separate layers of building paper.
- B. Air Barrier:
  - 1. On outside surface of inside wythe of exterior masonry cavity walls use air barrier coating.
  - 2. On outside surface of sheathing of exterior walls use air barrier coating.

### **2.02 WATER-RESISTIVE BARRIER MATERIALS (NEITHER AIR BARRIER OR VAPOR RETARDER)**

- A. Asphalt Felt: ASTM D226/D226M Type I felt (No.15).
- B. Building Paper: Asphalt-saturated Kraft building paper complying with requirements of ICC-ES AC38 Grade D.
  - 1. Water Penetration Resistance: Withstand a water head of 21 inches, minimum, for minimum of five hours, when tested in accordance with AATCC Test Method 127.

### **2.03 AIR BARRIER MATERIALS (WATER VAPOR PERMEABLE AND WATER-RESISTIVE)**

- A. Air Barrier, Fluid Applied: Vapor permeable, elastomeric waterproofing.
  - 1. Air Barrier Coating:
    - a. Dry Film Thickness (DFT): 10 mil, 0.010 inch, minimum.
      - 1) Provide application thickness as recommended by manufacturer for product, substrate and optimum performance.
    - b. Air Permeance: 0.004 cfm/sq ft, maximum, when tested in accordance with ASTM E2178.
    - c. Water Vapor Permeance: 18 perms, minimum, when tested in accordance with ASTM E96/E96M Procedure B (Water Method) at 73.4 degrees F.
    - d. Ultraviolet (UV) and Weathering Resistance: Approved in writing by manufacturer for up to six months of weather exposure after application.
    - e. Elongation: 300 percent, minimum, when tested in accordance with ASTM D412.
    - f. Surface Burning Characteristics: Flame spread index of 25 or less, smoke developed index of 450 or less, when tested in accordance with ASTM E84.
    - g. Complies with NFPA 285 wall assembly requirements.

- h. Nail Sealability: Pass, when tested in accordance with ASTM D1970/D1970M.
- i. Code Acceptance: Comply with applicable requirements of ICC-ES AC212.
- j. Sealants, Tapes and Accessories: As recommended by coating manufacturer.
- k. Manufacturers:
  - 1) Carlisle Coatings and Waterproofing, Inc; Fire Resist Barrithane VP: [www.carlisleccw.com/#sle](http://www.carlisleccw.com/#sle).
  - 2) BASF Corporation; MasterSeal AWB 660: [www.master-builders-solutions.basf.us/#sle](http://www.master-builders-solutions.basf.us/#sle).
  - 3) Dow Chemical Company; DOWSIL DefendAir 200: [consumer.dow.com/en-us/industry/ind-building-construction.html/#sle](http://consumer.dow.com/en-us/industry/ind-building-construction.html/#sle).
  - 4) DuPont de Nemours, Inc; Tyvek Fluid Applied WB+ with Tyvek Fluid Applied Flashing and Joint Compound, Sealant for Tyvek Fluid Applied System and StraightFlash: [www.dupont.com/#sle](http://www.dupont.com/#sle).
  - 5) Hohmann & Barnard, Inc; ENVIRO-BARRIER VP: [www.h-b.com/#sle](http://www.h-b.com/#sle).
  - 6) Momentive Performance Materials, Inc/GE Construction Sealants; GE Elemax 2600 AWB: [www.siliconeforbuilding.com/#sle](http://www.siliconeforbuilding.com/#sle).
  - 7) Pecora Corporation; Pecora ProPerm VP - Vapor Permeable Air Barrier System with Pecora XL-Flash Liquid Flashing and Joint Filler, AVB Silicone Surface Transitions, and XL-Span Transition Membrane: [www.pecora.com/#sle](http://www.pecora.com/#sle).
  - 8) PROSOCO, Inc; R-GUARD Cat 5: [www.prosoco.com/r-guard/#sle](http://www.prosoco.com/r-guard/#sle).
  - 9) Sto Corp; Stoguard Sto Airseal: [www.stocorp.com](http://www.stocorp.com).
  - 10) Substitutions: See Section 01 6000 - Product Requirements.

#### **2.04 ACCESSORIES**

- A. Sealants, Tapes, and Accessories for Sealing Weather Barrier and Sealing Weather Barrier to Adjacent Substrates: As specified or as recommended by weather barrier manufacturer.
- B. Flexible Flashing: Self-adhesive sheet flashing complying with ASTM D1970/D1970M, except slip resistance requirement is waived if not installed on a roof.
  - 1. Composition: Any material that meets physical requirements of ASTM D1970/D1970M with exceptions indicated.
  - 2. Thickness: 30 mil, 0.030 inch, nominal; exception from ASTM D1970/D1970M.
- C. Pre-formed Transition Membrane: Semi-rigid silicone or polyester composition, tapered edges, tear resistant.
  - 1. Manufacturers:
    - a. Dow Chemical Company; DOWSIL Silicone Transition Strip and System: [consumer.dow.com/en-us/industry/ind-building-construction.html/#sle](http://consumer.dow.com/en-us/industry/ind-building-construction.html/#sle).
    - b. Fortifiber Building Systems Group; Moistop Corner Shield: [www.fortifiber.com/#sle](http://www.fortifiber.com/#sle).
    - c. Momentive Performance Materials, Inc/GE Construction Sealants; RF100 Reinforcing Fabric: [www.siliconeforbuilding.com/#sle](http://www.siliconeforbuilding.com/#sle).
    - d. Tremco Commercial Sealants & Waterproofing; ProGlaze ETA System 1: [www.tremcosealants.com/#sle](http://www.tremcosealants.com/#sle).
    - e. Substitutions: See Section 01 6000 - Product Requirements.
- D. Thinners and Cleaners: As recommended by material manufacturer.

### **PART 3 EXECUTION**

#### **3.01 EXAMINATION**

- A. Verify that surfaces and conditions are ready to accept the work of this section.

#### **3.02 PREPARATION**

- A. Remove projections, protruding fasteners, and loose or foreign matter that might interfere with proper installation.
- B. Clean and prime substrate surfaces to receive adhesives in accordance with manufacturer's instructions.

### **3.03 INSTALLATION**

- A. Install materials in accordance with manufacturer's instructions.
- B. Water-Resistive Barriers: Install continuous barrier over surfaces indicated, with sheets lapped to shed water but with seams not sealed.
- C. Air Barriers: Install continuous air tight barrier over surfaces indicated, with sealed seams and with sealed joints to adjacent surfaces.
- D. Apply sealants and adhesives within recommended application temperature ranges. Consult manufacturer if temperature is out of this range.
- E. Coatings:
  - 1. Prepare substrate in manner recommended by coating manufacturer; treat joints in substrate and between dissimilar materials as recommended by manufacturer.
  - 2. Where exterior masonry veneer is to be installed, install masonry anchors before installing weather barrier over masonry; seal around anchors air tight.
  - 3. Use flashing to seal to adjacent construction and to bridge joints.
- F. Openings and Penetrations in Exterior Weather Barriers:
  - 1. Install flashing over sills, covering entire sill frame member, extending at least 5 inches onto weather barrier and at least 6 inches up jambs; mechanically fasten stretched edges.
  - 2. At openings to be filled with frames having nailing flanges, seal head and jamb flanges using a continuous bead of sealant compressed by flange and cover flanges with sealing tape at least 4 inches wide; do not seal sill flange.
  - 3. At openings to be filled with non-flanged frames, seal weather barrier to each side of opening framing, using flashing at least 9 inches wide, covering entire depth of framing.
  - 4. At head of openings, install flashing under weather barrier extending at least 2 inches beyond face of jambs; seal weather barrier to flashing.
  - 5. At interior face of openings, seal gap between window/door frame and rough framing, using joint sealant over backer rod.
  - 6. Service and Other Penetrations: Form flashing around penetrating item and seal to weather barrier surface.

### **3.04 FIELD QUALITY CONTROL**

- A. See Section 01 4000 - Quality Requirements, for additional requirements.
- B. Coordination of ABAA Tests and Inspections:
  - 1. Provide testing and inspection required by ABAA QAP.
  - 2. Notify ABAA in writing of schedule for air barrier work, and allow adequate time for testing and inspection.
  - 3. Cooperate with ABAA testing agency.
  - 4. Allow access to air barrier work areas and staging.
  - 5. Do not cover air barrier work until tested, inspected, and accepted.
- C. Do not cover installed weather barriers until required inspections have been completed.
- D. Obtain approval of installation procedures by the weather barrier manufacturer based on a mock-up installed in place, prior to proceeding with remainder of installation.
- E. Take digital photographs of each portion of the installation prior to covering up.

### **3.05 PROTECTION**

- A. Do not leave materials exposed to weather longer than recommended by manufacturer.
- B. Do not leave paper- or felt-based barriers exposed to weather for longer than one week.

**END OF SECTION**

**SECTION 07 4646**  
**FIBER-CEMENT SIDING**

**PART 1 GENERAL**

**1.01 SECTION INCLUDES**

- A. Fiber-cement siding.
  - 1. Shingle panel siding.
  - 2. Lap siding.

**1.02 RELATED REQUIREMENTS**

- A. Section 07 2500 - Weather Barriers: Weather barrier under siding.
- B. Section 09 9113 - Exterior Painting: Field painting.

**1.03 REFERENCE STANDARDS**

- A. ASTM B221 - Standard Specification for Aluminum and Aluminum-Alloy Extruded Bars, Rods, Wire, Profiles, and Tubes; 2014.
- B. ASTM B221M - Standard Specification for Aluminum and Aluminum-Alloy Extruded Bars, Rods, Wire, Profiles, and Tubes (Metric); 2013.
- C. ASTM C1186 - Standard Specification for Flat Fiber Cement Sheets; 2008 (Reapproved 2012).

**1.04 SUBMITTALS**

- A. See Section 01 3000 - Administrative Requirements, for submittal procedures.
- B. Product Data: Submit manufacturer's data sheets on each product to be used, including:
  - 1. Manufacturer's requirements for related materials to be installed by others.
  - 2. Preparation instructions and recommendations.
  - 3. Storage and handling requirements and recommendations.
  - 4. Installation methods, including nail patterns.
- C. Test Report: Applicable model code authority evaluation report (e.g. ICC-ES).
- D. Installer's Qualification Statement.
- E. Maintenance Instructions: Periodic inspection recommendations and maintenance procedures.
- F. Warranty: Submit copy of manufacturer's warranty, made out in Owner's name, showing that it has been registered with manufacturer.

**1.05 QUALITY ASSURANCE**

- A. Installer Qualifications: Company specializing in performing work of the type specified in this section with minimum three years of experience.

**1.06 DELIVERY, STORAGE, AND HANDLING**

- A. Store products under waterproof cover and elevated above grade, on a flat surface.

**1.07 WARRANTY**

- A. See Section 01 7800 - Closeout Submittals, for additional warranty requirements.
- B. Correct defective work within a five year period after Date of Substantial Completion.

**PART 2 PRODUCTS**

**2.01 FIBER-CEMENT SIDING**

- A. Lap Siding: Individual horizontal boards made of cement and cellulose fiber formed under high pressure with integral surface texture, complying to ASTM C1186, Type A, Grade II; with machined edges, for nail attachment.
  - 1. Style: Beaded lap style.
  - 2. Texture: Smooth.
  - 3. Length: 12 ft, nominal.
  - 4. Width (Height): 8-1/4 inches.

5. Thickness: 5/16 inch, nominal.
6. Finish: Factory applied primer.
7. Color: As indicated on drawings.
8. Warranty: 50 year limited; transferable.
9. Manufacturers:
  - a. Basis of Design: James Hardie Building Products, Inc; Hardiplank Beaded Smooth Siding: [www.jameshardie.com/#sle](http://www.jameshardie.com/#sle).
  - b. Other Acceptable Manufacturers: With Architects approval, provide equivalent products of the following manufacturers:
    - 1) Allura, a division of Plycem USA, Inc: [www.allurausa.com/#sle](http://www.allurausa.com/#sle).
    - 2) Nichiha USA, Inc: [www.nichiha.com/#sle](http://www.nichiha.com/#sle).
  - c. Substitutions: See Section 01 6000 - Product Requirements.
- B. Shingle Panels: Panels giving appearance of multiple shingles made of cement and cellulose fiber formed under high pressure with integral surface texture, complying with ASTM C1186, Type A, Grade II; with machined edges, for nail attachment.
  1. Style: Random width, staggered edge.
  2. Texture: Smooth.
  3. Length: 48 inches.
  4. Width (Height): 15.-1/4 inches.
  5. Thickness: 1/4 inch, nominal.
  6. Exposure: 6 inch.
  7. Finish: Factory applied primer.
  8. Color: As indicated on drawings.
  9. Warranty: 50 year limited; transferable.
  10. Manufacturers:
    - a. Basis of Design: James Hardie Building Products, Inc; Hardishingle Staggered Edge Panel: [www.jameshardie.com/#sle](http://www.jameshardie.com/#sle).
    - b. Other Acceptable Manufacturers: With Architects approval, provide equivalent products of the following manufacturers:
      - 1) Allura, a division of Plycem USA, Inc: [www.allurausa.com/#sle](http://www.allurausa.com/#sle).
      - 2) Nichiha USA, Inc: [www.nichiha.com/#sle](http://www.nichiha.com/#sle).
    - c. Substitutions: See Section 01 6000 - Product Requirements.

## 2.02 ACCESSORIES

- A. Trim: Extruded aluminum, factory finished, reveal type.
  1. Reveal Width: As indicated on Drawings.
  2. Basis of Design Manufacturer: Tamlyn: [www.xtremetrim.com](http://www.xtremetrim.com).
    - a. Vertical Bead Reveal: XtremeTrim BRV.
    - b. Horizontal Z: XtremeTrim XZH.
    - c. J-Mold: XtremeTrim JMH.
    - d. Termination Piece: XtremeTrim XZHT.
    - e. Finish Color: Light Mist (LM).
  3. Substitutions: See Section 01 6000 - Product Requirements.
- B. Exterior Soffit Vents: One piece, perforated, ASTM B221 (ASTM B221M), 6063 alloy, T5 temper, aluminum, with edge suitable for direct application to gypsum board and manufactured especially for soffit application, and provide continuous vent.
- C. Sealant: Elastomeric, polyurethane or silyl-terminated polyether/polyurethane, and capable of being painted.
- D. Finish Paint: Latex house paint acceptable to siding manufacturer; primer recommended by paint manufacturer. See Section 09 9113 - Exterior Painting.

### **PART 3 EXECUTION**

#### **3.01 EXAMINATION**

- A. Examine substrate, clean and repair as required to eliminate conditions that would be detrimental to proper installation.
- B. Verify that weather barrier has been installed over substrate completely and correctly.
- C. Do not begin until unacceptable conditions have been corrected.
- D. If substrate preparation is responsibility of another installer, notify Architect of unsatisfactory preparation before proceeding.

#### **3.02 PREPARATION**

- A. Install Sheet Metal Flashing:
  - 1. Above door and window trim and casings.
  - 2. Above horizontal trim in field of siding.

#### **3.03 INSTALLATION**

- A. Install in accordance with manufacturer's instructions and recommendations.
  - 1. Read warranty and comply with terms necessary to maintain warranty coverage.
  - 2. Install in accordance with conditions stated in model code evaluation report applicable to location of project.
  - 3. Use trim details indicated on drawings.
  - 4. Touch up field cut edges before installing.
  - 5. Pre-drill nail holes if necessary to prevent breakage.
- B. Over Steel Studs: Use hot-dipped galvanized self-tapping screws, with the points of at least three screws penetrating each stud the panel crosses and at panel ends.
- C. Allow space for thermal movement between both ends of siding panels that butt against trim; seal joint between panel and trim with specified sealant.
- D. Joints in Horizontal Siding: Avoid joints in lap siding except at corners; where joints are inevitable stagger joints between successive courses.
- E. Do not install siding less than 6 inches from surface of ground nor closer than 1 inch to roofs, patios, porches, and other surfaces where water may collect.
- F. Exterior Soffit Vents: Install according to manufacturer's written instructions and in locations indicated on drawings, and provide vent area specified.
- G. After installation, seal joints except lap joints of lap siding; seal around penetrations, and paint exposed cut edges.
- H. Finish Painting: Refer to Section 09 9113.

#### **3.04 PROTECTION**

- A. Protect installed products until Date of Substantial Completion.
- B. Touch-up, repair or replace damaged products before Date of Substantial Completion.

**END OF SECTION**

**SECTION 07 6200**  
**SHEET METAL FLASHING AND TRIM**

**PART 1 GENERAL**

**1.01 SECTION INCLUDES**

- A. Fabricated sheet metal items, including flashings, counterflashings, and other items indicated on Drawings.
- B. Sealants for joints within sheet metal fabrications.

**1.02 RELATED REQUIREMENTS**

- A. Section 04 2000 - Unit Masonry: Metal flashings embedded in masonry.
- B. Section 05 5000 - Metal Fabrications: Downspout boots.
- C. Section 06 1000 - Rough Carpentry: Wood nailers for sheet metal work.
- D. Section 07 3113 - Asphalt Shingles: Non-metallic flashings associated with shingle roofing.
- E. Section 07 9200 - Joint Sealants: Sealing non-lap joints between sheet metal fabrications and adjacent construction.
- F. Section 13 3419 - Metal Building Systems: Flashings and sheet metal provided as part of pre-engineered pre-fabricated metal building system.

**1.03 REFERENCE STANDARDS**

- A. AAMA 2604 - Voluntary Specification, Performance Requirements and Test Procedures for High Performance Organic Coatings on Aluminum Extrusions and Panels (with Coil Coating Appendix); 2017a.
- B. AAMA 2605 - Voluntary Specification, Performance Requirements and Test Procedures for Superior Performing Organic Coatings on Aluminum Extrusions and Panels (with Coil Coating Appendix); 2017a.
- C. ASTM A653/A653M - Standard Specification for Steel Sheet, Zinc-Coated (Galvanized) or Zinc-Iron Alloy-Coated (Galvannealed) by the Hot-Dip Process; 2018.
- D. ASTM B32 - Standard Specification for Solder Metal; 2008 (Reapproved 2014).
- E. ASTM B209 - Standard Specification for Aluminum and Aluminum-Alloy Sheet and Plate; 2014.
- F. ASTM B209M - Standard Specification for Aluminum and Aluminum-Alloy Sheet and Plate (Metric); 2014.
- G. ASTM C920 - Standard Specification for Elastomeric Joint Sealants; 2014a.
- H. ASTM D2178/D2178M - Standard Specification for Asphalt Glass Felt Used in Roofing and Waterproofing; 2015a.
- I. CDA A4050 - Copper in Architecture - Handbook; current edition.
- J. SMACNA (ASMM) - Architectural Sheet Metal Manual; 2012.

**1.04 ADMINISTRATIVE REQUIREMENTS**

- A. Preinstallation Meeting: Convene one week before starting work of this section.

**1.05 SUBMITTALS**

- A. See Section 01 3000 - Administrative Requirements, for submittal procedures.
- B. Shop Drawings: Indicate material profile, jointing pattern, jointing details, fastening methods, flashings, terminations, and installation details.
- C. Samples: Submit two samples 8 by 8 inch in size illustrating metal finish color.

**1.06 QUALITY ASSURANCE**

- A. Perform work in accordance with SMACNA (ASMM) and CDA A4050 requirements and standard details, except as otherwise indicated.

- B. Fabricator and Installer Qualifications: Company specializing in sheet metal work with five years of documented experience.

### **1.07 DELIVERY, STORAGE, AND HANDLING**

- A. Stack material to prevent twisting, bending, and abrasion, and to provide ventilation. Slope metal sheets to ensure drainage.
- B. Prevent contact with materials that could cause discoloration or staining.

## **PART 2 PRODUCTS**

### **2.01 SHEET MATERIALS**

- A. Galvanized Steel: ASTM A653/A653M, with G90/Z275 zinc coating; minimum 24 gage, (0.0239 inch) thick base metal.
- B. Pre-Finished Galvanized Steel: ASTM A653/A653M, with G90/Z275 zinc coating; minimum 24 gage, (0.0239) inch thick base metal, shop pre-coated with PVDF coating.
  - 1. PVDF (Polyvinylidene Fluoride) Coating: Superior Performance Organic Finish, AAMA 2605; multiple coat, thermally cured fluoropolymer finish system.
- C. Aluminum: ASTM B209 (ASTM B209M); 20 gage, (0.032 inch) thick; mill finish.
- D. Pre-Finished Aluminum: ASTM B209 (ASTM B209M); 20 gage, (0.032 inch) thick; plain finish shop pre-coated with modified silicone coating.
  - 1. Fluoropolymer Coating: High Performance Organic Finish, AAMA 2604; multiple coat, thermally cured fluoropolymer finish system.
  - 2. Color: As selected by Architect from manufacturer's standard colors.

### **2.02 FABRICATION**

- A. Form sections true to shape, accurate in size, square, and free from distortion or defects.
- B. Fabricate cleats of same type sheet metal, minimum 1-1/2 inches wide, interlocking with sheet.
- C. Form pieces in longest possible lengths.
- D. Hem exposed edges on underside 1/2 inch; miter and seam corners.
- E. Form material with flat lock seams, except where otherwise indicated; at moving joints, use sealed lapped, bayonet-type or interlocking hooked seams.
- F. Fabricate corners from one piece with minimum 18 inch long legs; seam for rigidity, seal with sealant.
- G. Fabricate vertical faces with bottom edge formed outward 1/4 inch and hemmed to form drip.
- H. Fabricate flashings to allow toe to extend 2 inches over roofing surface. Return and brake edges.

### **2.03 EXTERIOR PENETRATION FLASHING PANELS**

- A. Flashing Panels for Exterior Wall Penetrations: Premanufactured components and accessories as required to preserve integrity of building envelope; suitable for conduits and facade materials to be installed.

### **2.04 ACCESSORIES**

- A. Fasteners: Galvanized steel, with soft neoprene washers.
- B. Underlayment: ASTM D2178/D2178M, glass fiber roofing felt.
- C. Primer: Zinc chromate type.
- D. Protective Backing Paint: Zinc molybdate alkyd.
- E. Concealed Sealants: Non-curing butyl sealant.
- F. Exposed Sealants: ASTM C920; elastomeric sealant, with minimum movement capability as recommended by manufacturer for substrates to be sealed; color to match adjacent material.
- G. Reglets: Surface mounted type, galvanized steel; face and ends covered with plastic tape.



- H. Solder: ASTM B32; Sn50 (50/50) type.

### **PART 3 EXECUTION**

#### **3.01 EXAMINATION**

- A. Verify roof openings, curbs, pipes, sleeves, ducts, and vents through roof are solidly set, reglets in place, and nailing strips located.
- B. Verify roofing termination and base flashings are in place, sealed, and secure.

#### **3.02 PREPARATION**

- A. Install starter and edge strips, and cleats before starting installation.
- B. Install surface mounted reglets true to lines and levels, and seal top of reglets with sealant.
- C. Back paint concealed metal surfaces with protective backing paint to a minimum dry film thickness of 15 mil.

#### **3.03 INSTALLATION**

- A. Insert flashings into reglets to form tight fit; secure in place with lead wedges; pack remaining spaces with lead wool; seal flashings into reglets with sealant.
- B. Secure flashings in place using concealed fasteners, and use exposed fasteners only where permitted..
- C. Apply plastic cement compound between metal flashings and felt flashings.
- D. Fit flashings tight in place; make corners square, surfaces true and straight in planes, and lines accurate to profiles.
- E. Seal metal joints watertight.

#### **3.04 FIELD QUALITY CONTROL**

- A. See Section 01 4000 - Quality Requirements, for field inspection requirements.
- B. Inspection will involve surveillance of work during installation to ascertain compliance with specified requirements.

**END OF SECTION**

**SECTION 07 8400  
FIRESTOPPING**

**PART 1 GENERAL**

**1.01 SECTION INCLUDES**

- A. Firestopping materials.
- B. Firestopping of all penetrations and interruptions to fire rated assemblies, whether indicated on drawings or not, and other openings indicated.

**1.02 RELATED REQUIREMENTS**

- A. Section 04800 - Unit Masonry Assemblies.
- B. Section 09 2116 - Gypsum Board Assemblies: Gypsum wallboard fireproofing.

**1.03 REFERENCE STANDARDS**

- A. ASTM E119 - Standard Test Methods for Fire Tests of Building Construction and Materials; 2016a.
- B. ASTM E814 - Standard Test Method for Fire Tests of Penetration Firestop Systems; 2013a.
- C. ASTM G21 - Standard Practice for Determining Resistance of Synthetic Polymeric Materials to Fungi; 2015.
- D. ITS (DIR) - Directory of Listed Products; current edition.
- E. FM 4991 - Approval Standard for Firestop Contractors; 2013.
- F. FM (AG) - FM Approval Guide; current edition.
- G. UL 1479 - Standard for Fire Tests of Penetration Firestops; Current Edition, Including All Revisions.
- H. UL (FRD) - Fire Resistance Directory; Current Edition.

**1.04 SUBMITTALS**

- A. See Section 01 3000 - Administrative Requirements, for submittal procedures.
- B. Schedule of Firestopping: List each type of penetration, fire rating of the penetrated assembly, and firestopping test or design number. Utilize applicable or equivalent forms at the end of this Section.
- C. Product Data: Provide data on product characteristics.
- D. Manufacturer's Installation Instructions: Indicate preparation and installation instructions.
- E. Manufacturer's Certificate: Certify that products meet or exceed specified requirements.
- F. Certificate from authority having jurisdiction indicating approval of materials used.
- G. Installer Qualification: Submit qualification statements for installing mechanics.

**1.05 QUALITY ASSURANCE**

- A. Fire Testing: Provide firestopping assemblies of designs which provide the specified fire ratings when tested in accordance with methods indicated.
  - 1. Listing in the current classification or certification books of UL, FM, or ITS (Warnock Hersey) will be considered as constituting an acceptable test report.
  - 2. Valid evaluation report published by ICC Evaluation Service, Inc. (ICC-ES) at [www.icc-es.org](http://www.icc-es.org) will be considered as constituting an acceptable test report.
  - 3. Current evaluation reports published by CABO, ICBO, or BOCA will be considered as constituting an acceptable test report.
  - 4. Submission of actual test reports is required for assemblies for which none of the above substantiation exists.
- B. Manufacturer Qualifications: Company specializing in manufacturing the products specified in this section with minimum three years documented experience.

- C. Installer Qualifications: Company specializing in performing the work of this section and:
  - 1. Approved by Factory Mutual Research Corporation under FM 4991, or meeting any two of the following requirements:
  - 2. Verification of minimum three years documented experience installing work of this type.
  - 3. Verification of at least five satisfactorily completed projects of comparable size and type.
  - 4. Licensed by local authorities having jurisdiction (AHJ).
  - 5. Approved by firestopping manufacturer.
- D. Installing Mechanic's Qualifications: Trained by firestopping manufacturer and able to provide evidence thereof.

#### **1.06 MOCK-UP**

- A. Install one firestopping assembly representative of each fire rating design required on project.
  - 1. Where one design may be used for different penetrating items or in different wall constructions, install one assembly for each different combination.
  - 2. Where firestopping is intended to fill a linear opening, install minimum of 1 linear ft.
- B. Obtain approval of authorities having jurisdiction (AHJ) before proceeding.
- C. If accepted, mock-up will represent minimum standard for the Work.
- D. If accepted, mock-up may remain as part of the Work. Remove and replace mock-ups not accepted.

#### **1.07 ENVIRONMENTAL REQUIREMENTS**

- A. Comply with firestopping manufacturer's recommendations for temperature and conditions during and after installation; maintain minimum temperature before, during, and for three days after installation of materials.
- B. Provide ventilation in areas where solvent-cured materials are being installed.

### **PART 2 PRODUCTS**

#### **2.01 MANUFACTURERS**

- A. Firestopping Manufacturers:
  - 1. 3M Fire Protection Products: [www.3m.com/firestop/#sle](http://www.3m.com/firestop/#sle).
  - 2. A/D Fire Protection Systems Inc: [www.adfire.com/#sle](http://www.adfire.com/#sle).
  - 3. Hilti, Inc: [www.us.hilti.com/#sle](http://www.us.hilti.com/#sle).
  - 4. Nelson FireStop Products: [www.nelsonfirestop.com/#sle](http://www.nelsonfirestop.com/#sle).
  - 5. Specified Technologies Inc: [www.stifirestop.com/#sle](http://www.stifirestop.com/#sle).
  - 6. Tremco Commercial Sealants & Waterproofing: [www.tremcosealants.com/#sle](http://www.tremcosealants.com/#sle).

#### **2.02 MATERIALS**

- A. Firestopping Materials: Any materials meeting requirements.
- B. Mold and Mildew Resistance: Provide firestopping materials with mold and mildew resistance rating of zero(0) in accordance with ASTM G21.
- C. Primers, Sleeves, Forms, Insulation, Packing, Stuffing, and Accessories: Provide type of materials as required for tested firestopping assembly.
- D. Fire Ratings: Refer to drawings for required systems and ratings.

#### **2.03 FIRESTOPPING ASSEMBLIES**

- A. Firestopping: Any material meeting requirements.
  - 1. Fire Ratings: Use system that is listed by FM (AG), ITS (DIR), or UL (FRD) and tested in accordance with ASTM E814, ASTM E119, or UL 1479 with F Rating equal to fire rating of penetrated assembly and minimum T Rating Equal to F Rating and in compliance with other specified requirements.

## 2.04 MATERIALS

- A. Elastomeric Silicone Firestopping: Single component silicone elastomeric compound and compatible silicone sealant; conforming to the following:
  - 1. Manufacturers:
    - a. A/D Fire Protection Systems Inc; Product FireBarrier Silicone: [www.adfire.com](http://www.adfire.com).
    - b. 3M Fire Protection Products; Product Fire Barrier 1000 N/S: [www.3m.com/firestop](http://www.3m.com/firestop).
    - c. Specified Technologies, Inc; Product PEN300: [www.stifirestop.com](http://www.stifirestop.com).
    - d. Grace Construction Products; Product FlameSafe FS 1900: [www.na.graceconstruction.com](http://www.na.graceconstruction.com)
    - e. Substitutions: See Section 01 6000 - Product Requirements.
- B. Foam Firestopping: Multiple component foam compound; conforming to the following:
  - 1. Manufacturers:
    - a. 3M Fire Protection Products; Product Fire Barrier Silicone RTV Foam 2001: [www.3m.com/firestop](http://www.3m.com/firestop).
    - b. Hilti, Inc; Product CP 620 Fire Foam: [www.hilti.com](http://www.hilti.com).
    - c. Specified Technologies, Inc; Product PEN200: [www.stifirestop.com](http://www.stifirestop.com).
    - d. Substitutions: See Section 01 6000 - Product Requirements.
- C. Fiber Packing Material: Mineral fiber packing insulation; conforming to the following:
  - 1. Manufacturers:
    - a. A/D Fire Protection Systems Inc; Product FireBarrier Mineral Wool: [www.adfire.com](http://www.adfire.com).
    - b. Hilti, Inc; Product Mineral Wool (4 pcf)Product [CP 620 Fire Foam]: [www.hilti.com](http://www.hilti.com).
    - c. USG Corporation Thermafiber; Product Safing Insulation.
    - d. Substitutions: See Section 01 6000 - Product Requirements.
- D. Firestop Devices: Mechanical device with incombustible filler and sheet stainless steel jacket; conforming to the following:
  - 1. Manufacturers:
    - a. Grace Construction Products; Product FlameSafe Intumescent Wrap Strip and Devices: [www.na.graceconstruction.com](http://www.na.graceconstruction.com).
    - b. 3M Fire Protection Products; Product Fire Barrier FS-195+ and RC-1 Restricting Collar: [www.3m.com/firestop](http://www.3m.com/firestop).
    - c. Specified Technologies, Inc; Product LCC Intumescent Collars: [www.stifirestop.com](http://www.stifirestop.com).
    - d. A/D Fire Protection Systems Inc; Product Firebarrier Collars, Wrap Strip and Collar Strips.
    - e. Substitutions: See Section 01 6000 - Product Requirements.
- E. Intumescent Putty: Compound which expands on exposure to surface heat gain; conforming to the following:
  - 1. Manufacturers:
    - a. Grace Construction Products; Product FlameSafe FSP Putty: [www.na.graceconstruction.com](http://www.na.graceconstruction.com).
    - b. 3M Fire Protection Products; Product Fire Barrier Moldable Putty+: [www.3m.com/firestop](http://www.3m.com/firestop).
    - c. Hilti, Inc; Product CP 617 Putty Pad, CP 618 Putty Stick: [www.hilti.com](http://www.hilti.com).
    - d. Specified Technologies, Inc; Product SSP Intumescent Putty: [www.stifirestop.com](http://www.stifirestop.com).
    - e. Substitutions: See Section 01 6000 - Product Requirements.
- F. Firestop Pillows: Formed mineral fiber pillows; conforming to the following:
  - 1. Manufacturers:
    - a. Grace Construction Products; Product FlameSafe Pillows: [www.na.graceconstruction.com](http://www.na.graceconstruction.com).
    - b. A/D Fire Protection Systems Inc; Product Firebarrier Pillows: [www.nelsonfirestop.com](http://www.nelsonfirestop.com).
    - c. Specified Technologies, Inc; Product SSB Firestop Pillows: [www.stifirestop.com](http://www.stifirestop.com).

d. Substitutions: See Section 01 6000 - Product Requirements.

G. Primers, Sleeves, Forms, and Accessories: Type required for tested assembly design.

### **PART 3 EXECUTION**

#### **3.01 EXAMINATION**

A. Verify openings are ready to receive the work of this section.

#### **3.02 PREPARATION**

A. Clean substrate surfaces of dirt, dust, grease, oil, loose material, or other matter which may affect bond of firestopping material.

B. Remove incompatible materials which may affect bond.

C. Install backing materials to prevent liquid material from leakage.

#### **3.03 INSTALLATION**

A. Install materials in manner described in fire test report and in accordance with manufacturer's instructions, completely closing openings.

B. Do not cover installed firestopping until inspected by authorities having jurisdiction.

C. Install labeling required by code.

#### **3.04 FIELD QUALITY CONTROL**

A. Repair or replace penetration firestopping and joints at locations where inspection results indicate firestopping or joints do not meet specified requirements.

#### **3.05 CLEANING**

A. Clean adjacent surfaces of firestopping materials.

#### **3.06 CLEANING AND PROTECTION**

A. Clean adjacent surfaces of firestopping materials.

B. Protect adjacent surfaces from damage by material installation.

**END OF SECTION**

## SINGLE UNINSULATED METALLIC PIPING & CONDUIT

Manufacturer/Product Name:

Color:

Accessories:

Wall or Floor Const.	Item Size/ Description	Sleeve Type	"F" Rating	"T" Rating	Annular Space	Firestop Thickness	Tested Assembly Number

## MULTIPLE UNINSULATED METALLIC PIPING & CONDUIT

Manufacturer/Product Name:

Color:

Accessories:

Wall or Floor Const.	Item Size/ Description	Sleeve Type	"F" Rating	"T" Rating	Annular Space	Firestop Thickness	Tested Assembly Number

## UNINSULATED PLASTIC PIPING & CONDUIT

Manufacturer/Product Name:

Color:

Accessories:

Wall or Floor Const.	Item Size/ Description	Sleeve Type	"F" Rating	"T" Rating	Annular Space	Firestop Thick-ness	Tested Assembly Number

## GLASS PIPING

Manufacturer/Product Name:

Color:

Accessories:

Wall or Floor Const.	Sleeve Type	"F" Rating	"T" Rating	Annular Space	Firestop Thickness	Tested Assembly Number

## INSULATED METALLIC PIPING

Manufacturer/Product Name:

Color:

Accessories:

Wall or Floor Const.	Sleeve Type	"F" Rating	"T" Rating	Annular Space	Firestop Thickness	Tested Assembly Number

## BLANKS, VOIDS, HOLES

Manufacturer/Product Name:

Color:

Accessories:

Wall or Floor Const.	Size	"F" Rating	"T" Rating	Firestop Thickness	Tested Assembly Number



## INSULATED HIGH TEMPERATURE FLUES & EXHAUST PIPES

(Boiler flues, generator exhausts insulated with calcium silicate or other non-combustible insulation)

Manufacturer/Product Name:

Color:

Accessories:

Wall or Floor. Const.	Item Size/Description	Sleeve Type	"F" Rating	"T" Rating	Annular Space Range	Firestop Thickness	Tested Assembly Number

## ELECTRICAL/TELEPHONE CABLE

Cable Type:

Manufacturer/Product Name:

Color:

Accessories:

Wall or Floor. Const.	Single or Bundled	Sleeve Type	"F" Rating	"T" Rating	Annular Space	Firestop Thickness	Tested Assembly Number.

## CABLE TRAY

Manufacturer/Product Name:

Color:

Accessories:

Wall or Floor. Const.	Item Size/Description	Sleeve Type	"F" Rating	"T" Rating	Annular Space Range	Firestop Thickness	Tested Assembly Number

## BUS DUCT

Manufacturer/Product Name:

Color:

Accessories:

Wall or Floor Const.	Item Size/Description	"F" Rating	"T" Rating	Annular Space	Firestop Thickness	Tested Assembly Number.

## FIRE RATED JOINTS

Manufacturer/Product Name:

Color:

Accessories:

Joint Description	"F" Rating	"T" Rating	Firestop Thickness	Tested Assembly Number.

## MISCELLANEOUS PENETRATIONS

Manufacturer/Product Name:

Color:

Accessories:

Wall or Floor. Const.	Item Size/Description	Sleeve Type	"F" Rating	"T" Rating	Annular Space Range	Firestop Thick- ness	Tested Assembly Number

**ENGINEERING JUDGMENTS/  
OVERSIZE OR UNUSUAL CONDITIONS**

(Submit Actual Installation Drawing and Letter of Certification)

Manufacturer/Product Name:

Color:

Accessories:

Wall or Floor. Const.	Item Description	Sleeve Type	"F" Rating	"T" Rating	Annular Space Range	Firestop Thick-ness	Packing Thick-ness

END OF SECTION

**SECTION 07 9200**  
**JOINT SEALANTS**

**PART 1 GENERAL**

**1.01 SECTION INCLUDES**

- A. Nonsag gunnable joint sealants.
- B. Self-leveling pourable joint sealants.
- C. Joint backings and accessories.

**1.02 RELATED REQUIREMENTS**

- A. Section 07 2500 - Weather Barriers: Sealants required in conjunction with air barriers and vapor retarders.
- B. Section 07 8400 - Firestopping: Firestopping sealants.
- C. Section 07 9100 - Preformed Joint Seals: Precompressed foam, gaskets, and strip seals.
- D. Section 07 9513 - Expansion Joint Cover Assemblies: Sealants forming part of expansion joint cover assemblies.
- E. Section 08 7100 - Door Hardware: Setting exterior door thresholds in sealant.
- F. Section 08 8000 - Glazing: Glazing sealants and accessories.
- G. Section 09 2116 - Gypsum Board Assemblies: Sealing acoustical and sound-rated walls and ceilings.
- H. Section 09 2216 - Non-Structural Metal Framing: Sealing between framing and adjacent construction in acoustical and sound-rated walls and ceilings.
- I. Section 09 3000 - Tiling: Sealant between tile and plumbing fixtures and at junctions with other materials and changes in plane.

**1.03 REFERENCE STANDARDS**

- A. ASTM C661 - Standard Test Method for Indentation Hardness of Elastomeric-Type Sealants by Means of a Durometer; 2015.
- B. ASTM C794 - Standard Test Method for Adhesion-In-Peel of Elastomeric Joint Sealants; 2018.
- C. ASTM C834 - Standard Specification for Latex Sealants; 2017.
- D. ASTM C919 - Standard Practice for Use of Sealants in Acoustical Applications; 2012 (Reapproved 2017).
- E. ASTM C920 - Standard Specification for Elastomeric Joint Sealants; 2014a.
- F. ASTM C1087 - Standard Test Method for Determining Compatibility of Liquid-Applied Sealants with Accessories Used in Structural Glazing Systems; 2016.
- G. ASTM C1193 - Standard Guide for Use of Joint Sealants; 2016.
- H. ASTM C1248 - Standard Test Method for Staining of Porous Substrate by Joint Sealants; 2008 (Reapproved 2012).
- I. ASTM C1311 - Standard Specification for Solvent Release Sealants; 2014.
- J. ASTM C1330 - Standard Specification for Cylindrical Sealant Backing for Use with Cold Liquid-Applied Sealants; 2018.
- K. ASTM C1521 - Standard Practice for Evaluating Adhesion of Installed Weatherproofing Sealant Joints; 2013.
- L. ASTM E90 - Standard Test Method for Laboratory Measurement of Airborne Sound Transmission Loss of Building Partitions and Elements; 2009 (Reapproved 2016).
- M. SWRI (VAL) - SWR Institute Validated Products Directory; Current Edition.

#### 1.04 SUBMITTALS

- A. See Section 01 3000 - Administrative Requirements, for submittal procedures.
- B. Product Data for Sealants: Submit manufacturer's technical data sheets for each product to be used, that includes the following.
  - 1. Physical characteristics, including movement capability, VOC content, hardness, cure time, and color availability.
  - 2. List of backing materials approved for use with the specific product.
  - 3. Substrates that product is known to satisfactorily adhere to and with which it is compatible.
  - 4. Substrates the product should not be used on.
  - 5. Substrates for which use of primer is required.
  - 6. Substrates for which laboratory adhesion and/or compatibility testing is required.
  - 7. Installation instructions, including precautions, limitations, and recommended backing materials and tools.
  - 8. Sample product warranty.
  - 9. Certification by manufacturer indicating that product complies with specification requirements.
  - 10. SWRI Validation: Provide currently available sealant product validations as listed by SWRI (VAL) for specified sealants.
- C. Product Data for Accessory Products: Submit manufacturer's technical data sheet for each product to be used, including physical characteristics, installation instructions, and recommended tools.
- D. Color Cards for Selection: Where sealant color is not specified, submit manufacturer's color cards showing standard colors available for selection.
- E. Samples for Verification: Where custom sealant color is specified, obtain directions from Architect and submit at least two physical samples for verification of color of each required sealant.
- F. Preconstruction Laboratory Test Reports: Submit at least four weeks prior to start of installation.
- G. Installation Plan: Submit at least four weeks prior to start of installation.
- H. Preinstallation Field Adhesion Test Plan: Submit at least two weeks prior to start of installation.
- I. Preinstallation Field Adhesion Test Reports: Submit filled out Preinstallation Field Adhesion Test Reports log within 10 days after completion of tests; include bagged test samples and photographic records.
- J. Installation Log: Submit filled out log for each length or instance of sealant installed.
- K. Field Quality Control Log: Submit filled out log for each length or instance of sealant installed, within 10 days after completion of inspections/tests; include bagged test samples and photographic records, if any.

#### 1.05 QUALITY ASSURANCE

- A. Manufacturer Qualifications: Company specializing in manufacturing the products specified in this section with minimum five years documented experience.
- B. Installer Qualifications: Company specializing in performing the work of this section and with at least three years of documented experience and approved by manufacturer.
- C. Preconstruction Laboratory Testing: Arrange for sealant manufacturer(s) to test each combination of sealant, substrate, backing, and accessories.
  - 1. Adhesion Testing: In accordance with ASTM C794.
  - 2. Compatibility Testing: In accordance with ASTM C1087.
  - 3. Allow sufficient time for testing to avoid delaying the work.
  - 4. Deliver to manufacturer sufficient samples for testing.

5. Report manufacturer's recommended corrective measures, if any, including primers or techniques not indicated in product data submittals.
  6. Testing is not required if sealant manufacturer provides data showing previous testing, not older than 24 months, that shows satisfactory adhesion, lack of staining, and compatibility.
- D. Installation Plan: Include schedule of sealed joints, including the following.
1. Joint width indicated in Contract Documents.
  2. Joint depth indicated in Contract Documents; to face of backing material at centerline of joint.
  3. Method to be used to protect adjacent surfaces from sealant droppings and smears, with acknowledgement that some surfaces cannot be cleaned to like-new condition and therefore prevention is imperative.
  4. Approximate date of installation, for evaluation of thermal movement influence.
  5. Installation Log Form: Include the following data fields, with known information filled out.
    - a. Unique identification of each length or instance of sealant installed.
    - b. Location on project.
    - c. Substrates.
    - d. Sealant used.
    - e. Stated movement capability of sealant.
    - f. Primer to be used, or indicate as "No primer" used.
    - g. Size and actual backing material used.
    - h. Date of installation.
    - i. Name of installer.
    - j. Actual joint width; provide space to indicate maximum and minimum width.
    - k. Actual joint depth to face of backing material at centerline of joint.
    - l. Air temperature.
- E. Preinstallation Field Adhesion Test Plan: Include destructive field adhesion testing of one sample of each combination of sealant type and substrate, except interior acrylic latex sealants, and include the following for each tested sample.
1. Identification of testing agency.
  2. Name(s) of sealant manufacturers' field representatives who will be observing
  3. Preinstallation Field Adhesion Test Log Form: Include the following data fields, with known information filled out.
    - a. Substrate; if more than one type of substrate is involved in a single joint, provide two entries on form, for testing each sealant substrate side separately.
    - b. Test date.
    - c. Location on project.
    - d. Sealant used.
    - e. Test method used.
    - f. Date of installation of field sample to be tested.
    - g. Copy of test method documents.
    - h. Age of sealant upon date of testing.
    - i. Test results, modeled after the sample form in the test method document.
    - j. Indicate use of photographic record of test.
- F. Field Adhesion Test Procedures:
1. Allow sealants to fully cure as recommended by manufacturer before testing.
  2. Have a copy of the test method document available during tests.
  3. Take photographs or make video records of each test, with joint identification provided in the photos/videos; for example, provide small erasable whiteboard positioned next to joint.
  4. Record the type of failure that occurred, other information required by test method, and the information required on the Field Quality Control Log.
  5. If any combination of sealant type and substrate does not show evidence of minimum adhesion or shows cohesion failure before minimum adhesion, report results to Architect.

- G. Non-Destructive Field Adhesion Test: Test for adhesion in accordance with ASTM C1521, using Nondestructive Spot Method.
  - 1. Record results on Field Quality Control Log.
  - 2. Repair failed portions of joints.

#### **1.06 WARRANTY**

- A. See Section 01 7800 - Closeout Submittals, for additional warranty requirements.
- B. Correct defective work within a five year period after Date of Substantial Completion.
- C. Warranty: Include coverage for installed sealants and accessories that fail to achieve watertight seal, exhibit loss of adhesion or cohesion, or do not cure.

### **PART 2 PRODUCTS**

#### **2.01 MANUFACTURERS**

- A. Non-Sag Sealants: Permits application in joints on vertical surfaces without sagging or slumping.
  - 1. BASF Construction Chemicals-Building Systems: [www.buildingsystems.basf.com](http://www.buildingsystems.basf.com).
  - 2. Bostik Inc: [www.bostik-us.com/#sle](http://www.bostik-us.com/#sle).
  - 3. Dow Chemical Company:  
[consumer.dow.com/en-us/industry/ind-building-construction.html/#sle](http://consumer.dow.com/en-us/industry/ind-building-construction.html/#sle).
  - 4. Hilti, Inc: [www.us.hilti.com/#sle](http://www.us.hilti.com/#sle).
  - 5. Momentive Performance Materials, Inc (formerly GE Silicones):  
[www.momentive.com/#sle](http://www.momentive.com/#sle).
  - 6. Pecora Corporation: [www.pecora.com/#sle](http://www.pecora.com/#sle).
  - 7. Tremco Global Sealants: [www.tremcosealants.com](http://www.tremcosealants.com).
  - 8. Sherwin-Williams Company: [www.sherwin-williams.com/#sle](http://www.sherwin-williams.com/#sle).
  - 9. Sika Corporation: [www.usa-sika.com/#sle](http://www.usa-sika.com/#sle).
  - 10. W.R. Meadows, Inc: [www.wrmeadows.com/#sle](http://www.wrmeadows.com/#sle).
  - 11. Substitutions: See Section 01 6000 - Product Requirements.
- B. Self-Leveling Sealants: Pourable or self-leveling sealant that has sufficient flow to form a smooth, level surface when applied in a horizontal joint.
  - 1. BASF Construction Chemicals-Building Systems: [www.buildingsystems.basf.com/#sle](http://www.buildingsystems.basf.com/#sle).
  - 2. Bostik Inc: [www.bostik-us.com/#sle](http://www.bostik-us.com/#sle).
  - 3. Dayton Superior Corporation: [www.daytonsuperior.com/#sle](http://www.daytonsuperior.com/#sle).
  - 4. Dow Chemical Company:  
[consumer.dow.com/en-us/industry/ind-building-construction.html/#sle](http://consumer.dow.com/en-us/industry/ind-building-construction.html/#sle).
  - 5. Pecora Corporation: [www.pecora.com/#sle](http://www.pecora.com/#sle).
  - 6. Tremco Global Sealants: [www.tremcosealants.com](http://www.tremcosealants.com).
  - 7. Sherwin-Williams Company: [www.sherwin-williams.com/#sle](http://www.sherwin-williams.com/#sle).
  - 8. Sika Corporation: [www.usa-sika.com/#sle](http://www.usa-sika.com/#sle).
  - 9. W.R. Meadows, Inc: [www.wrmeadows.com/#sle](http://www.wrmeadows.com/#sle).

#### **2.02 JOINT SEALANT APPLICATIONS**

- A. Scope:
  - 1. Exterior Joints: Seal open joints, whether or not the joint is indicated on drawings, unless specifically indicated not to be sealed. Exterior joints to be sealed include, but are not limited to, the following items.
    - a. Joints between door, window, and other frames and adjacent construction.
    - b. Joints between different exposed materials.
    - c. Openings below ledge angles in masonry.
    - d. Other joints indicated below.
  - 2. Interior Joints: Do not seal interior joints unless specifically indicated to be sealed. Interior joints to be sealed include, but are not limited to, the following items.
    - a. Joints between door, window, and other frames and adjacent construction.



- b. In sound-rated wall and ceiling assemblies, gaps at electrical outlets, wiring devices, piping, and other openings; between wall/ceiling and other construction; and other flanking sound paths.
  - 1) Exception: Through-penetrations in sound-rated assemblies that are also fire-rated assemblies.
- c. Other joints indicated below.
- 3. Do not seal the following types of joints.
  - a. Intentional weepholes in masonry.
  - b. Weep holes in storefront work and similar components requiring water evacuation.
  - c. Joints indicated to be treated with manufactured expansion joint cover or some other type of sealing device.
  - d. Joints where sealant is specified to be provided by manufacturer of product to be sealed.
  - e. Joints where installation of sealant is specified in another section.
  - f. Joints between suspended panel ceilings/grid and walls.
- B. Exterior Joints: Use non-sag non-staining silicone sealant, Type A or B, unless otherwise indicated.
  - 1. Lap Joints in Sheet Metal Fabrications: Butyl rubber, non-curing; Type H.
  - 2. Control and Expansion Joints in Concrete Paving: Self-leveling polyurethane "traffic-grade" sealant; Type F or H.
  - 3. Cooling Tower and Fountain Basins: Nonsag polyurethane sealant for continuous immersion; Type E or J.
- C. Type D - Interior Joints: Use non-sag polyurethane sealant, unless otherwise indicated.
  - 1. Type E - Wall and Ceiling Joints in Wet Areas: Non-sag polyurethane sealant for continuous liquid immersion.
  - 2. Type F - Floor Joints in Wet Areas: Non-sag polyurethane "traffic-grade" sealant suitable for continuous liquid immersion.
  - 3. Type C - Joints between Fixtures in Wet Areas and Floors, Walls, and Ceilings: Mildew-resistant silicone sealant; white.
  - 4. In Sound-Rated Assemblies: Acrylic emulsion latex sealant especially recommended as acoustical sealant..
  - 5. Other Floor Joints: Self-leveling polyurethane "traffic-grade" sealant; Type J.
- D. Interior Wet Areas: Bathrooms, restrooms, kitchens, food service areas, and food processing areas; fixtures in wet areas include plumbing fixtures, food service equipment, countertops, cabinets, and other similar items.

## 2.03 JOINT SEALANTS - GENERAL

- A. Colors: As selected from manufacturer's full range.

## 2.04 NONSAG JOINT SEALANTS

- A. Type A - Non-Staining Silicone Sealant: ASTM C920, Grade NS, Uses M and A; not expected to withstand continuous water immersion or traffic.
  - 1. Movement Capability: Plus 100 percent, minus 50 percent, minimum.
  - 2. Non-Staining To Porous Stone: Non-staining to light-colored natural stone when tested in accordance with ASTM C1248.
  - 3. Dirt Pick-Up: Reduced dirt pick-up compared to other silicone sealants.
  - 4. Hardness Range: 15 to 35, Shore A, when tested in accordance with ASTM C661.
  - 5. Color: To be selected by Architect from manufacturer's standard range.
  - 6. Cure Type: Single-component, neutral moisture curing.
  - 7. Service Temperature Range: Minus 65 to 180 degrees F.
  - 8. Manufacturers:
    - a. Dow Chemical Company; DOWSIL 790 Silicone Building Sealant: [consumer.dow.com/en-us/industry/ind-building-construction.html/#sle](http://consumer.dow.com/en-us/industry/ind-building-construction.html/#sle).

- b. Pecora Corporation; 890NST Ultra Low Modulus Silicone Sealant Class 100: [www.pecora.com/#sle](http://www.pecora.com/#sle).
  - c. Sika Corporation; Sikasil WS-290: [www.usa-sika.com/#sle](http://www.usa-sika.com/#sle).
  - d. Tremco Commercial Sealants & Waterproofing; Spectrem 1: [www.tremcosealants.com/#sle](http://www.tremcosealants.com/#sle).
  - e. Substitutions: See Section 01 6000 - Product Requirements.
- B. Type B - Silicone Sealant: ASTM C920, Grade NS, Uses M and A; not expected to withstand continuous water immersion or traffic.
1. Movement Capability: Plus and minus 25 percent, minimum.
  2. Hardness Range: 15 to 35, Shore A, when tested in accordance with ASTM C661.
  3. Color: To be selected by Architect from manufacturer's standard range.
  4. Cure Type: Single-component, neutral moisture curing
  5. Service Temperature Range: Minus 65 to 180 degrees F.
  6. Manufacturers:
    - a. Pecora Corporation; \_\_\_\_\_: [www.pecora.com/#sle](http://www.pecora.com/#sle).
    - b. Sika Corporation; Sikasil WS-295: [www.usa-sika.com/#sle](http://www.usa-sika.com/#sle).
    - c. Tremco Commercial Sealants & Waterproofing; Spectrem 3: [www.tremcosealants.com/#sle](http://www.tremcosealants.com/#sle).
    - d. Dow Corning; 795 Silicone Building Sealant: [www.dowcorning.com](http://www.dowcorning.com).
- C. Type C - Mildew-Resistant Silicone Sealant: ASTM C920, Grade NS, Uses M and A; single component, mildew resistant; not expected to withstand continuous water immersion or traffic.
1. Color: White.
  2. Manufacturers:
    - a. BASF Construction Chemicals - Building Systems; Masterseal NP100: [www.buildingsystems.basf.com](http://www.buildingsystems.basf.com).
    - b. Pecora Corporation; 898NST Sanitary Mildew-Resistant Silicone Sealant: [www.pecora.com/#sle](http://www.pecora.com/#sle).
    - c. Sika Corporation; Sikasil GP: [www.usa-sika.com/#sle](http://www.usa-sika.com/#sle).
    - d. Tremco Global Sealants; Tremsil 200 Sanitary Sealant: [www.tremcosealants.com](http://www.tremcosealants.com).
    - e. Substitutions: See Section 01 6000 - Product Requirements.
- D. Type D - Polyurethane Sealant: ASTM C920, Grade NS, Uses M and A; single or multi-component; not expected to withstand continuous water immersion or traffic.
1. Movement Capability: Plus and minus 25 percent, minimum.
  2. Hardness Range: 20 to 35, Shore A, when tested in accordance with ASTM C661.
  3. Color: To be selected by Architect from manufacturer's standard range.
  4. Service Temperature Range: Minus 40 to 180 degrees F.
  5. Manufacturers:
    - a. Pecora Corporation; Dynatrol 1-XL: [www.pecora.com/#sle](http://www.pecora.com/#sle).
    - b. The QUIKRETE Companies; QUIKRETE® Polyurethane Non-Sag Sealant: [www.quikrete.com/#sle](http://www.quikrete.com/#sle).
    - c. Sherwin-Williams Company; Stampede-1/-TX Polyurethane Sealant: [www.sherwin-williams.com/#sle](http://www.sherwin-williams.com/#sle).
    - d. Sika Corporation; Sikaflex-15 LM: [www.usa-sika.com/#sle](http://www.usa-sika.com/#sle).
    - e. Tremco Global Sealants; Dymeric 240FC: [tremcosealants.com](http://tremcosealants.com)
    - f. W. R. Meadows, Inc; POURTHANE NS: [www.wrmeadows.com/#sle](http://www.wrmeadows.com/#sle).
    - g. Substitutions: See Section 01 6000 - Product Requirements.
- E. Type E - Polyurethane Sealant for Continuous Water Immersion: ASTM C920, Grade NS, Uses M and A; single or multicomponent; explicitly approved by manufacturer for continuous water immersion; suitable for traffic exposure when recessed below traffic surface .
1. Movement Capability: Plus and minus 50 percent.
  2. Hardness Range: 20 to 35, Shore A, when tested in accordance with ASTM C661.
  3. Color: To be selected by Architect from manufacturer's standard range.

4. Service Temperature Range: Minus 40 to 180 degrees F.
5. Manufacturers:
  - a. Sika Corporation; Sikaflex-1a: [www.usa-sika.com/#sle](http://www.usa-sika.com/#sle).
- F. Type F - Nonsag "Traffic-Grade" Polyurethane Sealant: ASTM C920, Grade NS, Uses M and A; single or multicomponent; explicitly approved by manufacturer for continuous water immersion and traffic without the necessity to recess sealant below traffic surface.
  1. Movement Capability: Plus and minus 25 percent, minimum.
  2. Hardness Range: 40 to 50, Shore A, when tested in accordance with ASTM C661.
  3. Color: To be selected by Architect from manufacturer's standard range.
  4. Service Temperature Range: Minus 40 to 180 degrees F.
- G. Type G - Acrylic Emulsion Latex: Water-based; ASTM C834, single component, non-staining, non-bleeding, non-sagging; not intended for exterior use.
  1. Color: To be selected by Architect from manufacturer's standard range.
  2. Grade: ASTM C834; Grade - Minus 18 Degrees C.
  3. Manufacturers:
    - a. Hilti, Inc; CP 506 Smoke and Acoustical Sealant: [www.us.hilti.com/#sle](http://www.us.hilti.com/#sle).
    - b. Pecora Corporation; AC-20 +Silicone: [www.pecora.com/#sle](http://www.pecora.com/#sle).
    - c. Sherwin-Williams Company; White Lightning 3006 Siliconized Acrylic Latex Caulk: [www.sherwin-williams.com/#sle](http://www.sherwin-williams.com/#sle).
    - d. Sherwin-Williams Company; 950A Siliconized Acrylic Latex Caulk: [www.sherwin-williams.com/#sle](http://www.sherwin-williams.com/#sle).
    - e. Substitutions: See Section 01 6000 - Product Requirements.
- H. Type H - Butyl Acoustical Sealant: Solvent-based; ASTM C919; single component, nonsag; not expected to withstand continuous water immersion or traffic.
  1. ASTM E90
  2. Hardness Range: 10 to 30, Shore A, when tested in accordance with ASTM C661.
  3. Color: To be selected by Architect from manufacturer's standard range.
  4. Service Temperature Range: Minus 13 to 180 degrees F.
  5. Manufacturers:
    - a. Pecora Corporation; BA98: [www.pecora.com](http://www.pecora.com).
    - b. Tremco Global Sealants; Acoustical Sealant: [www.tremcosealants.com](http://www.tremcosealants.com).
- I. Type H - Non-Curing Butyl Sealant: Solvent-based; ASTM C1311; single component, non-sag, non-skinning, non-hardening, non-bleeding; vapor-impermeable; intended for fully concealed applications.
  1. Manufacturers:
    - a. DAP Corporation; Butyl-Flex Sealant: [www.dap.com](http://www.dap.com).
    - b. Pecora Corporation; BC158: [www.pecora.com](http://www.pecora.com).
    - c. Tremco Global Sealants; Tremco Butyl Sealant: [www.tremcosealants.com](http://www.tremcosealants.com).
    - d. Substitutions: See Section 01 6000 - Product Requirements.

## **2.05 SELF-LEVELING SEALANTS**

- A. Type J - Self-Leveling Polyurethane Sealant: ASTM C920, Grade P, Uses M and A; single or multicomponent; explicitly approved by manufacturer for traffic exposure; not expected to withstand continuous water immersion .
  1. Movement Capability: Plus and minus 25 percent, minimum.
- B. Type K - Self-Leveling Polyurethane Sealant for Continuous Water Immersion: Polyurethane; ASTM C920, Grade P, Uses M and A; single or multicomponent; explicitly approved by manufacturer for traffic exposure and continuous water immersion.
  1. Movement Capability: Plus and minus 25 percent, minimum.

## **2.06 ACCESSORIES**

- A. Backer Rod: Cylindrical cellular foam rod with surface that sealant will not adhere to, compatible with specific sealant used, and recommended by backing and sealant manufacturers for specific application.
  - 1. Type for Joints Not Subject to Pedestrian or Vehicular Traffic: ASTM C1330; Type O - Open Cell Polyurethane.
  - 2. Type for Joints Subject to Pedestrian or Vehicular Traffic: ASTM C1330; Type B - Bi-Cellular Polyethylene.
  - 3. Open Cell: 40 to 50 percent larger in diameter than joint width.
  - 4. Closed Cell and Bi-Cellular: 25 to 33 percent larger in diameter than joint width.
- B. Backing Tape: Self-adhesive polyethylene tape with surface that sealant will not adhere to and recommended by tape and sealant manufacturers for specific application.
- C. Masking Tape: Self-adhesive, nonabsorbent, non-staining, removable without adhesive residue, and compatible with surfaces adjacent to joints and sealants.
- D. Joint Cleaner: Non-corrosive and non-staining type, type recommended by sealant manufacturer; compatible with joint forming materials.
- E. Primers: Type recommended by sealant manufacturer to suit application; non-staining.

## **PART 3 EXECUTION**

### **3.01 EXAMINATION**

- A. Verify that joints are ready to receive work.
- B. Verify that backing materials are compatible with sealants.
- C. Verify that backer rods are of the correct size.
- D. Preinstallation Adhesion Testing: Install a sample for each test location indicated in the test plan.
  - 1. Test each sample as specified in PART 1 under QUALITY ASSURANCE article.
  - 2. Notify Architect of date and time that tests will be performed, at least 7 days in advance.
  - 3. Arrange for sealant manufacturer's technical representative to be present during tests.
  - 4. Record each test on Preinstallation Adhesion Test Log as indicated.
  - 5. If any sample fails, review products and installation procedures, consult manufacturer, or take whatever other measures are necessary to ensure adhesion; re-test in a different location; if unable to obtain satisfactory adhesion, report to Architect.
  - 6. After completion of tests, remove remaining sample material and prepare joint for new sealant installation.

### **3.02 PREPARATION**

- A. Remove loose materials and foreign matter that could impair adhesion of sealant.
- B. Clean joints, and prime as necessary, in accordance with manufacturer's instructions.
- C. Perform preparation in accordance with manufacturer's instructions and ASTM C1193.
- D. Mask elements and surfaces adjacent to joints from damage and disfigurement due to sealant work; be aware that sealant drips and smears may not be completely removable.
- E. Concrete Floor Joints That Will Be Exposed in Completed Work: Test joint filler in inconspicuous area to verify that it does not stain or discolor slab.

### **3.03 INSTALLATION**

- A. Perform work in accordance with sealant manufacturer's requirements for preparation of surfaces and material installation instructions.
- B. Perform installation in accordance with ASTM C1193.
- C. Perform acoustical sealant application work in accordance with ASTM C919.

- D. Measure joint dimensions and size joint backers to achieve the following, unless otherwise indicated:
  - 1. Width/depth ratio of 2:1.
  - 2. Neck dimension no greater than 1/3 of the joint width.
  - 3. Surface bond area on each side not less than 75 percent of joint width.
- E. Install bond breaker backing tape where backer rod cannot be used.
- F. Install sealant free of air pockets, foreign embedded matter, ridges, and sags, and without getting sealant on adjacent surfaces.
- G. Do not install sealant when ambient temperature is outside manufacturer's recommended temperature range, or will be outside that range during the entire curing period, unless manufacturer's approval is obtained and instructions are followed.
- H. Nonsag Sealants: Tool surface concave, unless otherwise indicated; remove masking tape immediately after tooling sealant surface.

#### **3.04 FIELD QUALITY CONTROL**

- A. Perform field quality control inspection/testing as specified in PART 1 under QUALITY ASSURANCE article.
- B. Remove and replace failed portions of sealants using same materials and procedures as indicated for original installation.

#### **3.05 POST-OCCUPANCY**

- A. Post-Occupancy Inspection: Perform visual inspection of entire length of project sealant joints at a time that joints have opened to their greatest width; i.e. at low temperature in thermal cycle. Report failures immediately and repair.

**END OF SECTION**

**SECTION 08 1113  
HOLLOW METAL DOORS AND FRAMES**

**PART 1 GENERAL**

**1.01 SECTION INCLUDES**

- A. Non-fire-rated hollow metal doors and frames.
- B. Hollow metal frames for wood doors.
- C. Fire-rated hollow metal doors and frames.
- D. Thermally insulated hollow metal doors with frames.
- E. Hurricane-resistant hollow metal doors and frames.
- F. Hollow metal borrowed lites glazing frames.
- G. Accessories, including glazing, louvers, and matching panels.

**1.02 RELATED REQUIREMENTS**

- A. Section 08 7100 - Door Hardware.
- B. Section 08 8000 - Glazing: Glass for doors and borrowed lites.
- C. Section 09 9113 - Exterior Painting: Field painting.
- D. Section 09 9123 - Interior Painting: Field painting.

**1.03 ABBREVIATIONS AND ACRONYMS**

- A. ANSI: American National Standards Institute.
- B. ASCE: American Society of Civil Engineers.
- C. HMMA: Hollow Metal Manufacturers Association.
- D. NAAMM: National Association of Architectural Metal Manufacturers.
- E. NFPA: National Fire Protection Association.
- F. SDI: Steel Door Institute.
- G. UL: Underwriters Laboratories.

**1.04 REFERENCE STANDARDS**

- A. ADA Standards - Americans with Disabilities Act (ADA) Standards for Accessible Design; 2010.
- B. ANSI/SDI A250.4 - Test Procedure and Acceptance Criteria for Physical Endurance for Steel Doors, Frames and Frame Anchors; 2011.
- C. ANSI/SDI A250.6 - Recommended Practice for Hardware Reinforcing on Standard Steel Doors and Frames; 2003 (R2009).
- D. ANSI/SDI A250.8 - Specifications for Standard Steel Doors and Frames (SDI-100); 2014.
- E. ANSI/SDI A250.10 - Test Procedure and Acceptance Criteria for Prime Painted Steel Surfaces for Steel Doors and Frames; 2011.
- F. ASTM A653/A653M - Standard Specification for Steel Sheet, Zinc-Coated (Galvanized) or Zinc-Iron Alloy-Coated (Galvannealed) by the Hot-Dip Process; 2018.
- G. ASTM A1008/A1008M - Standard Specification for Steel, Sheet, Cold-Rolled, Carbon, Structural, High-Strength Low-Alloy, High-Strength Low-Alloy with Improved Formability, Solution Hardened, and Bake Hardenable; 2018.
- H. ASTM A1011/A1011M - Standard Specification for Steel, Sheet and Strip, Hot-Rolled, Carbon, Structural, High-Strength Low-Alloy, High-Strength Low-Alloy with Improved Formability, and Ultra-High Strength; 2018a.
- I. ASTM E330/E330M - Standard Test Method for Structural Performance of Exterior Windows, Doors, Skylights and Curtain Walls by Uniform Static Air Pressure Difference; 2014.

- J. BHMA A156.115 - American National Standard for Hardware Preparation in Steel Doors and Steel Frames; 2014.
- K. FBC TAS 201 - Impact Test Procedures; Testing Application Standard; 1994.
- L. FBC TAS 202 - Criteria for Testing Impact and Non-Impact Resistant Building Envelope Components Using Uniform Static Air Pressure; Testing Application Standard; 1994.
- M. FBC TAS 203 - Criteria for Testing Products Subject To Cyclic Wind Pressure Loading; Testing Application Standard; 1994.
- N. FLA (PAD) - Florida Building Code Online - Product Approval Directory; database at [www.floridabuilding.org](http://www.floridabuilding.org).
- O. ICC (IECC) - International Energy Conservation Code; 2012.
- P. ICC A117.1 - Accessible and Usable Buildings and Facilities; 2017.
- Q. ITS (DIR) - Directory of Listed Products; current edition.
- R. Miami (APD) - Approved Products Directory; Miami-Dade County; database at [www.miamidade.gov/building/pc-search\\_app.asp](http://www.miamidade.gov/building/pc-search_app.asp).
- S. NAAMM HMMA 805 - Recommended Selection and Usage Guide for Hollow Metal Doors and Frames; 2012.
- T. NAAMM HMMA 830 - Hardware Selection for Hollow Metal Doors and Frames; 2002.
- U. NAAMM HMMA 831 - Hardware Locations for Hollow Metal Doors and Frames; 2011.
- V. NAAMM HMMA 840 - Guide Specifications for Installation and Storage of Hollow Metal Doors and Frames; 2007.
- W. NAAMM HMMA 850 - Fire-Protection and Smoke Control Rated Hollow Metal Door and Frame Products; 2014.
- X. NAAMM HMMA 860 - Guide Specifications for Hollow Metal Doors and Frames; 2013.
- Y. NAAMM HMMA 861 - Guide Specifications for Commercial Hollow Metal Doors and Frames; 2006.
- Z. NFPA 80 - Standard for Fire Doors and Other Opening Protectives; 2016.
- AA. NFPA 252 - Standard Methods of Fire Tests of Door Assemblies; 2012.
- AB. SDI 117 - Manufacturing Tolerances for Standard Steel Doors and Frames; 2013.
- AC. UL (DIR) - Online Certifications Directory; current listings at [database.ul.com](http://database.ul.com).
- AD. UL 10C - Standard for Positive Pressure Fire Tests of Door Assemblies; Current Edition, Including All Revisions.

#### **1.05 SUBMITTALS**

- A. See Section 01 3000 - Administrative Requirements, for submittal procedures.
- B. Product Data: Materials and details of design and construction, hardware locations, reinforcement type and locations, anchorage and fastening methods, and finishes; and one copy of referenced standards/guidelines.
- C. Shop Drawings: Details of each opening, showing elevations, glazing, frame profiles, and any indicated finish requirements.
- D. Samples: Submit two samples of metal, 2 inch by 2 inch in size showing factory finishes, colors, and surface texture.
- E. Design Submittals: Manufacturer to submit anchor design analysis calculations for blast-resistant doors signed and sealed by specialty design engineer experienced in this type of work and licensed in the State in which the Project is located.
- F. Installation Instructions: Manufacturer's published instructions, including any special installation instructions relating to this project.

- G. Manufacturer's Certificate: Certification that products meet or exceed specified requirements.
- H. Manufacturer's Qualification Statement.
- I. Installer's Qualification Statement.

#### **1.06 QUALITY ASSURANCE**

- A. Manufacturer Qualifications: Company specializing in manufacturing products specified in this section, with not less than five years documented experience.
- B. Installer Qualifications: Company specializing in performing work of the type specified and with at least five years of documented experience and approved by manufacturer.
- C. Maintain at project site copies of reference standards relating to installation of products specified.

#### **1.07 DELIVERY, STORAGE, AND HANDLING**

- A. Comply with NAAMM HMMA 840 or ANSI/SDI A250.8 (SDI-100) in accordance with specified requirements.
- B. Protect with resilient packaging; avoid humidity build-up under coverings; prevent corrosion and adverse effects on factory applied painted finish.

### **PART 2 PRODUCTS**

#### **2.01 MANUFACTURERS**

- A. Hollow Metal Doors and Frames:
  - 1. Ceco Door, an Assa Abloy Group company: [www.assaabloydss.com/#sle](http://www.assaabloydss.com/#sle).
  - 2. Curries, an Assa Abloy Group company: [www.assaabloydss.com](http://www.assaabloydss.com).
  - 3. Fleming Door Products, an Assa Abloy Group company: [www.assaabloydss.com/#sle](http://www.assaabloydss.com/#sle).
  - 4. Krieger Specialty Products: [www.kriegerproducts.com/#sle](http://www.kriegerproducts.com/#sle).
  - 5. Mesker, dormakaba Group: [www.meskeropeningsgroup.com/#sle](http://www.meskeropeningsgroup.com/#sle).
  - 6. Republic Doors, an Allegion brand: [www.republicdoor.com/#sle](http://www.republicdoor.com/#sle).
  - 7. Steelcraft, an Allegion brand: [www.allegion.com/#sle](http://www.allegion.com/#sle).
  - 8. Technical Glass Products: [www.tgpamerica.com](http://www.tgpamerica.com).
  - 9. Substitutions: See Section 01 6000 - Product Requirements.
- B. Hurricane-Resistant and Tornado-Resistant Hollow Metal Doors and Frames:
  - 1.
  - 2. Krieger Specialty Products; Hurricane Resistant Door: [www.kriegerproducts.com/#sle](http://www.kriegerproducts.com/#sle).
  - 3. Mesker, dormakaba Group; Windstorm Series, Hurricane Doors and Frames: [www.meskeropeningsgroup.com/#sle](http://www.meskeropeningsgroup.com/#sle).
  - 4. Republic Doors, an Allegion brand; Hurricane Resistant: [www.republicdoor.com/#sle](http://www.republicdoor.com/#sle).
  - 5. Substitutions: See Section 01 6000 - Product Requirements.

#### **2.02 PERFORMANCE REQUIREMENTS**

- A. Requirements for Hollow Metal Doors and Frames:
  - 1. Steel Sheet: Comply with one or more of the following requirements; galvanized steel complying with ASTM A653/A653M, cold-rolled steel complying with ASTM A1008/A1008M, or hot-rolled pickled and oiled (HRPO) steel complying with ASTM A1011/A1011M, commercial steel (CS) Type B, for each.
  - 2. Accessibility: Comply with ICC A117.1 and ADA Standards.
  - 3. Exterior Door Top Closures: Flush end closure channel, with top and door faces aligned.
  - 4. Door Edge Profile: Manufacturers standard for application indicated.
  - 5. Typical Door Face Sheets: Flush.
  - 6. Glazed Lights: Non-removable stops on non-secure side; sizes and configurations as indicated on drawings. Style: Manufacturers standard.
  - 7. Hardware Preparations, Selections and Locations: Comply with NAAMM HMMA 830 and NAAMM HMMA 831 or BHMA A156.115 and ANSI/SDI A250.8 (SDI-100) in accordance with specified requirements.



8. Zinc Coating for Typical Interior and/or Exterior Locations: Provide metal components zinc-coated (galvanized) and/or zinc-iron alloy-coated (galvannealed) by the hot-dip process in accordance with ASTM A653/A653M, with manufacturer's standard coating thickness, unless noted otherwise for specific hollow metal doors and frames.
  - a. Based on NAAMM HMMA Custom Guidelines: Provide at least A25/ZF75 (galvannealed) for interior applications, and at least A60/ZF180 (galvannealed) or G60/Z180 (galvanized) for corrosive locations.
- B. Minimum Thermal Standards: Swing door unit U-value no greater than 0.61 in accord with ICC (IECC) requirements (Table C402.1.4 - U-value method).
- C. Combined Requirements: If a particular door and frame unit is indicated to comply with more than one type of requirement, comply with the specified requirements for each type; for instance, an exterior door that is also indicated as being sound-rated must comply with the requirements specified for exterior doors and for sound-rated doors; where two requirements conflict, comply with the most stringent.

### 2.03 HOLLOW METAL DOORS

- A. Door Finish: Factory primed and field finished.
- B. Exterior Doors: Thermally insulated.
  1. Based on NAAMM HMMA Custom Guidelines:
    - a. Comply with guidelines of NAAMM HMMA 860 for Hollow Metal Doors and Frames.
    - b. Performance Level 3 - Heavy Duty, in accordance with NAAMM HMMA 805.
    - c. Physical Performance Level B, 500,000 cycles; in accordance with ANSI/SDI A250.4.
    - d. Door Face Metal Thickness: 16 gage, 0.053 inch, minimum.
    - e. Zinc Coating: G90/Z275 galvanized coating; ASTM A653/A653M.
  2. Core Material: Polyurethane, 1.8 lbs/cu ft minimum density.
  3. Door Thermal Resistance: R-Value of 8.7, minimum, for installed thickness of polyurethane.
  4. Door Thickness: 1-3/4 inch, nominal.
  5. Weatherstripping: Refer to Section 08 7100.
- C. Interior Doors, Non-Fire Rated:
  1. Based on NAAMM HMMA Custom Guidelines:
    - a. Comply with guidelines of NAAMM HMMA 860 for Hollow Metal Doors and Frames.
    - b. Performance Level 3 - Heavy Duty, in accordance with NAAMM HMMA 805.
    - c. Physical Performance Level B, 500,000 cycles; in accordance with ANSI/SDI A250.4.
    - d. Door Face Metal Thickness: 18 gage, 0.042 inch, minimum.
    - e. Zinc Coating: G90/Z275 galvanized coating; ASTM A653/A653M.
  2. Door Core Material: Manufacturer's standard core material/construction and in compliance with requirements.
  3. Door Thickness: 1-3/4 inch, nominal.
- D. Fire-Rated Doors:
  1. Based on NAAMM HMMA Custom Guidelines: Comply with NAAMM HMMA 850 requirements for fire-rated doors.
    - a. Comply with guidelines of NAAMM HMMA 860 for Hollow Metal Doors and Frames.
    - b. Performance Level 3 - Heavy Duty, in accordance with NAAMM HMMA 805.
    - c. Physical Performance Level B, 500,000 cycles; in accordance with ANSI/SDI A250.4.
    - d. Door Face Metal Thickness: 16 gage, 0.053 inch, minimum.
    - e. Zinc Coating: G90/Z275 galvanized coating; ASTM A653/A653M.
  2. Fire Rating: As indicated on Door Schedule, tested in accordance with UL 10C and NFPA 252 ("positive pressure fire tests").
  3. Temperature-Rise Rating (TRR) Across Door Thickness: In accordance with local building code and authorities having jurisdiction.
  4. Provide units listed and labeled by UL (DIR) or ITS (DIR).
    - a. Attach fire rating label to each fire rated unit.

5. Door Thickness: 1-3/4 inch, nominal.
- E. Hurricane-Resistant Doors: Provide fire-rated door construction as indicated for door Type HMSI-2, Fire-Rated Doors, and the following hurricane resistant door requirements.
  1. Comply with Florida Building Code (FBC) test protocols for High Velocity Hurricane Zone (HVHZ) FBC TAS 201, FBC TAS 202 and FBC TAS 203.
  2. Design and size door and frame components to withstand the specified load requirements without damage or permanent set, when tested in accordance with ASTM E330/E330M.
    - a. Design Wind Loads: Comply with requirements of authorities having jurisdiction.
    - b. Wind-Borne Debris Resistance: Door and frame components shall have FLA (PAD) approval or Miami (APD) approval for Large and Small Missile impact and pressure cycling at design wind loads.
  3. Based on NAAMM HMMA Custom Guidelines:
    - a. Comply with guidelines of NAAMM HMMA 860 for Hollow Metal Doors and Frames.
    - b. Performance Level 2 - Moderate Duty, in accordance with NAAMM HMMA 805.
    - c. Physical Performance Level C, 250,000 cycles; in accordance with ANSI/SDI A250.4.
    - d. Door Face Metal Thickness: 16 gage, 0.053 inch, minimum.
  4. Door Core Material: Manufacturers standard core material/construction and in compliance with requirements.
  5. Door Thickness: 1-3/4 inch, nominal.

#### **2.04 HOLLOW METAL FRAMES**

- A. Comply with standards and/or custom guidelines as indicated for corresponding door in accordance with applicable door frame requirements.
- B. Frame Finish: Factory primed and field finished.
- C. Exterior Door Frames: Full profile/continuously welded type.
  1. Galvanizing: Components hot-dipped zinc-iron alloy-coated (galvannealed) in accordance with ASTM A653/A653M, with A40/ZF120 coating.
  2. Frame Metal Thickness: 14 gage, 0.067 inch, minimum.
  3. Weatherstripping: Separate, see Section 08 7100.
- D. Interior Door Frames, Non-Fire Rated: Face welded type.
  1. Frame Metal Thickness: 16 gage, 0.053 inch, minimum.
- E. Door Frames, Fire-Rated: Full profile/continuously welded type.
  1. Fire Rating: Same as door, labeled.
  2. Frame Metal Thickness: 16 gage, 0.053 inch, minimum.
- F. Hurricane-Resistant Door Frames: With same hurricane resistance as door; face welded or full profile/continuously welded construction, ground smooth, fully prepared and reinforced for hardware installation.
- G. Frames for Wood Doors: Comply with frame requirements in accordance with corresponding door.
- H. Mullions for Pairs of Doors: Removable type, with profile similar to jambs.
- I. Transom Bars: Fixed, of profile same as jamb and head.
- J. Provide mortar guard boxes for hardware cut-outs in frames to be installed in masonry or to be grouted.
- K. Frames in Masonry Walls: Size to suit masonry coursing with head member 4 inch high to fill opening without cutting masonry units.
- L. Frames Wider than 48 inches: Reinforce with steel channel fitted tightly into frame head, flush with top.

#### **2.05 FINISHES**

- A. Primer: Rust-inhibiting, complying with ANSI/SDI A250.10, door manufacturer's standard.
- B. Bituminous Coating: Asphalt emulsion or other high-build, water-resistant, resilient coating.

## **2.06 ACCESSORIES**

- A. Louvers: Roll formed steel with overlapping frame; finish same as door components; factory-installed.
  - 1. Style: Sightproof inverted Y blade.
  - 2. Louver Free Area: 50 percent.
  - 3. Fasteners: Exposed, tamper proof fasteners.
- B. Glazing: As specified in Section 08 8000, factory installed.
- C. Removable Stops: Formed sheet steel, shape as indicated on drawings, mitered or butted corners; prepared for countersink style tamper proof screws.
- D. Astragals for Double Doors: Specified in Section 08 7100.
- E. Mechanical Fasteners for Concealed Metal-to-Metal Connections: Self-drilling, self-tapping, steel with electroplated zinc finish.
- F. Grout for Frames: Portland cement grout with maximum 4 inch slump for hand troweling; thinner pumpable grout is prohibited.
- G. Silencers: Resilient rubber, fitted into drilled hole; provide three on strike side of single door, three on center mullion of pairs, and two on head of pairs without center mullions.
- H. Temporary Frame Spreaders: Provide for factory- or shop-assembled frames.

## **PART 3 EXECUTION**

### **3.01 EXAMINATION**

- A. Verify existing conditions before starting work.
- B. Verify that opening sizes and tolerances are acceptable.
- C. Verify that finished walls are in plane to ensure proper door alignment.

### **3.02 PREPARATION**

- A. Coat inside of frames to be installed in masonry or to be grouted, with bituminous coating, prior to installation.
- B. Coat inside of frames with bituminous coating to a thickness of 1/16 inch.

### **3.03 INSTALLATION**

- A. Install doors and frames in accordance with manufacturer's instructions and related requirements of specified door and frame standards or custom guidelines indicated.
- B. Install prefinished frames after painting and wall finishes are complete.
- C. Install fire rated units in accordance with NFPA 80.
- D. Coordinate frame anchor placement with wall construction.
- E. Grout frames in masonry construction, using hand trowel methods; brace frames so that pressure of grout before setting will not deform frames.
- F. Install door hardware as specified in Section 08 7100.
  - 1. Comply with recommended practice for hardware placement of doors and frames in accordance with ANSI/SDI A250.6 or NAAMM HMMA 861.
- G. Touch up damaged factory finishes.

### **3.04 TOLERANCES**

- A. Clearances Between Door and Frame: Comply with related requirements of specified frame standards or custom guidelines indicated in accordance with SDI 117 or NAAMM HMMA 861.
- B. Maximum Diagonal Distortion: 1/16 inch measured with straight edge, corner to corner.

### **3.05 ADJUSTING**

- A. Adjust for smooth and balanced door movement.

**3.06 SCHEDULE**

- A. Refer to Door and Frame Schedule on the drawings.

**END OF SECTION**

**SECTION 08 1416**  
**FLUSH WOOD DOORS**

**PART 1 GENERAL**

**1.01 SECTION INCLUDES**

- A. Flush wood doors; flush and flush glazed configuration; fire rated and non-rated.
- B. Louvers for flush wood doors.

**1.02 RELATED REQUIREMENTS**

- A. Section 08 1113 - Hollow Metal Doors and Frames.
- B. Section 08 7100 - Door Hardware.
- C. Section 08 8000 - Glazing.

**1.03 REFERENCE STANDARDS**

- A. 16 CFR 1201 - Safety Standard for Architectural Glazing Materials; current edition.
- B. ANSI A208.1 - American National Standard for Particleboard; 2009.
- C. ASTM C1048 - Standard Specification for Heat-Strengthened and Fully Tempered Flat Glass; 2012.
- D. ASTM E413 - Classification for Rating Sound Insulation; 2016.
- E. AWI/AWMAC/WI (AWS) - Architectural Woodwork Standards; 2014.
- F. AWMAC/WI (NAAWS) - North American Architectural Woodwork Standards, U.S. Version 3.0; 2016.
- G. ICC (IBC) - International Building Code; 2015.
- H. NFPA 80 - Standard for Fire Doors and Other Opening Protectives; 2016.
- I. NFPA 105 - Standard for Smoke Door Assemblies and Other Opening Protectives; 2016.
- J. NFPA 252 - Standard Methods of Fire Tests of Door Assemblies; 2012.
- K. UL 10B - Standard for Fire Tests of Door Assemblies; Current Edition, Including All Revisions.
- L. UL 10C - Standard for Positive Pressure Fire Tests of Door Assemblies; Current Edition, Including All Revisions.
- M. UL 1784 - Standard for Air Leakage Tests of Door Assemblies; Current Edition, Including All Revisions.
- N. WDMA I.S. 1A - Interior Architectural Wood Flush Doors; 2013.

**1.04 SUBMITTALS**

- A. See Section 01 3000 - Administrative Requirements, for submittal procedures.
- B. Product Data: Indicate door core materials and construction; veneer species, type and characteristics and factory finishing specifications.
- C. Shop Drawings: Show doors and frames, elevations, sizes, types, swings, undercuts, beveling, blocking for hardware, factory machining, factory finishing, cutouts for glazing and other details.
- D. Certificate: Submit labels and certificates required by quality assurance and quality control programs.
- E. Specimen warranty.
- F. Samples for Initial Selection: Color charts consisting of actual materials in smapp sections showing manufacturers range of available colors and sheens.
- G. Samples for Verification: Submit two samples of door construction, 12 x 12 inch in size cut from top corner of door.
- H. Samples: Submit one sample of door veneer, 8 x 10 inch in size illustrating wood grain, stain color, and sheen for each material and finish.

- I. Manufacturer's Installation Instructions: Indicate special installation instructions.
- J. Warranty, executed in Owner's name.

#### **1.05 QUALITY ASSURANCE**

- A. Maintain one copy of the specified door quality standard on site for review during installation and finishing.
- B. Obtain flush wood doors through one source from single manufacturer.
- C. Manufacturer Qualifications: Company specializing in manufacturing the products specified in this section with minimum five years of documented experience.
  - 1. Company with at least one project within the past 5 years with value of woodwork within 20 percent of cost of woodwork for this project.
- D. Installer Qualifications: Company specializing in performing work of the type specified in this section, with not less than five years of documented experience and approved by manufacturer.
- E. Installed Fire Rated Door and Transom Panel Assembly: Conform to NFPA 80 for fire-rating as indicated.

#### **1.06 DELIVERY, STORAGE, AND HANDLING**

- A. Package, deliver and store doors in accordance with specified quality standard.
- B. Accept doors on site in manufacturer's packaging. Inspect for damage.
- C. Protect doors with resilient packaging sealed with heat shrunk plastic. Do not store in damp or wet areas; or in areas where sunlight might bleach veneer. Seal top and bottom edges with tinted sealer if stored more than one week. Break seal on site to permit ventilation.
- D. Mark each door on top and bottom edge with opening number used on shop drawings.

#### **1.07 PROJECT CONDITIONS**

- A. Coordinate the work with door opening construction, door frame and door hardware installation.
- B. Do not deliver or install doors until building is enclosed, wet work is complete, and HVAC system is operating and will maintain temperature and relative humidity at occupancy levels during the remainder of the construction period.

#### **1.08 WARRANTY**

- A. See Section 01 7800 - Closeout Submittals for additional warranty requirements.
- B. Interior Doors: Provide manufacturer's warranty for the life of the installation.
- C. Special Warranty: Manufacturer's standard form, signed by manufacturer, installer and Contractor, in which manufacturer agrees to repair or replace doors that are defective in materials or workmanship, have delaminated, warped (bow, cup or twist) more than 1/4 inch (6.4 mm) in a 42-by-84 inch (1067-by-2134 mm) section, or show telegraphing of core construction in face veneers exceeding 0.01 inch in a 3 inch (0.25 mm in a 75 mm) span.
  - 1. Warranty shall include installation and finishing that may be required due to repair or replacement of defective doors.
- D. Include coverage for delamination of veneer, warping beyond specified installation tolerances, defective materials, telegraphing core construction, and other visible defects.

### **PART 2 PRODUCTS**

#### **2.01 MANUFACTURERS**

#### **2.02 DOORS AND PANELS**

- A. Doors: Refer to drawings for locations and additional requirements.
  - 1. Quality Level: Custom Grade, Extra Heavy Duty performance, in accordance with AWI/AWMAC/WI (AWS) or WDMA I.S. 1A.
  - 2. Wood Veneer Faced Doors: 5-ply unless otherwise indicated.
- B. Interior Doors: 1-3/4 inches thick unless otherwise indicated; flush construction.

1. Provide solid core doors at all locations unless scheduled otherwise.
2. Fire Rated Doors: Tested to ratings indicated on drawings in accordance with UL 10C - Positive Pressure; Underwriters Laboratories Inc (UL) or Intertek/Warnock Hersey (WHI) labeled without any visible seals when door is open.
3. Smoke and Draft Control Doors (Indicated as "S" on Drawings): In addition to required fire rating, provide door assemblies tested in accordance with UL 1784 with maximum air leakage of 3.0 cfm per sq ft of door opening at 0.10 inch wg pressure at both ambient and elevated temperatures for "S" label; if necessary, provide additional gasketing or edge sealing.
4. Smoke and Draft Control Doors (Indicated as "S" on Drawings): In addition to required fire rating, provide flush wood door assemblies in compliance with WDMA I.S. 1A requirements for "S" label; no additional gasketing or edge sealing allowed.
5. Wood veneer facing with factory transparent finish.

C. Transom Panels: Same construction and finish as door; same performance rating as door.

### **2.03 DOOR AND PANEL CORES**

- A. Non-Rated Solid Core and 20 Minute Rated Doors: Type particleboard core (PC), plies and faces as indicated.
- B. Core for Low Pressure Decorative Laminate (LPDL), Non-Rated and 20 Minute Rated Doors: ANSI A208.1 Grade M-2 particleboard, minimum, with no seams on faces; edges reinforced as required to pass performance grade specified.
- C. Non-Rated Solid Core and 20 Minute Rated Doors to receive Exit Devices: Type structural composite lumber core (SCLC), plies and faces as indicated above.
- D. Fire-Rated Doors: Mineral core type, with fire resistant composite core (FD), plies and faces as indicated above; with core blocking as required to provide adequate anchorage of hardware without through-bolting.

### **2.04 DOOR FACINGS**

- A. Veneer Facing for Transparent Finish: White birch, HPVA Grade A, rotary cut, with random match (mismatched) between leaves of veneer, sets compatible matched of spliced veneer leaves assembled on door or panel face.
  1. Vertical Edges: Same species as face veneer.
  2. "Pair Match" each pair of doors; "Set Match" pairs of doors within 10 feet of each other when doors are closed.
  3. Room Match: Provide door faces of compatible color and grain within each separate room or area of building.
  4. Transoms: End match to doors.
- B. Facing Adhesive: Type I - waterproof.

### **2.05 ACCESSORIES**

- A. Hollow Metal Door Frames: As specified in Section 08 1113.
- B. Metal Door Louvers:
  1. Frame: 18 gage cold rolled steel.
  2. Blades: 22 gage cold rolled steel.
  3. Style: Non-vision inverted "Y" or "V" Louver.
  4. Finish: Primer finish for field painting.
  5. Manufacturers:
    - a. Anemostat; AFDL: [www.anemostat.com](http://www.anemostat.com).
    - b. Air Louvers Inc; 800 Series: [www.activarcpg.com](http://www.activarcpg.com).
    - c. National Guard Products; L700BF: [www.ngp.com](http://www.ngp.com).
    - d. Substitutions: See Section 01600 - Product Requirements.
- C. Glazed Openings:
  1. Heat-Strengthened and Fully Tempered Glass: 1.

2. Fire-Protection-Rated Glass: Safety Certification, 1, Category II.
  3. Glazing: Single vision units, 1/4 inch glass.
  4. Tint: Clear.
- D. Glazing Stops: Wood, of same species as door facing, butted corners; prepared for countersink style tamper proof screws.
- E. Astragals for Fire Rated Double Doors: Steel, T shaped, overlapping and recessed at face edge, specifically for double doors.
- F. Door Hardware: As specified in Section 08 7100.
- G. Applied door trim: Provide wood moldings and applied detail as indicated on Drawings. See Door Schedule for additional information and detail.

## **2.06 DOOR CONSTRUCTION**

- A. Fabricate doors in accordance with door quality standard specified.
- B. Cores Constructed with stiles and rails:
- C. Provide solid blocks at lock edge for hardware reinforcement.
1. Provide solid blocking for other throughbolted hardware.
- D. Factory machine doors for hardware other than surface-mounted hardware, in accordance with hardware requirements and dimensions.
- E. Factory fit doors for frame opening dimensions identified on shop drawings, with edge clearances in accordance with specified quality standard.
- F. Provide edge clearances in accordance with the quality standard specified.

## **2.07 FACTORY FINISHING - WOOD VENEER DOORS**

- A. Finish work in accordance with AWI/AWMAC/WI (AWS) or AWMAC/WI (NAAWS), Section 5 - Finishing for grade specified and as follows:
1. Type FWD-1: Transparent:
    - a. System - 9, UV Curable, Acrylated Epoxy, Polyester or Urethane.
    - b. Color: See Finish Legend Type FWD.
    - c. Sheen: Satin.
- B. Finish work in accordance with WDMA I.S. 1A for grade specified and as follows:
1. Transparent:
    - a. System - TR-8, UV Cured Acrylated Polyester/Urethane.
    - b. Color: See Finish Legend Type FWD.
    - c. Sheen: Satin.
- C. Factory finish doors in accordance with sample to be provided.
- D. Seal door top edge with color sealer to match door facing.

## **PART 3 EXECUTION**

### **3.01 EXAMINATION**

- A. Verify existing conditions before starting work.
- B. Verify that opening sizes and tolerances are acceptable.
- C. Do not install doors in frame openings that are not plumb or are out-of-tolerance for size or alignment.

### **3.02 INSTALLATION**

- A. Install doors in accordance with manufacturer's instructions and specified quality standard.
1. Install fire-rated doors in accordance with NFPA 80 requirements.
  2. Install smoke and draft control doors in accordance with NFPA 105 requirements.
- B. Factory-Finished Doors: Do not field cut or trim; if fit or clearance is not correct, replace door.
- C. Use machine tools to cut or drill for hardware.



- D. Coordinate installation of doors with installation of frames and hardware.
- E. Coordinate installation of glazing.
- F. Install door louvers plumb and level.

**3.03 TOLERANCES**

- A. Comply with specified quality standard for fit and clearance tolerances.
- B. Comply with specified quality standard for telegraphing, warp, and squareness.

**3.04 ADJUSTING**

- A. Adjust doors for smooth and balanced door movement.
- B. Adjust closers for full closure.

**3.05 SCHEDULE - SEE DRAWINGS**

**END OF SECTION**

**SECTION 08 3100**  
**ACCESS DOORS AND PANELS**

**PART 1 GENERAL**

**1.01 SECTION INCLUDES**

- A. Wall and ceiling access door and frame units.

**1.02 RELATED REQUIREMENTS**

- A. Section 09 9123 - Interior Painting: Field paint finish.

**1.03 REFERENCE STANDARDS**

- A. ITS (DIR) - Directory of Listed Products; current edition.
- B. UL (FRD) - Fire Resistance Directory; Current Edition.

**1.04 SUBMITTALS**

- A. See Section 01 3000 - Administrative Requirements, for submittal procedures.
- B. Product Data: Provide sizes, types, finishes, hardware, scheduled locations, and details of adjoining work.
- C. Shop Drawings: Indicate exact position of each access door and/or panel unit.
- D. Samples: Submit two access units, 12 by 12 inch in size illustrating frame configuration and anchors. Approved units will be returned to contractor for installation in the Work.
- E. Manufacturer's Installation Instructions: Indicate installation requirements.
- F. Project Record Documents: Record actual locations of each access unit.

**1.05 QUALITY ASSURANCE**

- A. Manufacturer Qualifications: Company specializing in manufacturing the products specified in this section with minimum five years documented experience.
- B. Installer Qualifications: Company specializing in performing work of the type specified and with at least three years documented experience and approved by manufacturer.

**PART 2 PRODUCTS**

**2.01 ACCESS DOORS AND PANELS ASSEMBLIES**

- A. Wall-Mounted Units:
  - 1. Location: As indicated on drawings.
  - 2. Material: Steel.
  - 3. Size: 12 inch by 12 inch.
  - 4. Door/Panel: Hinged, standard duty, with tool-operated spring or cam lock and no handle.
  - 5. Wall Mounting Criteria: Provide surface-mounted face frame and door surface flush with frame surface.
  - 6. Gypsum Board Mounting Criteria: Provide drywall bead frame with door surface flush with wall surface.
  - 7. Masonry Mounting Criteria: Provide surface-mounted frame with door surface flush with frame surface.
- B. Wall-Mounted Units in Wet Areas:
  - 1. Location: As indicated on drawings.
  - 2. Material: Steel, hot-dipped zinc, or zinc-aluminum-alloy coated.
  - 3. Size: 12 inch by 12 inch.
  - 4. Door/Panel: Hinged, standard duty, with tool-operated spring or cam lock and no handle.
  - 5. Wall Mounting Criteria: Provide surface-mounted face frame and door surface flush with frame surface.
  - 6. Gypsum Board Mounting Criteria: Provide drywall bead frame with door surface flush with wall surface.

7. Masonry Mounting Criteria: Provide surface-mounted frame with door surface flush with frame surface.
- C. Fire-Rated Wall-Mounted Units:
1. Location: As indicated on drawings.
  2. Wall Fire-Rating: As indicated on drawings.
  3. Material: Steel.
  4. Size: 12 inch by 12 inch.
  5. Door/Panel: Insulated double-surface panel, with tool-operated spring or cam lock and no handle.
- D. Ceiling-Mounted Units:
1. Location: As indicated on drawings.
  2. Material: Steel.
  3. Size - Lay-In Grid Ceilings: To match module of ceiling grid.
  4. Size - Other Ceilings: 12 inch by 12 inch.
  5. Door/Panel: Hinged, standard duty, with tool-operated spring or cam lock and no handle.
- E. Fire-Rated Ceiling-Mounted Units:
1. Location: As indicated on drawings.
  2. Ceiling Fire-Rating: As indicated on drawings.
  3. Material: Steel.
  4. Size: 12 inch by 12 inch.
  5. Door/Panel: Hinged, standard duty, with tool-operated spring or cam lock and no handle.

## 2.02 WALL AND CEILING MOUNTED UNITS

- A. Manufacturers:
1. ACUDOR Products Inc: [www.acudor.com/#sle](http://www.acudor.com/#sle).
  2. Babcock-Davis: [www.babcockdavis.com/sle](http://www.babcockdavis.com/sle).
  3. Cendrex, Inc: [www.cendrex.com/#sle](http://www.cendrex.com/#sle).
  4. Karp Associates, Inc: [www.karpinc.com](http://www.karpinc.com).
  5. Milcor, Inc: [www.milcorinc.com](http://www.milcorinc.com).
  6. Nystrom, Inc: [www.nystrom.com/sle](http://www.nystrom.com/sle).
  7. Williams Brothers Corporation of America: [www.wbdoors.com](http://www.wbdoors.com).
  8. Substitutions: See Section 01 6000 - Product Requirements.
- B. Wall and Ceiling Mounted Units: Factory fabricated door and frame, fully assembled units with corner joints welded, filled and ground flush; square and without rack or warp; coordinate requirements with type of installation assembly being used for each unit.
1. Style: Exposed frame with door surface flush with frame surface.
    - a. Gypsum Board Mounting Criteria: Use drywall bead type frame.
  2. Door Style: Single thickness with rolled or turned in edges.
  3. Frames: 16 gage, 0.0598 inch, minimum thickness.
  4. Single Steel Sheet Door Panels: 1/16 inch, minimum thickness.
  5. Door Panels to Receive Wall/Ceiling Finish: Surface recessed 5/8 inch back from wall face.
  6. Insulation: Non-combustible mineral wool or glass fiber.
  7. Units in Fire-Rated Assemblies: Fire rating as required by applicable code for fire-rated assembly that access doors are being installed.
    - a. Provide products listed by ITS (DIR) or UL (FRD) as suitable for purpose indicated.
    - b. Provide certificate of compliance from authorities having jurisdiction indicating approval of fire rated doors.
  8. Steel Finish: Primed.
  9. Hardware:
    - a. Hardware for Fire-Rated Units: As required for listing.
    - b. Hinges for Non-Fire-Rated Units: Concealed, constant force closure spring type.
    - c. Handle: No handle.

- d. Latch/Lock: Tamperproof tool-operated cam latch.
- e. Number of Locks/Latches Required: As recommended by manufacturer for size of unit.
- f. Gasketing: Extruded neoprene, around perimeter of door panel.

### **PART 3 EXECUTION**

#### **3.01 EXAMINATION**

- A. Verify that rough openings are correctly sized and located.
- B. Begin installation only after substrates have been properly prepared, and if the responsibility of another installer, notify Architect of unsatisfactory preparation before proceeding.

#### **3.02 PREPARATION**

- A. Clean surfaces thoroughly prior to proceeding with this work.
- B. Prepare surfaces using methods recommended by manufacturer for applicable substrates in accordance with project conditions.

#### **3.03 INSTALLATION**

- A. Install units in accordance with manufacturer's instructions.
- B. Install frames plumb and level in openings, and secure units rigidly in place.
- C. Position units to provide convenient access to concealed equipment when necessary.

**END OF SECTION**

## **SECTION 08 4113.16**

### **HURRICANE RESISTANT ALUMINUM-FRAMED ENTRANCES AND STOREFRONTS**

#### **PART 1 GENERAL**

##### **1.01 SECTION INCLUDES**

- A. Aluminum-framed hurricane resistant storefront, with vision glass.
- B. Aluminum hurricane resistant doors and frames.
- C. Weatherstripping.

##### **1.02 RELATED REQUIREMENTS**

- A. Section 07 9200 - Joint Sealants: Sealing joints between frames and adjacent construction.
- B. Section 08 7100 - Door Hardware: Hardware items other than specified in this section.
- C. Section 08 8000 - Glazing: Hurricane resistant glass and glazing accessories.

##### **1.03 REFERENCE STANDARDS**

- A. AAMA CW-10 - Care and Handling of Architectural Aluminum From Shop to Site; 2015.
- B. AAMA 501.2 - Quality Assurance and Diagnostic Water Leakage Field Check of Installed Storefronts, Curtain Walls, and Sloped Glazing Systems; 2015.
- C. AAMA 609 & 610 - Cleaning and Maintenance Guide for Architecturally Finished Aluminum (Combined Document); 2015.
- D. AAMA 611 - Voluntary Specification for Anodized Architectural Aluminum; 2014 (2015 Errata).
- E. AAMA 1503 - Voluntary Test Method for Thermal Transmittance and Condensation Resistance of Windows, Doors and Glazed Wall Sections; 2009.
- F. AAMA/WDMA/CSA 101/I.S.2/A440 - North American Fenestration Standard/Specification for windows, doors, and skylights; 2017.
- G. ASCE 7 - Minimum Design Loads and Associated Criteria for Buildings and Other Structures; 2016.
- H. ASTM A36/A36M - Standard Specification for Carbon Structural Steel; 2014.
- I. ASTM A123/A123M - Standard Specification for Zinc (Hot-Dip Galvanized) Coatings on Iron and Steel Products; 2017.
- J. ASTM B209 - Standard Specification for Aluminum and Aluminum-Alloy Sheet and Plate; 2014.
- K. ASTM B209M - Standard Specification for Aluminum and Aluminum-Alloy Sheet and Plate (Metric); 2014.
- L. ASTM B221 - Standard Specification for Aluminum and Aluminum-Alloy Extruded Bars, Rods, Wire, Profiles, and Tubes; 2014.
- M. ASTM B221M - Standard Specification for Aluminum and Aluminum-Alloy Extruded Bars, Rods, Wire, Profiles, and Tubes (Metric); 2013.
- N. ASTM E1300 - Standard Practice for Determining Load Resistance of Glass in Buildings; 2016.
- O. ASTM E1886 - Standard Test Method for Performance of Exterior Windows, Curtain Walls, Doors, and Impact Protective Systems Impacted by Missile(s) and Exposed to Cyclic Pressure Differentials; 2019.
- P. ASTM E283 - Standard Test Method for Determining the Rate of Air Leakage Through Exterior Windows, Curtain Walls, and Doors Under Specified Pressure Differences Across the Specimen; 2004 (Reapproved 2012).
- Q. ASTM E330/E330M - Standard Test Method for Structural Performance of Exterior Windows, Doors, Skylights and Curtain Walls by Uniform Static Air Pressure Difference; 2014.

- R. ASTM E331 - Standard Test Method for Water Penetration of Exterior Windows, Skylights, Doors, and Curtain Walls by Uniform Static Air Pressure Difference; 2000 (Reapproved 2016).
- S. ASTM E1996 - Standard Specification for Performance of Exterior Windows, Curtain Walls, Doors, and Impact Protective Systems Impacted by Windborne Debris in Hurricanes; 2017.
- T. FBC TAS 201 - Impact Test Procedures; Testing Application Standard; 1994.
- U. FBC TAS 202 - Criteria for Testing Impact and Non-Impact Resistant Building Envelope Components Using Uniform Static Air Pressure; Testing Application Standard; 1994.
- V. FBC TAS 203 - Criteria for Testing Products Subject To Cyclic Wind Pressure Loading; Testing Application Standard; 1994.
- W. FLA (PAD) - Florida Building Code Online - Product Approval Directory; database at [www.floridabuilding.org](http://www.floridabuilding.org).
- X. SSPC-Paint 20 - Zinc-Rich Primers (Type I, "Inorganic," and Type II, "Organic"); 2002 (Ed. 2004).

#### **1.04 ADMINISTRATIVE REQUIREMENTS**

- A. Coordinate with installation of other components that comprise the exterior enclosure.
  - 1. Provide hurricane resistant storefront units including hurricane resistant thermal insulating glazing to match tested hurricane resistant frame and glazing units including manufacturer and thickness of laminated glass interlayer. Test units that do not match previously tested and approved units.
- B. Preinstallation Meeting: Conduct a preinstallation meeting one week before starting work of this section; require attendance by all affected installers.

#### **1.05 SUBMITTALS**

- A. See Section 01 3000 - Administrative Requirements, for submittal procedures.
- B. Product Data: Provide component dimensions, describe components within assembly, anchorage and fasteners, glass and infill, connection to air barrier internal drainage details and perimeter detail.
- C. Shop Drawings: Indicate system dimensions, framed opening requirements and tolerances, affected related work, expansion and contraction joint location and details, and field welding required.
  - 1. Include design engineer's stamp or seal on shop drawings for attachments and anchors.
- D. Samples: Submit two samples 16 by 16 inches in size illustrating finished aluminum surface, glass, glazing materials and accessory materials.
- E. Quality Assurance/Control:
  - 1. Test Reports: Submit certified test reports showing compliance with specified performance characteristics and physical properties.
  - 2. Standard Systems: Submit certified copies of previous test reports substantiating performance of system in lieu of re-testing. Include other supportive data as necessary.
- F. Manufacturer's Certificate: Certify that the products supplied meet or exceed the specified requirements.
- G. Field Quality Control Submittals: Report of field testing for water penetration and air leakage.
- H. Manufacturer's Qualification Statement.
- I. Installer's Qualification Statement.
- J. Warranty: Submit manufacturer warranty and ensure forms have been completed in Owner's name and registered with manufacturer.

## **1.06 QUALITY ASSURANCE**

- A. Designer Qualifications: Design structural support framing components under direct supervision of a Professional Structural Engineer experienced in design of this Work and licensed in the State in which the Project is located.
- B. Manufacturer Qualifications: Company specializing in performing work of type specified and with at least five years of documented experience.
- C. Installer Qualifications: Company specializing in performing work of type specified and with at least five years of documented experience and approved by manufacturer.

## **1.07 DELIVERY, STORAGE, AND HANDLING**

- A. Handle products of this section in accordance with AAMA CW-10.
- B. Protect finished aluminum surfaces with wrapping. Do not use adhesive papers or sprayed coatings that bond to aluminum when exposed to sunlight or weather.

## **1.08 FIELD CONDITIONS**

- A. Do not install sealants when ambient temperature is less than 40 degrees F. Maintain this minimum temperature during and 48 hours after installation.

## **1.09 WARRANTY**

- A. See Section 01 7800 - Closeout Submittals, for additional warranty requirements.
- B. Correct defective Work within a five year period after Date of Substantial Completion.
- C. Provide five year manufacturer warranty against failure of glass seal on insulating glass units, including interpane dusting or misting. Include provision for replacement of failed units.
- D. Provide five year manufacturer warranty against excessive degradation of exterior finish. Include provision for replacement of units with excessive fading, chalking, or flaking.

## **PART 2 PRODUCTS**

### **2.01 BASIS OF DESIGN -- FRAMING FOR INSULATING GLAZING**

- A. Center-Set Style, Wind-Borne-Debris Resistance Tested, thermally broken:
  - 1. Basis of Design: C.R. Laurence Company, Inc; U.S. Aluminum; Series IT600 Storm Front (thermal): [www.crl-arch.com/#sle](http://www.crl-arch.com/#sle).
  - 2. Vertical Mullion Dimensions: 2-1/2 inches wide by 5 inches deep.
- B. Other Manufacturers: Provide either the product identified as "Basis of Design" or an equivalent product of one of the manufacturers listed below:
  - 1. Coral Architectural Products, a division of Coral Industries, Inc; FL550T Hurricane Resistant Thermal Storefront System: [www.coralap.com/#sle](http://www.coralap.com/#sle).
  - 2. Oldcastle Building Envelope (OBE); FG-5100T StormMax Thermal Storefront
  - 3. YKK AP America Inc; ProTek YHS 50TU: [www.ykkap.com/#sle](http://www.ykkap.com/#sle).
- C. Substitutions: See Section 01 6000 - Product Requirements.
  - 1. For any product not identified as "Basis of Design", submit information as specified for substitutions.

### **2.02 BASIS OF DESIGN -- SWINGING DOORS**

- A. Wind-Borne-Debris Resistance Tested:
  - 1. Basis of Design: C.R. Laurence Company, Inc; U.S. Aluminum; Series IG 600 Storm Door, medium stile: [www.crl-arch.com/#sle](http://www.crl-arch.com/#sle).
  - 2. Thickness: 2-3/16 inch.
- B. Other Manufacturers: Provide either the product identified as "Basis of Design" or an equivalent product of one of the manufacturers listed below:
  - 1. EFCO, a Pella Company: [www.efcocorp.com/sle](http://www.efcocorp.com/sle).
  - 2. Kawneer North America: [www.kawneer.com](http://www.kawneer.com).

3. Pittco Architectural Metals Inc: [www.pittcometals.com/sle](http://www.pittcometals.com/sle).
4. Trulite Glass & Aluminum Solutions, LLC: [www.trulite.com](http://www.trulite.com).
5. YKK AP America Inc: [www.ykkap.com](http://www.ykkap.com).

C. Substitutions: See Section 01 6000 - Product Requirements.

### 2.03 STOREFRONT

- A. Hurricane Resistant Aluminum-Framed Storefront: Factory fabricated, factory finished aluminum framing members with infill, and related flashings, anchorage and attachment devices.
1. Unitized, shop assembly.
  2. Glazing Rabbet: For 1-5/16 inch hurricane resistant insulating glazing.
  3. Finish: Class I natural anodized.
    - a. Factory finish all surfaces that will be exposed in completed assemblies.
    - b. Coat concealed metal surfaces that will be in contact with cementitious materials or dissimilar metals with bituminous paint.
  4. Finish Color: As indicated on the drawings.
  5. Fabrication: Joints and corners flush, hairline, and weatherproof, accurately fitted and secured; prepared to receive anchors and hardware; fasteners and attachments concealed from view; reinforced as required for imposed loads.
  6. System Internal Drainage: Drain to the exterior by means of a weep drainage network any water entering joints, condensation occurring in glazing channel, and migrating moisture occurring within system.
  7. Expansion/Contraction: Provide for expansion and contraction within system components caused by cycling temperature range of 170 degrees F over a 12 hour period without causing detrimental effect to system components, anchorages, and other building elements.
  8. Movement: Allow for movement between storefront and adjacent construction, without damage to components or deterioration of seals.
  9. Perimeter Clearance: Minimize space between framing members and adjacent construction while allowing expected movement.
  10. Air and Vapor Seal: Maintain continuous air barrier and vapor retarder throughout assembly, primarily in line with inside pane of glazing and inner sheet of infill panel and heel bead of glazing compound.
- B. Performance Requirements:
1. Test Documents:
    - a. FBC TAS 201 Large Missile Impact Test, Level D, Wind Zone 4
    - b. FBC TAS 202 Uniform Static Air Pressure,  $\pm 65.0$ psf design pressure, 12.0psf water penetration.
    - c. FBC TAS 203 Cyclic Pressure loading  $\pm 65.0$ psf design pressure.
    - d. AAMA/WDMA/CSA 101/I.S.2/A440
    - e. Design pressure: Water penetration resistance  $\pm 65.0$ psf 12.0psf
    - f. ASTM E1886 and ASTM E1996:
    - g. ASTM E1886/ E1996 Large Missile Impact, Level D, Wind Zone 4
    - h. ASTM E1886/ E1996 Cyclic Load Test,  $\pm 65.0$ psf design pressure
  2. Limitations:
    - a. Maximum design pressure: 65.0 psf
    - b. Maximum panel size:
      - 1) 62 1/2" x 101" (Reinforced units)
      - 2) 62 1/2" x 86 1/2" (Non-reinforced units)
    - c. Glaze per ASTM E1300, according with glazing details in approval drawing.
    - d. Frame material shall be extruded Aluminum 6063-T5.



3. Wind Loads: Design and size components to withstand the specified load requirements without damage or permanent set, when tested in accordance with ASTM E330/E330M, using loads 1.65 times the design wind loads and 10 second duration of maximum load.
  - a. Design Wind Loads: Comply with requirements of ASCE 7.
  - b. IT600 Storefront - Design 65 psf; - Structural +/- 97.5 psf.
  - c. IT600 Pair of Doors - Design 65 psf, - Structural +/- 97.5 psf.
  - d. Member Deflection: Limit member deflection to L/180 in any direction, with full recovery of glazing materials.
4. Wind-Borne-Debris Resistance: Identical full-size glazed assembly without auxiliary protection, having Florida Building Code "FLA (PAD)" approval for Large and Small Missile impact and pressure cycling at design wind pressure.
  - a. IT600 Pair of Doors
    - 1) Large Missile Impact Test - Shall be tested in accordance with Dade County Protocol FBC TAS 201 with a 9 lb. 2x4 traveling at 50 fp.
  - b. IT600 Storefront and IT600 Pair of Doors:
    - 1) Cycle Load Test - Shall be tested in accordance with: Dade County Protocol FBC TAS 201 for 9,000 cycles.
  - c. IT600 Storefront and IT600 Pair of Doors:
5. Water Penetration Resistance on Manufactured Assembly: No uncontrolled water on interior face, when tested in accordance with ASTM E331 at pressure differential of 12 psf.
6. Air Leakage Laboratory Test: Maximum of 0.06 cu ft/min sq ft of wall area for single doors and 1.0 cu ft/min sq. ft. for double doors, when tested in accordance with ASTM E283 at 6.27 psf pressure differential across assembly.
7. Condensation Resistance Factor of Framing: 50, minimum, measured in accordance with AAMA 1503.

#### 2.04 COMPONENTS

- A. Aluminum Framing Members: Tubular aluminum sections, drainage holes and internal weep drainage system.
  1. Framing members for interior applications need not be thermally broken.
  2. Glazing Stops: Flush.
  3. Cross-Section: As indicated on drawings.
- B. Glazing: As specified in Section 08 8000.
  1. For Exterior Framing: Type IG-1 - Hurricane resistant insulating glazing.
  2. For Interior Framing: Type G-1 - 1/4 inch single glazing, tempered.
- C. Swing Doors: Glazed aluminum.
  1. Thickness: 2-3/16 inches.
  2. Top Rail: 5-11/16 inches wide.
  3. Vertical Stiles: 4-5/8 inches wide.
  4. Bottom Rail: 10 inches wide.
  5. Glazing Stops: Square.
  6. Finish: Same as storefront.

#### 2.05 MATERIALS

- A. Extruded Aluminum: ASTM B221 (ASTM B221M).
- B. Sheet Aluminum: ASTM B209 (ASTM B209M).
- C. Structural Steel Sections: ASTM A36/A36M; galvanized in accordance with requirements of ASTM A123/A123M.
- D. Structural Supporting Anchors Attached to Structural Steel: Design for bolted attachment.
- E. Fasteners: Stainless steel.
- F. Exposed Flashings: Aluminum sheet, 20 gage, 0.032 inch minimum thickness; finish to match framing members.

- G. Concealed Flashings: Sheet aluminum, 26 gage, 0.017 inch minimum thickness.
- H. Sill Flashing Sealant: Elastomeric, silicone or polyurethane, compatible with flashing material.
- I. Sealant for Setting Thresholds: Non-curing butyl type.
- J. Glazing Gaskets: Type to suit application to achieve weather, moisture, and air infiltration requirements.
- K. Glazing Accessories: As specified in Section 08 8000.
- L. Touch-Up Primer for Galvanized Steel Surfaces: SSPC-Paint 20, zinc rich.

## **2.06 FINISHES**

- A. Class I Natural Anodized Finish: AAMA 611 AA-M12C22A41 Clear anodic coating not less than 0.7 mils thick.
- B. Touch-Up Materials: As recommended by coating manufacturer for field application.

## **2.07 HARDWARE**

- A. For each door, include weatherstripping and sill sweep strip.
- B. Other Door Hardware: As specified in Section 08 7100.
- C. Weatherstripping: Wool pile, continuous and replaceable; provide on all doors.
- D. Sill Sweep Strips: Resilient seal type, retracting, of neoprene; provide on all doors.

## **2.08 FABRICATION**

- A. Fabricate components in accordance with approved shop drawings. Shop fabricate to greatest extent practicable to minimize field cutting, splicing and fastening. Remove burrs from cut edges.
- B. Fabricate system as indicated on approved shop drawings. Any welding shall be in accordance with AWS standards, performed by qualified welders. Do not distort members or deface exposed finish. Grind exposed welds smooth.
- C. Factory preparation per manufacturer templates for finish hardware. Mortise and reinforce frames and door stiles and rails to receive finish hardware in accordance with approved shop drawings.
- D. Prior to leaving factory, all doors and frames shall be assembled and "hung". All necessary adjustments shall be made to provide proper perimeter clearance between door and frame and all coordination between door, frame and finish hardware shall be tested.

## **PART 3 EXECUTION**

### **3.01 EXAMINATION**

- A. Verify dimensions, tolerances, and method of attachment with other work.
- B. Verify that wall openings and adjoining air and vapor seal materials are ready to receive work of this section.

### **3.02 INSTALLATION**

- A. Install wall system in accordance with manufacturer's instructions and storefront/entrance system as tested for hurricane resistance.
- B. Attach to structure to permit sufficient adjustment to accommodate construction tolerances and other irregularities.
- C. Provide alignment attachments and shims to permanently fasten system to building structure.
- D. Align assembly plumb and level, free of warp or twist. Maintain assembly dimensional tolerances, aligning with adjacent work.
- E. Provide thermal isolation where components penetrate or disrupt building insulation.
- F. Install sill flashings. Turn up ends and edges; seal to adjacent work to form water tight dam.

- G. Where fasteners penetrate sill flashings, make watertight by seating and sealing fastener heads to sill flashing.
- H. Pack fibrous insulation in shim spaces at perimeter of assembly to maintain continuity of thermal barrier.
- I. Touch-up minor damage to factory applied finish; replace components that cannot be satisfactorily repaired.

### **3.03 TOLERANCES**

- A. Maximum Variation from Plumb: 0.06 inch per 3 feet non-cumulative or 0.06 inch per 10 feet, whichever is less.
- B. Maximum Misalignment of Two Adjoining Members Abutting in Plane: 1/32 inch.

### **3.04 FIELD QUALITY CONTROL**

- A. Provide services of storefront manufacturer's field representative to observe for proper installation of system and submit report.
- B. Water-Spray Test: Provide water spray quality test of installed storefront components in accordance with AAMA 501.2 during construction process and before installation of interior finishes.
  - 1. Perform a minimum of two tests in each designated area as indicated on drawings.
  - 2. Conduct tests in each area prior to 10 percent and 50 percent completion of this work.
- C. Repair or replace storefront components that have failed designated field testing, and retest to verify performance complies with specified requirements.

### **3.05 ADJUSTING**

- A. Adjust operating hardware and sash for smooth operation.

### **3.06 CLEANING**

- A. Remove protective material from pre-finished aluminum surfaces.
- B. Wash down surfaces with a solution of mild detergent in warm water, applied with soft, clean wiping cloths. Take care to remove dirt from corners. Wipe surfaces clean.
- C. Upon completion of installation, thoroughly clean aluminum surfaces in accordance with AAMA 609 & 610.

### **3.07 PROTECTION**

- A. Protect installed products from damage until Date of Substantial Completion.

**END OF SECTION**

**SECTION 08 4313**  
**ALUMINUM-FRAMED STOREFRONTS**

**PART 1 GENERAL**

**1.01 SECTION INCLUDES**

- A. Aluminum-framed storefront, with vision glass for interior use.
- B. Aluminum doors and frames for interior use.

**1.02 RELATED REQUIREMENTS**

- A. Section 07 9200 - Joint Sealants: Sealing joints between frames and adjacent construction.
- B. Section 08 7100 - Door Hardware: Hardware items other than specified in this section.
- C. Section 08 8000 - Glazing: Glass and glazing accessories.

**1.03 REFERENCE STANDARDS**

- A. AAMA CW-10 - Care and Handling of Architectural Aluminum From Shop to Site; 2015.
- B. AAMA 609 & 610 - Cleaning and Maintenance Guide for Architecturally Finished Aluminum (Combined Document); 2015.
- C. AAMA 611 - Voluntary Specification for Anodized Architectural Aluminum; 2014 (2015 Errata).
- D. AAMA 2604 - Voluntary Specification, Performance Requirements and Test Procedures for High Performance Organic Coatings on Aluminum Extrusions and Panels (with Coil Coating Appendix); 2017a.
- E. ASTM B209 - Standard Specification for Aluminum and Aluminum-Alloy Sheet and Plate; 2014.
- F. ASTM B209M - Standard Specification for Aluminum and Aluminum-Alloy Sheet and Plate (Metric); 2014.
- G. ASTM B221 - Standard Specification for Aluminum and Aluminum-Alloy Extruded Bars, Rods, Wire, Profiles, and Tubes; 2014.
- H. ASTM B221M - Standard Specification for Aluminum and Aluminum-Alloy Extruded Bars, Rods, Wire, Profiles, and Tubes (Metric); 2013.

**1.04 ADMINISTRATIVE REQUIREMENTS**

- A. Preinstallation Meeting: Conduct a preinstallation meeting one week before starting work of this section; require attendance by all affected installers.

**1.05 SUBMITTALS**

- A. See Section 01 3000 - Administrative Requirements, for submittal procedures.
- B. Product Data: Provide component dimensions, describe components within assembly, anchorage and fasteners, glass and infill, internal drainage details and perimeter detail.
- C. Shop Drawings: Indicate system dimensions, framed opening requirements and tolerances, affected related work, expansion and contraction joint location and details, and field welding required.
- D. Samples: Submit two samples 16 by 16 inches in size illustrating finished aluminum surface, glass, glazing materials.
- E. Manufacturer's Certificate: Certify that the products supplied meet or exceed the specified requirements.
- F. Manufacturer's Qualification Statement.
- G. Installer's Qualification Statement.
- H. Warranty: Submit manufacturer warranty and ensure forms have been completed in Owner's name and registered with manufacturer.

### **1.06 QUALITY ASSURANCE**

- A. Manufacturer Qualifications: Company specializing in performing work of type specified and with at least five years of documented experience.
- B. Installer Qualifications: Company specializing in performing work of type specified and with at least five years of documented experience and approved by manufacturer.

### **1.07 DELIVERY, STORAGE, AND HANDLING**

- A. Handle products of this section in accordance with AAMA CW-10.
- B. Protect finished aluminum surfaces with wrapping. Do not use adhesive papers or sprayed coatings that bond to aluminum when exposed to sunlight or weather.

### **1.08 FIELD CONDITIONS**

- A. Do not install sealants when ambient temperature is less than 40 degrees F. Maintain this minimum temperature during and 48 hours after installation.

### **1.09 WARRANTY**

- A. See Section 01 7800 - Closeout Submittals, for additional warranty requirements.
- B. Correct defective Work within a five year period after Date of Substantial Completion.
- C. Provide five year manufacturer warranty against failure of glass seal on insulating glass units, including interpane dusting or misting. Include provision for replacement of failed units.
- D. Provide five year manufacturer warranty against excessive degradation of exterior finish. Include provision for replacement of units with excessive fading, chalking, or flaking.

## **PART 2 PRODUCTS**

### **2.01 BASIS OF DESIGN -- FRAMING FOR MONOLITHIC GLAZING**

- A. Center-Set Style:
  - 1. Basis of Design: C.R. Laurence Company, Inc; U.S. Aluminum; Series 450/450-S: [www.crl-arch.com/#sle](http://www.crl-arch.com/#sle).
  - 2. Vertical Mullion Dimensions: 1-3/4 inches wide by 4-1/2 inches deep.
- B. Other Manufacturers: Provide either the product identified as "Basis of Design" or an equivalent product of one of the manufacturers listed below:
  - 1. Coral Architectural Products, a division of Coral Industries, Inc: [www.coralap.com/#sle](http://www.coralap.com/#sle).
  - 2. Trulite Glass and Aluminum Solutions, LLC: [www.trulite.com/#sle](http://www.trulite.com/#sle).
  - 3. Kawneer North America: [www.kawneer.com](http://www.kawneer.com).
  - 4. YKK AP America Inc: [www.ykkap.com](http://www.ykkap.com).

### **2.02 BASIS OF DESIGN -- SWINGING DOORS**

- A. Wide Stile, Monolithic Glazing:
  - 1. Basis of Design: C.R. Laurence Company, Inc; U.S. Aluminum; Series 550 Wide Stile Door: [www.crl-arch.com/#sle](http://www.crl-arch.com/#sle).
- B. Other Manufacturers: Provide either the product identified as "Basis of Design" or an equivalent product of one of the manufacturers listed below:
  - 1. Coral Architectural Products, a division of Coral Industries, Inc: [www.coralap.com/#sle](http://www.coralap.com/#sle).
  - 2. EFCO, a Pella Company: [www.efcocorp.com/sle](http://www.efcocorp.com/sle).
  - 3. Kawneer North America: [www.kawneer.com](http://www.kawneer.com).
  - 4. Pittco Architectural Metals Inc: [www.pittcometals.com/sle](http://www.pittcometals.com/sle).
  - 5. Trulite Glass & Aluminum Solutions, LLC: [www.trulite.com](http://www.trulite.com).
  - 6. YKK AP America Inc: [www.ykkap.com](http://www.ykkap.com).
- C. Substitutions: See Section 01 6000 - Product Requirements.
  - 1. For any product not identified as "Basis of Design", submit information as specified for substitutions.

### 2.03 ALUMINUM-FRAMED STOREFRONT

- A. Aluminum-Framed Storefront: Factory fabricated, factory finished aluminum framing members with infill, and related flashings, anchorage and attachment devices.
  - 1. Unitized, shop assembly.
  - 2. Glazing Rabbet: For 1/4 inch monolithic glazing.
  - 3. Glazing Position: Centered (front to back).
  - 4. Vertical Mullion Dimensions: 2 inches wide by 4-1/2 inches deep.
  - 5. Finish: Class I natural anodized.
    - a. Factory finish all surfaces that will be exposed in completed assemblies.
    - b. Touch-up surfaces cut during fabrication so that no natural aluminum is visible in completed assemblies, including joint edges.
    - c. Coat concealed metal surfaces that will be in contact with cementitious materials or dissimilar metals with bituminous paint.
  - 6. Fabrication: Joints and corners flush, hairline, and weatherproof, accurately fitted and secured; prepared to receive anchors and hardware; fasteners and attachments concealed from view; reinforced as required for imposed loads.
  - 7. Expansion/Contraction: Provide for expansion and contraction within system components caused by cycling temperature range of 170 degrees F over a 12 hour period without causing detrimental effect to system components, anchorages, and other building elements.
  - 8. Movement: Allow for movement between storefront and adjacent construction, without damage to components or deterioration of seals.
  - 9. Perimeter Clearance: Minimize space between framing members and adjacent construction while allowing expected movement.

### 2.04 COMPONENTS

- A. Aluminum Framing Members: Tubular aluminum sections, drainage holes and internal weep drainage system.
  - 1. Glazing Stops: Flush.
  - 2. Cross-Section: 1-3/4 by 4-1/2 inch nominal dimension.
- B. Glazing: As specified in Section 08 8000.
- C. Swing Doors: Glazed aluminum.
  - 1. Thickness: 1-3/4 inches.
  - 2. Top Rail: 5-1/2 inches wide.
  - 3. Vertical Stiles: 5 inches wide.
  - 4. Bottom Rail: 10 inches wide.
  - 5. Glazing Stops: Square.

### 2.05 MATERIALS

- A. Extruded Aluminum: ASTM B221 (ASTM B221M).
- B. Sheet Aluminum: ASTM B209 (ASTM B209M).
- C. Structural Supporting Anchors Attached to Structural Steel: Design for bolted attachment.
- D. Fasteners: Stainless steel.
- E. Exposed Flashings: Aluminum sheet, 20 gage, 0.032 inch minimum thickness; finish to match framing members.
- F. Concealed Flashings: Sheet aluminum, 26 gage, 0.017 inch minimum thickness.
- G. Sill Flashing Sealant: Elastomeric, silicone or polyurethane, compatible with flashing material.
- H. Sealant for Setting Thresholds: Non-curing butyl type.
- I. Glazing Gaskets: Type to suit application to achieve weather, moisture, and air infiltration requirements.

- J. Glazing Accessories: As specified in Section 08 8000.

## **2.06 FINISHES**

- A. Class I Natural Anodized Finish: AAMA 611 AA-M12C22A41 Clear anodic coating not less than 0.7 mils thick.
- B. High Performance Organic Coatings: AAMA 2604; multiple coats, thermally cured fluoropolymer system.
1. Manufacturers:
- a. Valspar; Product Acroflur: [www.valsparcoilestrusion.com](http://www.valsparcoilestrusion.com).  
1) Valspar Special "Samford Ivory" No. E-03-311.
- b. PPG; Product Acrynar: [www.ppgideascape.com](http://www.ppgideascape.com).  
1) PPG Special "Samford Ivory" UC No. 90119.
- c. Substitutions: See Section 01 6000 - Product Requirements.

## **2.07 HARDWARE**

- A. For each door, include weatherstripping and sill sweep strip.
- B. Other Door Hardware: As specified in Section 08 7100.
- C. Weatherstripping: Wool pile, continuous and replaceable; provide on all doors.

## **PART 3 EXECUTION**

### **3.01 EXAMINATION**

- A. Verify dimensions, tolerances, and method of attachment with other work.
- B. Verify that wall openings and adjoining air and vapor seal materials are ready to receive work of this section.

### **3.02 INSTALLATION**

- A. Install wall system in accordance with manufacturer's instructions.
- B. Attach to structure to permit sufficient adjustment to accommodate construction tolerances and other irregularities.
- C. Provide alignment attachments and shims to permanently fasten system to building structure.
- D. Align assembly plumb and level, free of warp or twist. Maintain assembly dimensional tolerances, aligning with adjacent work.
- E. Touch-up minor damage to factory applied finish; replace components that cannot be satisfactorily repaired.

### **3.03 TOLERANCES**

- A. Maximum Variation from Plumb: 0.06 inch per 3 feet non-cumulative or 0.06 inch per 10 feet, whichever is less.
- B. Maximum Misalignment of Two Adjoining Members Abutting in Plane: 1/32 inch.

### **3.04 ADJUSTING**

- A. Adjust operating hardware and sash for smooth operation.

### **3.05 CLEANING**

- A. Remove protective material from pre-finished aluminum surfaces.
- B. Wash down surfaces with a solution of mild detergent in warm water, applied with soft, clean wiping cloths, and take care to remove dirt from corners and to wipe surfaces clean.
- C. Upon completion of installation, thoroughly clean aluminum surfaces in accordance with AAMA 609 & 610.

**3.06 PROTECTION**

- A. Protect installed products from damage until Date of Substantial Completion.

**END OF SECTION**



**SECTION 08 71 00**

**DOOR HARDWARE**

**PART 1 - GENERAL**

**1.1 SUMMARY:**

A. Section Includes: Finish Hardware for door openings, except as otherwise specified herein.

1. Door hardware for steel (hollow metal) doors.
2. Door hardware for aluminum doors.
3. Door hardware for wood doors.
4. Door hardware for other doors indicated.
5. Keyed cylinders as indicated.

B. Related Sections:

1. Division 06: Rough Carpentry.
2. Division 08: Aluminum Doors and Frames
3. Division 08: Hollow Metal Doors and Frames.
4. Division 08: Wood Doors.
5. Division 26: Electrical
6. Division 28: Electronic Security

C. References: Comply with applicable requirements of the following standards. Where these standards conflict with other specific requirements, the most restrictive shall govern.

1. Builders Hardware Manufacturing Association (BHMA)
2. NFPA 101 Life Safety Code, 2010
3. NFPA 80 – Standard for Fire Doors and Other Opening Protectives, 2013
4. ANSI-A156.xx- Various Performance Standards for Finish Hardware
5. UL10C – Positive Pressure Fire Test of Door Assemblies
6. ANSI-A117.1 – Accessible and Usable Buildings and Facilities
7. DHI /ANSI A115.IG – Installation Guide for Doors and Hardware
8. IBC – International Building Code, 2015

D. Intent of Hardware Groups

1. Should items of hardware not definitely specified be required for completion of the Work, furnish such items of type and quality comparable to adjacent hardware and appropriate for service required.
2. Where items of hardware are not definitely or correctly specified, but are required for completion of the Work, a written statement of such omission, error or other discrepancy must be submitted to Architect prior to date specified for receipt of bids for clarification by addendum.

E. Allowances

1. Refer to Division 01 for allowance amount and procedures.

F. Alternates

1. Refer to Division 01 for Alternates and procedures.

1.2 SUBSTITUTIONS:

A. Comply with Division 01.

1.3 SUBMITTALS:

A. Comply with Division 01.

B. Special Submittal Requirements: Combine submittals of this Section with Sections listed below to ensure the "design intent" of the system/assembly is understood and can be reviewed together.

C. Product Data: Manufacturer's specifications and technical data including the following:

1. Detailed specification of construction and fabrication.
2. Manufacturer's installation instructions.
3. Wiring diagrams for each electric product specified. Coordinate voltage with electrical before submitting.
4. Submit 6 copies of catalog cuts with hardware schedule.

D. Shop Drawings - Hardware Schedule: Submit 6 complete reproducible copy of detailed hardware schedule in a vertical format.

1. List groups and suffixes in proper sequence.
2. Completely describe door and list architectural door number.
3. Manufacturer, product name, and catalog number.
4. Function, type, and style.
5. Size and finish of each item.
6. Explanation of abbreviations and symbols used within schedule.

E. Templates: Submit templates and "reviewed Hardware Schedule" to door and frame supplier and others as applicable to enable proper and accurate sizing and locations of cutouts and reinforcing.

F. Samples: (If requested by the Architect)

1. 1 sample of Lever and Rose/Escutcheon design, (pair).
2. 3 samples of metal finishes

G. Contract Closeout Submittals: Comply with Division 01 including specific requirements indicated.

1. Operating and maintenance manuals: Submit 3 sets containing the following.
  - a. Complete information in care, maintenance, and adjustment, and data on repair and replacement parts, and information on preservation of finishes.
  - b. Catalog pages for each product.
  - c. Name, address, and phone number of local representatives for each manufacturer.
  - d. Manufacture's installation instructions for each product.
2. Copy of final hardware schedule, edited to reflect, "As installed".
3. Copy of final keying schedule
4. One set of special tools required for maintenance and adjustment of hardware, including changing of cylinders.

#### 1.4 QUALITY ASSURANCE

##### A. Comply with Division 01.

1. Statement of qualification for distributor and installers.
2. Statement of compliance with regulatory requirements and single source responsibility.
3. Distributor's Qualifications: Firm with 3 consecutive years of experience in the distribution of commercial hardware.
  - a. Distributor to employ full time Architectural Hardware Consultants (AHC) for the purpose of scheduling and coordinating hardware and establishing keying schedule.
  - b. Hardware Schedule shall be prepared and signed by an AHC.
  - c. Distributor must be an authorized factory distributor for products furnished.
4. Installer's Qualifications: Firm with 3 years experienced in installation of similar hardware to that required for this Project, including specific requirements indicated.
5. Regulatory Label Requirements: Provide testing agency label or stamp on hardware for labeled openings.
  - a. Provide UL listed hardware for labeled and 20-minute openings in conformance with requirements for class of opening scheduled.
  - b. Underwriters Laboratories requirements have precedence over this specification where conflict exists.
6. Single Source Responsibility: Except where specified in hardware schedule, furnish products of only one manufacturer for each type of hardware.

- B. Review Project for extent of finish hardware required to complete the Work. Where there is a conflict between these Specifications and the existing hardware, notify the Architect in writing and furnish hardware in compliance with the Specification unless otherwise directed in writing by the Architect.

#### 1.5 DELIVERY, STORAGE, AND HANDLING

##### A. Packing and Shipping: Comply with Division 01.

1. Deliver products in original unopened packaging with legible manufacturer's identification.
2. Package hardware to prevent damage during transit and storage.
3. Mark hardware to correspond with "reviewed hardware schedule".
4. Deliver hardware to door and frame manufacturer upon request.

- B. Storage and Protection: Comply with manufacturer's recommendations.

#### 1.6 PROJECT CONDITIONS:

- A. Coordinate hardware with other work. Furnish hardware items of proper design for use on doors and frames of the thickness, profile, swing, security and similar requirements indicated, as necessary for the proper installation and function, regardless of omissions or conflicts in the information on the Contract Documents.
- B. Review Shop Drawings for doors and entrances to confirm that adequate provisions will be made for the proper installation of hardware.

#### 1.7 WARRANTY:

- A. Refer to Conditions of the Contract

- B. Manufacturer's Warranty:

1. Closers: Ten years
2. Exit Devices: Five Years
3. Locksets & Cylinders: Seven Years
4. All other Hardware: Two Years.

1.8 OWNER'S INSTRUCTION:

- A. Instruct Owner's personnel in operation and maintenance of hardware units.

1.9 MAINTENANCE:

- A. Deliver to Owner:

1. Special Tools: Provide special wrenches and tools applicable to each different or special hardware component.

**PART 2 - PRODUCTS**

2.1 MANUFACTURERS:

- A. The following manufacturers are approved subject to compliance with requirements of the Contract Documents. Approval of manufacturers other than those listed shall be in accordance with Division 01.

<u>Item:</u>	<u>Manufacturer:</u>	<u>Approved:</u>
Hinges	Stanley	Ives, McKinney
Continuous Hinges	Stanley	Ives, Pemko
Locksets	Best 45H	Sargent 8200, Schlage L9000
Cylinders / Cores	Best (CORMAX)	
Exit Devices	Precision Apex 2000	Von Duprin 98, Sargent 80
Flush Bolts	ABH	Ives, Rockwood
Closers	Stanley D-4550/4551	LCN 4050, Sargent 351
Push/Pull Plates	Trimco	Ives, Rockwood
Protection Plates	Trimco	Ives, Rockwood
Door Stops	Trimco	Ives, Rockwood
Threshold & Gasketing	National Guard	Pemko, Zero

2.2 MATERIALS:

- A. Hinges: Shall be Five Knuckle Ball bearing hinges

1. Template screw hole locations
2. Bearings are to be fully hardened.
3. Bearing shell is to be consistent shape with barrel.
4. Minimum of 2 permanently lubricated non-detachable bearings on standard weight hinge and 4 permanently lubricated bearing on heavy weight hinges.
5. Equip with easily seated, non-rising pins.
6. Non-Removable Pin screws shall be slotted stainless steel screws.
7. Hinges shall be full polished, front, back and barrel.
8. Hinge pin is to be fully plated.
9. Bearing assembly is to be installed after plating.
10. Sufficient size to allow 180-degree swing of door
11. Furnish five knuckles with flush ball bearings
12. Provide hinge type as listed in schedule.

13. Furnish 3 hinges per leaf to 7-foot, 6-inch height. Add one for each additional 30 inches in height or fraction thereof.
14. Tested and approved by BHMA for all applicable ANSI Standards for type, size, function and finish
15. UL10C listed for Fire rated doors.

B. Geared Continuous Hinges:

1. Tested and approved by BHMA for ANSI A156.26-1996 Grade 1
2. Anti-spinning through fastener
3. UL10C listed for 3-hour Fire rating
4. Non-handed
5. Lifetime warranty
6. Provide Fire Pins for 3-hour fire ratings
7. Permit door to swing 180 degrees

C. Mortise Type Locks and Latches:

1. Tested and approved by BHMA for ANSI A156.13, Series 1000, Operational Grade 1, Extra-Heavy Duty, Security Grade 2 and be UL10C.
2. Fit ANSI A115.1 door preparation
3. Functions and design as indicated in the hardware groups
4. Solid, one-piece, 3/4-inch (19mm) throw, anti-friction latch bolt made of self-lubricating stainless steel
5. Deadbolt functions shall have 1 inch (25mm) throw bolt made of hardened stainless steel
6. Latch bolt and Deadbolt are to extend into the case a minimum of 3/8 inch (9.5mm) when fully extended
7. Auxiliary dead latch to be made of one-piece stainless steel, permanently lubricated
8. Provide sufficient curved strike lip to protect door trim
9. Lever handles must be of forged or cast brass, bronze or stainless-steel construction and conform to ANSI A117.1. Levers that contain a hollow cavity are not acceptable
10. Lock shall have self-aligning, thru-bolted trim
11. Levers to operate a roller bearing spindle hub mechanism
12. Mortise cylinders of lock shall have a concealed internal setscrew for securing the cylinder to the lockset. The internal setscrew will be accessible only by removing the core, with the control key, from the cylinder body.
13. Spindle to be designed to prevent forced entry from attacking of lever
14. Provide locksets with 7-pin removable and interchangeable core cylinders
15. Each lever to have independent spring mechanism controlling it
16. Core face must be the same finish as the lockset.

D. Tubular Deadbolts:

1. ANSI / BHMA Grade 1
2. 1" Throw Stainless Steel deadbolt
3. Solid extruded brass or bronze cylinder

E. Exit Devices:

1. Exit devices to meet or exceed BHMA for ANSI 156.3, Grade 1.
2. Exit devices chassis to be investment cast steel, zinc dichromate.
3. Exit devices to have stainless steel deadlocking 3/4" through latch bolt.
4. Exit devices to be equipped with sound dampening on touch bar.
5. Non-fire rated exit devices to have cylinder dogging.
6. Non-fire rated exit devices to have 1/4" minimum turn hex key dogging.
7. Touchpad to be "T" style constructed of architectural metal with matching metal end caps.
8. Touch bar assembly on wide style exit devices to have a 1/4" clearance to allow for vision frames.
9. All exposed exit device components to be of architectural metals and "true" architectural finishes.
10. Provide strikes as required by application.

11. Fire exit hardware to conform to UL10C and UBC 7-2. UL tested for Accident Hazard.
  12. The strike is to be black powder coated finish.
  13. Exit devices to have field reversible handing.
  14. Provide heavy duty vandal resistant lever trim with heavy duty investment cast stainless steel components and extra strength shock absorbing overload springs. Lever shall not require resetting. Lever design to match locksets and latch sets.
  15. Vertical Latch Assemblies to have gravity operation, no springs.
- F. Door Closers shall:
1. Tested and approved by BHMA for ANSI 156.4, Grade 1
  2. UL10C certified
  3. Conform to ANSI 117.1
  4. Maximum 2-7/16 inch case projection with non-ferrous cover
  5. Separate adjusting valves for closing and latching speed, and backcheck
  6. Provide adapter plates, shim spacers and blade stop spacers as required by frame and door conditions
  7. Full rack and pinion type closer with 1-1/2" minimum bore
  8. Mount closers on non-public side of door, unless otherwise noted in specification
  9. Closers shall be non-handed, non-sized and multi-sized.
- G. Push Plates: Provide with four beveled edges ANSI J301, .050 thickness, size as indicated in hardware set. Furnish oval-head countersunk screws to match finish.
- H. Pulls with plates: Provide with four beveled edges ANSI J301, .050 thickness Plates with ANSI J401 Pull as listed in hardware set. Provide proper fasteners for door construction.
- I. Kickplates: Provide with four beveled edges ANSI J102, 10 inches high by width less 2 inches on single doors and 1 inch on pairs of doors. Furnish oval-head countersunk screws to match finish.
- J. Mop plates: Provide with four beveled edges ANSI J103, 6 inches high by width less 1 inch on single doors and 1 inch on pairs of doors. Furnish oval-head countersunk screws to match finish.
- K. Weather stripping: Provide at head and jambs only those units where resilient or flexible seal strip is easily replaceable. Where bar-type weather strip is used with parallel arm mounted closers install weather-strip first.
1. Weather strip shall be resilient seal of (Neoprene, Polyurethane, Vinyl, Pile, Nylon Brush, Silicone)
  2. UL10C Positive Pressure rated seal set when required.
- L. Door Bottoms/Sweeps: Surface mounted or concealed door bottom where listed in the hardware sets.
1. Door seal shall be resilient seal of (Neoprene, Polyurethane, Nylon Brush, Silicone)
  2. UL10C Positive Pressure rated seal set when required.
- M. Thresholds: Thresholds shall be aluminum beveled type with maximum height of 1/2" for conformance with ADA requirements. Furnish as specified and per details. Provide fasteners and screws suitable for floor conditions.
- N. Silencers: Furnish silencers on all interior frames; 3 for single doors, 2 for pairs.

### **PART 3 - EXECUTION**

#### **3.1 EXAMINATION**

- A. Verification of conditions: Examine doors, frames, related items and conditions under which Work is to be performed and identify conditions detrimental to proper and or timely completion.
1. Do not proceed until unsatisfactory conditions have been corrected.

#### **3.2 HARDWARE LOCATIONS:**

- A. Mount hardware units at heights indicated in the following publications except as specifically indicated or required to comply with the governing regulations.
1. Recommended Locations for Builder's Hardware for Standard Steel Doors and Frames, by the Door and Hardware Institute (DHI).
  2. Recommended locations for Architectural Hardware for flush wood doors (DHI).
  3. WDMA Industry Standard I.S.-1A-04, Industry Standard for Architectural wood flush doors.

#### **3.3 INSTALLATION:**

- A. Install each hardware item per manufacturer's instructions and recommendations. Do not install surface mounted items until finishes have been completed on the substrate. Set units level, plumb and true to line and location. Adjust and reinforce the attachment substrate as necessary for proper installation and operation.
- B. Conform to local governing agency security ordinance.
- C. Install conforming to ICC/ANSI A117.1 Accessible and Usable Building and Facilities.
1. Adjust door closer sweep periods so that from the open position of 70 degrees, the door will take at least 3 seconds to move to a point 3 inches from the latch, measured to the landing side of the door.
- D. Installed hardware using the manufacturers fasteners provided. Drill and tap all screw holes located in metallic materials. Do not use "Riv-Nuts" or similar products.

#### **3.4 FIELD QUALITY CONTROL AND FINAL ADJUSTMENT**

- A. Contractor/Installers, Field Services: After installation is complete, contractor shall inspect the completed door openings on site to verify installation of hardware is complete and properly adjusted, in accordance with both the Contract Documents and final shop drawings.
1. Check and adjust closers to ensure proper operation.
  2. Check latch set, lockset, and exit devices are properly installed and adjusted to ensure proper operation.
    - a. Verify levers are free from binding.
    - b. Ensure latch bolts and dead bolts are engaged into strike and hardware is functioning.
  3. Report findings, in writing, to architect indicating that all hardware is installed and functioning properly. Include recommendations outlining corrective actions for improperly functioning hardware if required.

#### **SCHEDULE OF FINISH HARDWARE:**

DOOR HARDWARE

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### Manufacturer List

<u>Code</u>	<u>Name</u>
AB	ABH Manufacturing Inc.
BE	Best Access Systems
BY	By Others
NA	National Guard Products
PR	Precision
SD	Stanley Door Closers
ST	Stanley
TR	Trimco

### Option List

<u>Code</u>	<u>Description</u>
HC	Hurricane Code Device
LD	Less Dogging
SN	Sex Nuts (Pkg. of 4)
ALK	ALARM, BATTERY OPERATED
CSK	COUNTER SINKING OF KICK and MOP PLATES
NCA-03	Cylinder Attachment Kit
P45-180D	Drop Plate for Narrow Top Rail
B4E	BEVELED 4 EDGES – KICK / MOP PLATES

### Finish List

<u>Code</u>	<u>Description</u>
AL	Aluminum
600	Primed for Painting
626	Satin Chromium Plated
630	Satin Stainless Steel
689	Aluminum Painted
GREY	Grey
626AM	Satin Chrome - Antimicrobial Coating
630AM	Satin Stainless - Antimicrobial Coating
US26D	Chromium Plated, Dull
US32D	Stainless Steel, Dull

### Hardware Sets

#### SET #01 - Aluminum Storefront (Vestibule Pairs)

Doors: V001, V002



2 Rim or Mort. Cyl. as req'd.	1E-74 PATD or 12E-72 PATD	626	BE
2 Door Closer	CLD-4551 CS P45-180D SN	689	SD
1 Card Reader	Provided by Security Contractor		BY
	NOTE: At V00-2 only		
2 Door Position Switch	Provided by Security Contractor		BY
	NOTE: At V00-2 only		
1 Threshold	As Detailed		BY

NOTE: Provide Rim or Mortise Cylinders as required and door closers. Balance of approved hardware provided by Aluminum Door and Frame Supplier. At Door V00-2 (interior vestibule doors), presenting valid credential to wall mounted proximity reader temporarily retracts electrified exit device latch bolt on the active leaf to allow entry. Recessed Door Position Switches monitor door status. Request-to-Exit Switches are internal to the exit devices and, when activated upon egress, signal access control system for authorized exiting. Free egress is always possible through either leaf. Exit devices on exterior pair, V00-1, are mechanical only with active trim and cylinder on active leaf.

**SET #02 - Aluminum Storefront (Int./Single)**

Doors: 04-1, 05-1

1 Continuous Hinge	661HD UL 80"	AL	ST
1 Exit Device	2408 X 2908D NCA-03	630AM	PR
1 Rim Cylinder	12E-72 PATD	626	BE
1 Door Closer	CLD-4551 CS P45-180D SN	689	SD
1 Gasketing	5050 B @ head & jambs		NA

**SET #03 - Louvered Mech. Closet Door**

Doors: 01C-1, 02C-1

6 Hinges	FBB191 4 1/2 X 4 1/2 NRP	US32D	ST
1 Set Flush Bolts	1857P	US32D	AB
1 Dust Proof Strike	1870	US32D	AB
1 Lockset	45H-7D14R PATD	630	BE
2 Mop Plate	KM050 6" X 1" LDW B4E CSK	630	TR
1 Wall Bumper	1270CX	626	TR
1 Meeting Stile Astragal	9600 A (SET) x Door Height		NA
1 Saddle Threshold	425	AL	NA
2 Door Silencers	1229A	GREY	TR

**SET #04 - Sauna**

Doors: 01B-1, 02B-1

NOTE: Door and hardware provided by Sauna Supplier.

**SET #05 - Exterior Pair / Exit Only + Alarm**

Doors: 00A-1

6 Hinges	FBB199 4 1/2 X 4 1/2 NRP	US32D	ST
1 Removable Mullion	HCKR822	600	PR

2 Exit Device w/ Alarm	HC 2101 ALK LD	630AM	PR
2 Mortise Cylinder (Alarm)	1E-74 PATD	626	BE
1 Rim Cylinder (Mullion)	12E-72 PATD	626	BE
2 Door Closer	CLD-4550 CS	689	SD
2 Kick Plate	K0050 10" X 2" LDW B4E CSK	630	TR
1 Gasketing	127 NA @ head & jambs		NA
1 Drip Cap	16 A x 4" ODW		NA
2 Door Sweep	C627 A		NA
1 Mullion Seal	5100N-86 86"		NA
1 Bumper Seal Threshold	896 N	AL	NA

NOTE: Alarm kit in exit devices are armed / disarmed by turning key in arming cylinder. When armed, depressing push pad will activate audible alarm which will sound until reset by key. Post related signage as required.

**SET #06 - Storage**

Doors: 04A-1, 05A-1

6 Hinges	FBB191 4 1/2 X 4 1/2 NRP	US32D	ST
1 Set Flush Bolts	1857P	US32D	AB
1 Dust Proof Strike	1870	US32D	AB
1 Lockset	45H-7D14R PATD	630	BE
2 Door Closer	CLD-4550 HS SN	689	SD
2 Kick Plate	K0050 10" X 1" LDW B4E CSK	630	TR
2 Mop Plate	KM050 6" X 1" LDW B4E CSK	630	TR
2 Door Silencers	1229A	GREY	TR

**SET #07 - Janitor**

Doors: 08-1

3 Hinges	FBB191 4 1/2 X 4 1/2 NRP	US32D	ST
1 Lockset	45H-7D14R PATD	630	BE
1 Door Closer	CLD-4551 STD W/PA BRKT SN	689	SD
1 Kick Plate	K0050 10" X 2" LDW B4E CSK	630	TR
1 Mop Plate	KM050 6" X 1" LDW B4E CSK	630	TR
1 Wall Bumper	1270CX	626	TR
3 Door Silencers	1229A	GREY	TR

**SET #08 - Janitor**

Doors: 09-1

3 Hinges	FBB191 4 1/2 X 4 1/2 NRP	US32D	ST
1 Lockset	45H-7D14R PATD	630	BE
	NOTE: Locked on Janitor Rm. side		
1 Door Closer	CLD-4551 STD W/PA BRKT	689	SD
1 Kick Plate	K0050 10" X 2" LDW B4E CSK	630	TR
1 Mop Plate	KM050 6" X 1" LDW B4E CSK	630	TR
1 Wall Bumper	1270CX	626	TR

3 Door Silencers	1229A	GREY	TR
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**SET #09 - A.V. / Data**

Doors: 06-1

3 Hinges	FBB191 4 1/2 X 4 1/2 NRP	US32D	ST
1 Lockset	45H-7D14R PATD	630	BE
1 Door Closer	CLD-4551 STD W/PA BRKT	689	SD
1 Kick Plate	K0050 10" X 2" LDW B4E CSK	630	TR
1 Wall Bumper	1270CX	626	TR
3 Door Silencers	1229A	GREY	TR

**SET #10 - Check In**

Doors: 00-1

3 Hinges	FBB179 4 1/2 X 4 1/2	US26D	ST
1 Lockset	45H-7A14R PATD	630	BE
1 Door Closer	CLD-4551 STD W/PA BRKT SN	689	SD
	NOTE: Mount closer on pull side		
1 Kick Plate	K0050 10" X 2" LDW B4E CSK	630	TR
1 Wall Bumper	1270CX	626	TR
1 Gasketing	5075 B @ Head & Jambs		NA

**SET #11 - Restrooms**

Doors: 01A-1, 02A-1

3 Hinges	FBB191 4 1/2 X 4 1/2 NRP	US32D	ST
1 Deadlock	8T3-7S PATD	630AM	BE
1 Push Plate	1809-4	630	TR
1 Door Pull	1194-4	630	TR
1 Door Closer	CLD-4551 STD W/PA BRKT SN	689	SD
	NOTE: Mount closer on pull side		
1 Kick Plate	K0050 10" X 2" LDW B4E CSK	630	TR
1 Mop Plate	KM050 6" X 1" LDW B4E CSK	630	TR
1 Wall Bumper	1270CX	626	TR
1 Gasketing	5075 B @ Head & Jambs		NA

NOTE: Deadbolt locked or unlocked with key in on outside cylinder. Thumb turn inside only retracts deadbolt if extended.

**SET #12 - Consult Office**

Doors: 03A-1

3 Hinges	FBB179 4 1/2 X 4 1/2 NRP	US26D	ST
1 Passage Set	45H-0N14R	626	BE
1 Wall Bumper	1270CX	626	TR

1 Gasketing 5075 B @ Head & Jambs NA

**SET #13 - Breakroom**

Doors: 03-1

3 Hinges	FBB191 4 1/2 X 4 1/2 NRP	US32D	ST
1 Lockset	45H-7R14R PATD	626AM	BE
1 Door Closer	CLD-4551 CS SN	689	SD
1 Kick Plate	K0050 10" X 2" LDW B4E CSK	630	TR
1 Mop Plate	KM050 6" X 1" LDW B4E CSK	630	TR
1 Door Sweep	C627 A		NA
1 Gasketing	5075 B @ Head & Jambs		NA

**Opening List**

<u>Opening</u>	<u>Hdw Set</u>
00-1	10
00A-1	05
01A-1	11
01B-1	04
01C-1	03
02A-1	11
02B-1	04
02C-1	03
03-1	13
03A-1	12
04-1	02
04A-1	06
05-1	02
05A-1	06
06-1	09
08-1	07
09-1	08
V001	01
V002	01

END OF SECTION 08 71 00

**SECTION 08 8000**  
**GLAZING**

**PART 1 GENERAL**

**1.01 SECTION INCLUDES**

- A. Insulating glass units.
- B. Hurricane resistant insulating glass units.
- C. Glazing units.
- D. Glazing compounds and accessories.

**1.02 RELATED REQUIREMENTS**

- A. Section 07 9200 - Joint Sealants: Sealants for other than glazing purposes.
- B. Section 08 1113 - Hollow Metal Doors and Frames: Glazed lites in doors and borrowed lites.
- C. Section 08 1416 - FLUSH WOOD DOORS: Glazed lites in doors.
- D. Section 08 4113.16 - Hurricane Resistant Aluminum Framed Entrances and Storefronts: Glazing furnished as part of hurricane resistant aluminum framed entrances and storefronts.
- E. Section 08 4313 - Aluminum-Framed Storefronts: Glazing furnished as part of storefront assembly.
- F. Section 08 5513.13 - Tornado Resistant Aluminum Window Systems: Glazing furnished as part of tornado resistant glazing system.
- G. Section 08 8300 - Mirrors.

**1.03 REFERENCE STANDARDS**

- A. 16 CFR 1201 - Safety Standard for Architectural Glazing Materials; current edition.
- B. ANSI Z97.1 - American National Standard for Safety Glazing Materials Used in Buildings - Safety Performance Specifications and Methods of Test; 2015.
- C. ASCE 7 - Minimum Design Loads and Associated Criteria for Buildings and Other Structures; 2016.
- D. ASTM C864 - Standard Specification for Dense Elastomeric Compression Seal Gaskets, Setting Blocks, and Spacers; 2005 (Reapproved 2015).
- E. ASTM C920 - Standard Specification for Elastomeric Joint Sealants; 2014a.
- F. ASTM C1036 - Standard Specification for Flat Glass; 2016.
- G. ASTM C1048 - Standard Specification for Heat-Strengthened and Fully Tempered Flat Glass; 2012.
- H. ASTM C1172 - Standard Specification for Laminated Architectural Flat Glass; 2014.
- I. ASTM C1193 - Standard Guide for Use of Joint Sealants; 2016.
- J. ASTM E1886 - Standard Test Method for Performance of Exterior Windows, Curtain Walls, Doors, and Impact Protective Systems Impacted by Missile(s) and Exposed to Cyclic Pressure Differentials; 2019.
- K. ASTM E1300 - Standard Practice for Determining Load Resistance of Glass in Buildings; 2016.
- L. ASTM E1996 - Standard Specification for Performance of Exterior Windows, Curtain Walls, Doors, and Impact Protective Systems Impacted by Windborne Debris in Hurricanes; 2017.
- M. ASTM E2190 - Standard Specification for Insulating Glass Unit Performance and Evaluation; 2010.
- N. GANA (GM) - GANA Glazing Manual; 2009.
- O. GANA (SM) - GANA Sealant Manual; 2008.
- P. ICC (IECC) - International Energy Conservation Code; 2012.

- Q. NFRC 100 - Procedure for Determining Fenestration Product U-factors; 2017.
- R. NFRC 200 - Procedure for Determining Fenestration Product Solar Heat Gain Coefficient and Visible Transmittance at Normal Incidence; 2014, with Errata (2017).
- S. NFRC 300 - Test Method for Determining the Solar Optical Properties of Glazing Materials and Systems; 2017.

#### **1.04 ADMINISTRATIVE REQUIREMENTS**

- A. Coordinate with the Work of Related sections as required to facilitate energy calculations required by ICC (IECC) including all exterior glazed assemblies.
- B. Coordinate with the Work of related sections to meet requirements of hurricane resistant tested assemblies proposed for inclusion as part of the Work.
  - 1. Insulated glazing units shall exactly match tested hurricane resistant storefront units proposed for the Work, including interlayer manufacturer, material and thickness.
- C. Preinstallation Meeting: Convene a preinstallation meeting one week before starting work of this section; require attendance by each of the affected installers.

#### **1.05 SUBMITTALS**

- A. See Section 01 3000 - Administrative Requirements, for submittal procedures.
- B. Product Data on Glazing Unit Glazing Types: Provide structural, physical and environmental characteristics, size limitations, special handling and installation requirements.
- C. Product Data on Glazing Compounds and Accessories: Provide chemical, functional, and environmental characteristics, limitations, special application requirements, and identify available colors.
- D. Samples: Submit two samples 12 by 12 inch in size of glass units.
- E. Samples: Submit two samples 12 by 12 inch in size of each color laminated glass units.
- F. Samples: Submit 8 inch long bead of glazing sealant, color as selected.
- G. Certificate: Certify that products of this section meet or exceed specified requirements.
- H. Warranty Documentation: Submit manufacturer warranty and ensure that forms have been completed in Owner's name and registered with manufacturer.

#### **1.06 QUALITY ASSURANCE**

- A. Perform Work in accordance with GANA (GM) and GANA (SM) for glazing installation methods.
- B. Manufacturer Qualifications: Company specializing in manufacturing the products specified in this section with minimum five years of documented experience.
- C. Installer Qualifications: Company specializing in performing work of the type specified and with at least five years documented experience and approved by manufacturer.

#### **1.07 FIELD CONDITIONS**

- A. Do not install glazing when ambient temperature is less than 40 degrees F.
- B. Maintain minimum ambient temperature before, during and 24 hours after installation of glazing compounds.

#### **1.08 WARRANTY**

- A. See Section 01 7800 - Closeout Submittals, for additional warranty requirements.
- B. Insulating Glass Units: Provide a ten (10) year manufacturer warranty to include coverage for seal failure, interpane dusting or misting, including providing products to replace failed units.
- C. Laminated Glass: Provide a five (5) year manufacturer warranty to include coverage for delamination, including providing products to replace failed units.

## **PART 2 PRODUCTS**

### **2.01 MANUFACTURERS**

- A. Float Glass Manufacturers:
  - 1. AGC Glass Company North America, Inc: [www.us.agc.com](http://www.us.agc.com).
  - 2. Cardinal Glass Industries: [www.cardinalcorp.com](http://www.cardinalcorp.com).
  - 3. Guardian Glass, LLC: [www.guardianglass.com](http://www.guardianglass.com).
  - 4. Pilkington North America Inc: [www.pilkington.com/na](http://www.pilkington.com/na).
  - 5. Vitro Architectural Glass: [www.vitroglazings.com](http://www.vitroglazings.com).
  - 6. Substitutions: Refer to Section 01 6000 - Product Requirements.
- B. Laminated Glass Manufacturers:
  - 1. Cardinal Glass Industries: [www.cardinalcorp.com/#sle](http://www.cardinalcorp.com/#sle).
  - 2. Viracon, Architectural Glass segment of Apogee Enterprises, Inc: [www.viracon.com/#sle](http://www.viracon.com/#sle).
  - 3. Substitutions: Refer to Section 01 6000 - Product Requirements.
- C. Etched Glass Manufacturers:
  - 1. AGC Glass North America, Inc; Matelux: [www.agcglass.com/#sle](http://www.agcglass.com/#sle).
  - 2. GGI - General Glass International; Satin Etched: [www.generalglass.com/#sle](http://www.generalglass.com/#sle).
  - 3. Substitutions: Refer to Section 01 6000 - Product Requirements.

### **2.02 PERFORMANCE REQUIREMENTS - EXTERIOR GLAZING ASSEMBLIES**

- A. Provide type and thickness of exterior glazing assemblies to support assembly dead loads, and to withstand live loads caused by positive and negative wind pressure acting normal to plane of glass.
  - 1. Design Pressure: Calculated in accordance with ASCE 7 and locally adopted code..
  - 2. Comply with ASTM E1300 for design load resistance of glass type, thickness, dimensions, and maximum lateral deflection of supported glass.
  - 3. Seismic Loads: Design and size glazing components to withstand seismic loads and sway displacement in accordance with the requirements of ASCE 7.
  - 4. Provide glass edge support system sufficiently stiff to limit the lateral deflection of supported glass edges to less than 1/175 of their lengths under specified design load.
  - 5. Glass thicknesses listed are minimum.
- B. Vapor Retarder and Air Barrier Seals: Provide completed assemblies that maintain continuity of building enclosure vapor retarder and air barrier.
  - 1. In conjunction with vapor retarder and joint sealer materials described in other sections.
- C. Thermal and Optical Performance: Provide exterior glazing products with performance properties as indicated. Performance properties are in accordance with manufacturer's published data as determined with the following procedures and/or test methods:
  - 1. General: Provide glass products and assemblies in conformance with ICC (IECC), particularly Table C402.4 - Building Envelope Fenestration Maximum U-Factor and SHGC Requirements.
  - 2. Center of Glass U-Value: Comply with NFRC 100 using Lawrence Berkeley National Laboratory (LBNL) WINDOW 6.3 computer program.
  - 3. Center of Glass Solar Heat Gain Coefficient (SHGC): Comply with NFRC 200 using Lawrence Berkeley National Laboratory (LBNL) WINDOW 6.3 computer program.
  - 4. Solar Optical Properties: Comply with NFRC 300 test method.

### **2.03 GLASS MATERIALS**

- A. Float Glass: Provide float glass based glazing unless otherwise indicated.
  - 1. Kind HS - Heat-Strengthened Type: Complies with ASTM C1048.
  - 2. Kind FT - Fully Tempered Type: Complies with ASTM C1048.
  - 3. Fully Tempered Safety Glass: Complies with ANSI Z97.1 or 16 CFR 1201 criteria for safety glazing used in hazardous locations.

4. Impact Resistant Safety Glass: Complies with ANSI Z97.1 - Class A, or 16 CFR 1201 - Category II criteria.
  5. Tinted Type: ASTM C1036, Class 2 - Tinted, Quality - Q3, with color and performance characteristics as indicated.
  6. Thicknesses: As indicated; provide greater thickness as required for exterior glazing wind load design.
- B. Laminated Glass: Float glass laminated in accordance with ASTM C1172.
1. Comply with ASTM E1996
  2. Laminated Safety Glass: Complies with ANSI Z97.1 - Class B or 16 CFR 1201 - Category I impact test requirements.
  3. Polyvinyl Butyral (PVB) Interlayer: 0.075 inch thick, minimum.

#### **2.04 BASIS OF DESIGN - INSULATING GLASS UNITS**

- A. Basis of Design - Hurricane resistant Insulating Glass Units: Vision glazing, with Low-E coating, impact resistant.
1. Applications: Exterior insulating hurricane resistant glass glazing.
  2. Exactly match tested assemblies. See 08 4113.16.
  3. Space between lites filled with air.
  4. Total Thickness: 1-5/16 inch.
  5. Minimum Energy Performance.
    - a. Thermal Transmittance (U-Value), Winter - Center of Glass: 0.44, nominal.
    - b. Visible Light Transmittance (VLT): 50 percent, nominal.
    - c. Solar Heat Gain Coefficient (SHGC): 0.30, nominal.
    - d. Visible Light Reflectance, Outside: 8 percent, nominal.
  6. Glazing Method: Dry glazing method, tape and gasket spline.
  7. Durability: Certified by an independent testing agency to comply with ASTM E2190.
  8. Metal Edge Spacers: Aluminum, bent and soldered corners.
  9. Spacer Color: Black.
  10. Edge Seal:
    - a. Dual-Sealed System: Provide polyisobutylene sealant as primary seal applied between spacer and glass panes, and silicone, polysulfide, or polyurethane sealant as secondary seal applied around perimeter.
  11. Color: Black.
  12. Tests: In coordination with Section 08 4113.16 - Hurricane Resistant Entrances and Storefront, meet requirements of ASTM E1886 and ASTM E1996 and local code requirements. Where standard design is used, provide units exactly matching tested units including accessories and sealants.
  13. Basis of Design - Vitro Architectural Glass (formerly PPG Glass):  
[www.vitroglazings.com/#sle](http://www.vitroglazings.com/#sle).
    - a. Outboard Lite: Fully tempered float glass, 1/4 inch thick, minimum.
      - 1) Low-E Coating: Vitro Architectural Glass (formerly PPG Glass) Solarban 60 on #2 surface.
      - 2) Glass Tint: Optigray (Neutral warm light gray).
  14. Inboard Lite: Heat-strengthened laminated float glass, 1/4 inch thick each side of 0.090 interlayer.
    - a. Coating: No coating on inboard lite.
    - b. Glass: Clear.
  15. Other Manufacturers: Provide either the product identified as "Basis of Design" or an equivalent product of another acceptable manufacturer.
  16. Substitution Procedures: See Section 01 6000 - Product Requirements.
    - a. For any product not identified as "Basis of Design", submit information as specified for substitutions.



## 2.05 GLAZING UNITS

- A. Type G-1 - Monolithic Interior Vision Glazing:
  - 1. Applications: Interior glazing unless otherwise indicated.
  - 2. Glass Type: Fully tempered float glass.
  - 3. Tint: Clear.
  - 4. Thickness: 1/4 inch, nominal.
  - 5. Visible Light Transmittance (VLT): 89 percent, nominal.
  - 6. Solar Heat Gain Coefficient (SHGC): 0.82, nominal.
  - 7. Visible Light Reflectance, Outside: 8 percent, nominal.
  - 8. Glazing Method: Dry glazing method, gasket glazing.
- B. Type FG-1 - Etched Glass: Etched patterns on glass as full-coverage or discrete designs.
  - 1. Applications: As indicated on drawings.
  - 2. Glass Type: Monolithic; tempered safety glass; clear glass.
  - 3. Thickness: 0.197 inch, nominal.
  - 4. Pattern: Satin etched glass, 1 sided.
  - 5. Sheet Size: As indicated on drawings
  - 6. Clear Glass: Clear float glass
  - 7. Glazing Method: Dry glazing method, gasket glazing.
  - 8. Manufacturers:
    - a. AGC Glass North America, Inc; Matelux: [www.agcglass.com/#sle](http://www.agcglass.com/#sle).
    - b. GGI - General Glass International; Satin Etched Glass: [www.generalglass.com/#sle](http://www.generalglass.com/#sle).
    - c. Substitutions: Refer to Section 01 6000 - Product Requirements.

## 2.06 GLAZING COMPOUNDS

- A. Type GC-2 - Butyl Sealant: Single component; ASTM C920, Grade NS, Class 12-1/2, Uses M and A, Shore A hardness of 10 to 20; black color.
- B. Type GC-3 - Polysulfide Sealant: Two component; chemical curing, non-sagging type; ASTM C920, Type M, Grade NS, Class 25, Uses M, A, and G; with cured Shore A hardness range of 15 to 25; color as selected.
- C. Type GC-4 - Polyurethane Sealant: Single component, chemical curing, non-staining, non-bleeding; ASTM C920, Type S, Grade NS, Class 25, Uses M, A, and G; with cured Shore A hardness range of 20 to 35; color as selected.
- D. Type GC-5 - Silicone Sealant: Single component; neutral curing; capable of water immersion without loss of properties; non-bleeding, non-staining; ASTM C920, Type S, Grade NS, Class 25, Uses M, A, and G; with cured Shore A hardness range of 15 to 25; color as selected.
- E. Manufacturers:
  - 1. BASF Corporation: [www.basf.com/us/en.html/#sle](http://www.basf.com/us/en.html/#sle).
  - 2. Bostik Inc: [www.bostik-us.com](http://www.bostik-us.com).
  - 3. Dow Corning Corporation: [www.dowcorning.com/construction](http://www.dowcorning.com/construction).
  - 4. Momentive Performance Materials, Inc: [www.momentive.com](http://www.momentive.com).
  - 5. Pecora Corporation: [www.pecora.com](http://www.pecora.com).
  - 6. Tremco Commercial Sealants & Waterproofing: [www.tremcosealants.com/#sle](http://www.tremcosealants.com/#sle).
  - 7. Substitutions: Refer to Section 01 6000 - Product Requirements.

## 2.07 ACCESSORIES

- A. Setting Blocks: Silicone, with 80 to 90 Shore A durometer hardness; ASTM C864 Option II. Length of 0.1 inch for each square foot of glazing or minimum 4 inch by width of glazing rabbet space minus 1/16 inch by height to suit glazing method and pane weight and area.
- B. Spacer Shims: Neoprene, 50 to 60 Shore A durometer hardness; ASTM C864 Option II. Minimum 3 inch long by one half the height of the glazing stop by thickness to suit application, self adhesive on one face.

- C. Glazing Tape, Back Bedding Mastic Type: Preformed, butyl-based, 100 percent solids compound with integral resilient spacer rod applicable to application indicated; 5 to 30 cured Shore A durometer hardness; coiled on release paper; black color.
  - 1. Width: As required for application.
  - 2. Thickness: As required for application.
  - 3. Spacer Rod Diameter: As required for application.
  - 4. Manufacturers:
    - a. 3M United States: [www.3m.com](http://www.3m.com).
    - b. Lamatek: [www.lamatek.com](http://www.lamatek.com).
    - c. Pecora Corporation: [www.pecora.com](http://www.pecora.com).
    - d. Tremco Global Sealants: [www.tremcosealants.com](http://www.tremcosealants.com).
    - e. Substitutions: Refer to Section 01 6000 - Product Requirements.
- D. Glazing Splines: Resilient silicone extruded shape to suit glazing channel retaining slot; ASTM C864 Option II; color black.

### **PART 3 EXECUTION**

#### **3.01 INSTALLERS**

#### **3.02 VERIFICATION OF CONDITIONS**

- A. Verify that openings for glazing are correctly sized and within tolerances, including those for size, squareness, and offsets at corners.
- B. Verify that the minimum required face and edge clearances are being provided.
- C. Verify that surfaces of glazing channels or recesses are clean, free of obstructions that may impede moisture movement, weeps are clear, and support framing is ready to receive glazing system.
- D. Proceed with glazing system installation only after unsatisfactory conditions have been corrected.

#### **3.03 PREPARATION**

- A. Clean contact surfaces with appropriate solvent and wipe dry within maximum of 24 hours before glazing. Remove coatings that are not tightly bonded to substrates.
- B. Seal porous glazing channels or recesses with substrate compatible primer or sealer.
- C. Prime surfaces scheduled to receive sealant where required for proper sealant adhesion.

#### **3.04 INSTALLATION, GENERAL**

- A. Install glazing in compliance with written instructions of glass, gaskets, and other glazing material manufacturers, unless more stringent requirements are indicated, including those in glazing referenced standards.
- B. Install glazing sealants in accordance with ASTM C1193, GANA (SM), and manufacturer's instructions.
- C. Do not exceed edge pressures around perimeter of glass lites as stipulated by glass manufacturer.
- D. Set glass lites of system with uniform pattern, draw, bow, and similar characteristics.
- E. Set glass lites in proper orientation so that coatings face exterior or interior as indicated.
- F. Prevent glass from contact with any contaminating substances that may be the result of construction operations such as, and not limited to the following; weld splatter, fire-safing, plastering, mortar droppings, etc.

#### **3.05 INSTALLATION - DRY GLAZING METHOD (GASKET GLAZING)**

- A. Application - Exterior and/or Interior Glazed: Set glazing infills from either the exterior or the interior of the building.
- B. Place setting blocks at 1/4 points with edge block no more than 6 inch from corners.

- C. Rest glazing on setting blocks and push against fixed stop with sufficient pressure on gasket to attain full contact.
- D. Install removable stops without displacing glazing gasket; exert pressure for full continuous contact.

**3.06 INSTALLATION - DRY GLAZING METHOD (TAPE AND GASKET SPLINE GLAZING)**

- A. Application - Exterior Glazed: Set glazing infills from the exterior of the building.
- B. Cut glazing tape to length; install on glazing pane. Seal corners by butting tape and sealing junctions with butyl sealant.
- C. Place setting blocks at 1/4 points with edge block no more than 6 inch from corners.
- D. Rest glazing on setting blocks and push against fixed stop with sufficient pressure to attain full contact.
- E. Install removable stops without displacing glazing spline. Exert pressure for full continuous contact.
- F. Carefully trim protruding tape with knife.

**3.07 FIELD QUALITY CONTROL**

- A. Glass and Glazing product manufacturers to provide field surveillance of the installation of their products.
- B. Monitor and report installation procedures and unacceptable conditions.

**3.08 CLEANING**

- A. Remove excess glazing materials from finish surfaces immediately after application using solvents or cleaners recommended by manufacturers.
- B. Remove non-permanent labels immediately after glazing installation is complete.
- C. Clean glass and adjacent surfaces after sealants are fully cured.
- D. Clean glass on both exposed surfaces not more than 4 days prior to Date of Substantial Completion in accordance with glass manufacturer's written recommendations.

**3.09 PROTECTION**

- A. After installation, mark pane with an 'X' by using removable plastic tape or paste; do not mark heat absorbing or reflective glass units.
- B. Remove and replace glass that is damaged during construction period prior to Date of Substantial Completion.

**END OF SECTION**

**SECTION 08 8300**  
**MIRRORS**

**PART 1 GENERAL**

**1.01 SECTION INCLUDES**

- A. Glass mirrors.
  - 1. Tempered safety glass.

**1.02 RELATED REQUIREMENTS**

- A. Section 10 2800 - Toilet, Bath, and Laundry Accessories: Metal framed mirrors.

**1.03 REFERENCE STANDARDS**

- A. Consumer Product Safety Commission: 16 CFR 1201 Category II.
- B. ANSI Z97.1 - American National Standard for Safety Glazing Materials Used in Buildings, Safety Performance Specifications and Methods of Test; 2010.
- C. 16 CFR 1201 - Safety Standard for Architectural Glazing Materials; current edition.
- D. ANSI Z97.1 - American National Standard for Safety Glazing Materials Used in Buildings - Safety Performance Specifications and Methods of Test; 2015.
- E. ASTM C920 - Standard Specification for Elastomeric Joint Sealants; 2014a.
- F. ASTM C1036 - Standard Specification for Flat Glass; 2016.
- G. ASTM C1048 - Standard Specification for Heat-Strengthened and Fully Tempered Flat Glass; 2012.
- H. ASTM C1193 - Standard Guide for Use of Joint Sealants; 2016.
- I. ASTM C1503 - Standard Specification for Silvered Flat Glass Mirror; 2008 (Reapproved 2013).
- J. GANA (GM) - GANA Glazing Manual; 2009.
- K. GANA (SM) - GANA Sealant Manual; 2008.
- L. GANA (TIPS) - Mirrors: Handle with Extreme Care (Tips for the Professional on the Care and Handling of Mirrors); 2011.

**1.04 SUBMITTALS**

- A. See Section 01 3000 - Administrative Requirements, for submittal procedures.
- B. Product Data on Mirror Types: Submit structural, physical and environmental characteristics, size limitations, special handling and installation requirements.
- C. Product Data on Glazing Compounds: Submit chemical, functional, and environmental characteristics, limitations, special application requirements, and identify available colors.
- D. Samples: Submit two samples, 12 by 12 inch in size, illustrating mirrors design, edging, and coloration.
- E. Manufacturer's Certificate: Certify that mirrors, meets or exceeds specified requirements.
- F. Warranty: Submit manufacturer warranty and ensure that forms have been completed in Owner's name and registered with manufacturer.

**1.05 QUALITY ASSURANCE**

- A. Perform Work in accordance with GANA (GM) and GANA (SM) for glazing installation methods.
- B. Fabricate, store, transport, receive, install, and clean mirrors in accordance with manufacturer's recommendations.
- C. Where required by code, comply with applicable provisions of 16 CFR 1201 and ANSI Z97.1.

**1.06 FIELD CONDITIONS**

- A. Do not install mirrors when ambient temperature is less than 50 degrees F.

- B. Maintain minimum ambient temperature before, during and 24 hours after installation of glazing compounds.

### **1.07 WARRANTY**

- A. See Section 01 7800 - Closeout Submittals, for additional warranty requirements.
- B. Provide five year manufacturer warranty for reflective coating on mirrors and replacement of same.

## **PART 2 PRODUCTS**

### **2.01 MANUFACTURERS**

- A. Mirrors:
  - 1. Binswanger Mirror/ACI Distribution: [www.binswangerglass.com](http://www.binswangerglass.com).
  - 2. Lenoir Mirror Co: [www.lenoirmirror.com](http://www.lenoirmirror.com).
  - 3. Trulite Glass and Aluminum Solutions: [www.trulite.com](http://www.trulite.com).
  - 4. Substitutions: See Section 01 6000 - Product Requirements.

### **2.02 MATERIALS**

- A. Mirror Design Criteria: Select materials and/or provide supports as required to limit mirror material deflection to 1/200, or to the flexure limit of glass, with full recovery of glazing materials, whichever is less.
- B. Where required by code, provide tempered glass. Provide shatter resistant vinyl backing sheet in lieu of tempered glass with approval of Authority Having Jurisdiction; Cat. II (400 lb.) impact resistance rating.
- C. Mirror Glass: Clear, tempered safety glass; ASTM C1048, with copper and silver coatings, and protective overcoating.
  - 1. Thickness: Minimum 1/4 inch.
  - 2. Edges: Flat polish.
  - 3. Size: As indicated on drawings.
- D. Mirror Glass: ASTM C1036, Type 1 - Transparent Flat, Class 1 - Clear, Quality - Q1 (high-quality mirrors); silvering, protective coating, and quality requirements in compliance with ASTM C1503.
  - 1. Thickness: 1/4 inch.
  - 2. Size: As indicated on drawings.

### **2.03 GLAZING COMPOUNDS**

- A. Polyurethane Sealant: ASTM C920, Type S, Grade NS, Class 25, Uses M and A; single component, chemical curing, non-staining, non-bleeding, Shore A Hardness Range 20 to 35; color as selected.
- B. Silicone Sealant: ASTM C920, Type S, Grade NS, Class 25, Uses M and A; single component; chemical or solvent curing; non-bleeding, non-staining, cured Shore A hardness of 15 to 25; color as selected.

### **2.04 ACCESSORIES**

- A. Mirror Attachment Accessories: Stainless steel clips.
- B. Mirror Adhesive: Silicone pre-polymer based, chemically compatible with mirror coating and wall substrate.

## **PART 3 EXECUTION**

### **3.01 EXAMINATION**

- A. Verify that openings for mirrored glazing are correctly sized and within tolerance.
- B. Verify that surfaces of mirror frames or recesses are clean, free of obstructions, and ready for installation of mirrors.

### **3.02 PREPARATION**

- A. Clean contact surfaces with solvent and wipe dry.
- B. Seal porous mirror frames or recesses with substrate compatible primer or sealer. Prime surfaces scheduled to receive sealant.
- C. Prepare installation in accordance with ASTM C1193 for solvent release sealants, and install sealant in accordance with manufacturer's instructions.

### **3.03 INSTALLATION**

- A. Install mirrors in accordance with manufacturer's recommendations.
- B. Set mirrors plumb and level, and free of optical distortion.
- C. Set mirrors with edge clearance free of surrounding construction including countertops or backsplashes.
- D. Frameless Mirrors: Set mirrors in proper place with adhesive, applied in accordance with adhesive manufacturer's instructions. In addition provide 4 clips per mirror panel, anchoring rigidly to wall construction.

### **3.04 CLEANING**

- A. Remove wet glazing materials from finish surfaces.
- B. Remove labels after work is complete.
- C. Clean mirrors and adjacent surfaces.

**END OF SECTION**

**SECTION 09 2116**  
**GYPSUM BOARD ASSEMBLIES**

**PART 1 GENERAL**

**1.01 SECTION INCLUDES**

- A. Performance criteria for gypsum board assemblies.
- B. Metal stud wall framing.
- C. Metal channel ceiling framing.
- D. Gypsum wallboard.
- E. Joint treatment and accessories.

**1.02 RELATED REQUIREMENTS**

- A. Section 06 1000 - Rough Carpentry: Wood blocking product and execution requirements.
- B. Section 07 2100 - THERMAL INSULATION: Acoustic insulation.
- C. Section 07 2500 - Weather Barriers: Water-resistive barrier over sheathing.
- D. Section 07 8400 - Firestopping: Top-of-wall assemblies at fire rated walls.
- E. Section 07 9005 - Joint Sealers: Acoustic sealant.
- F. Section 09 2216 - Non-Structural Metal Framing.
- G. Section 09 3000 - Tiling: Tile backing board.
- H. Section 09 8100 - Acoustical Insulation.

**1.03 REFERENCE STANDARDS**

- A. AISI S100-12 - North American Specification for the Design of Cold-Formed Steel Structural Members; 2012.
- B. ASTM A36/A36M - Standard Specification for Carbon Structural Steel; 2014.
- C. ASTM A653/A653M - Standard Specification for Steel Sheet, Zinc-Coated (Galvanized) or Zinc-Iron Alloy-Coated (Galvannealed) by the Hot-Dip Process; 2018.
- D. ASTM A1003/A1003M - Standard Specification for Steel Sheet, Carbon, Metallic- and Nonmetallic-Coated for Cold-Formed Framing Members; 2015.
- E. ASTM C645 - Standard Specification for Nonstructural Steel Framing Members; 2014, with Editorial Revision (2015).
- F. ASTM C754 - Standard Specification for Installation of Steel Framing Members to Receive Screw-Attached Gypsum Panel Products; 2017.
- G. ASTM C840 - Standard Specification for Application and Finishing of Gypsum Board; 2018b.
- H. ASTM C954 - Standard Specification for Steel Drill Screws for the Application of Gypsum Panel Products or Metal Plaster Bases to Steel Studs From 0.033 in. (0.84 mm) to 0.112 in. (2.84 mm) in Thickness; 2015.
- I. ASTM C1002 - Standard Specification for Steel Self-Piercing Tapping Screws for Application of Gypsum Panel Products or Metal Plaster Bases to Wood Studs or Steel Studs; 2016.
- J. ASTM C1047 - Standard Specification for Accessories For Gypsum Wallboard and Gypsum Veneer Base; 2014a.
- K. ASTM C1278/C1278M - Standard Specification for Fiber-Reinforced Gypsum Panel; 2017.
- L. ASTM C1396/C1396M - Standard Specification for Gypsum Board; 2017.
- M. ASTM C1629/C1629M - Standard Classification for Abuse-Resistant Nondecorated Interior Gypsum Panel Products and Fiber-Reinforced Cement Panels; 2018a.
- N. ASTM C1658/C1658M - Standard Specification for Glass Mat Gypsum Panels; 2018.

- O. ASTM D3273 - Standard Test Method for Resistance to Growth of Mold on the Surface of Interior Coatings in an Environmental Chamber; 2016.
- P. GA-216 - Application and Finishing of Gypsum Panel Products; 2016.
- Q. GA-226 - Application of Gypsum Board to Form Curved Surfaces; Gypsum Association; 2016.
- R. GA-600 - Fire Resistance Design Manual; 2015.
- S. ICC (IBC) - International Building Code; 2015.
- T. UL (FRD) - Fire Resistance Directory; Current Edition.

#### **1.04 SUBMITTALS**

- A. See Section 01 3000 - Administrative Requirements, for submittal procedures.
- B. Shop Drawings: Indicate special details associated with fireproofing and acoustic seals.
- C. Product Data: Provide data on metal framing, gypsum board, glass mat faced gypsum board, accessories, joint finishing system, and shaftwall systems.
- D. Product Data: Provide manufacturer's data on partition head to structure connectors, showing compliance with requirements.
- E. Test Reports: For stud framing products that do not comply with ASTM C645 or ASTM C754, provide independent laboratory reports showing maximum stud heights at required spacings and deflections.

#### **1.05 QUALITY ASSURANCE**

- A. Installer Qualifications: Company specializing in performing gypsum board installation and finishing, with minimum five years of experience.

### **PART 2 PRODUCTS**

#### **2.01 GYPSUM BOARD ASSEMBLIES**

- A. Provide completed assemblies complying with ASTM C840 and GA-216.
  - 1. See PART 3 for finishing requirements.
- B. Fire Rated Assemblies: Provide completed assemblies complying with applicable code.
  - 1. ICC IBC Item Numbers: Comply with applicable requirements of ICC IBC for the particular assembly.
  - 2. Gypsum Association File Numbers: Comply with requirements of GA-600 for the particular assembly.
  - 3. UL Assembly Numbers: Provide construction equivalent to that listed for the particular assembly in the current UL (FRD).

#### **2.02 METAL FRAMING MATERIALS**

- A. Manufacturers - Metal Framing, Connectors, and Accessories:
  - 1. Clarkwestern Dietrich Building Systems LLC: [www.clarkdietrich.com/#sle](http://www.clarkdietrich.com/#sle).
  - 2. Jaimes Industries: [www.jaimesind.com/#sle](http://www.jaimesind.com/#sle).
  - 3. Marino: [www.marinoware.com/#sle](http://www.marinoware.com/#sle).
  - 4. Phillips Manufacturing Co: [www.phillipsmfg.com/#sle](http://www.phillipsmfg.com/#sle).
  - 5. Steel Construction Systems: [www.steelconsystems.com/#sle](http://www.steelconsystems.com/#sle).
  - 6. Substitutions: See Section 01 6000 - Product Requirements.
- B. Structural Steel Framing for Application of Gypsum Board: As specified in Section 05 4000.
- C. Non-structural Framing System Components: ASTM C645; galvanized sheet steel, of size and properties necessary to comply with ASTM C754 for the spacing indicated, with maximum deflection of wall framing of L/120 at 5 psf.
  - 1. Studs: "C" shaped with knurled or embossed faces.
  - 2. Runners: U shaped, sized to match studs.
  - 3. Ceiling Channels: C-shaped.
  - 4. Furring Members: Hat-shaped sections, minimum depth of 7/8 inch.



5. Resilient Furring Channels: Single or double leg configuration; 1/2 inch channel depth.
  - a. Products:
    - 1) Same manufacturer as other framing materials.
- D. Partition Head to Structure Connections: Provide mechanical anchorage devices that accommodate deflection using slotted holes, screws and anti-friction bushings, preventing rotation of studs while maintaining structural performance of partition.
  1. Structural Performance: Maintain lateral load resistance and vertical movement capacity required by applicable code, when evaluated in accordance with AISI S100-12.
  2. Material: ASTM A653/A653M steel sheet, SS Grade 50/340, with G60/Z180 hot dipped galvanized coating.
  3. Provide components UL-listed for use in UL-listed fire-rated head of partition joint systems indicated on drawings.
  4. Provide mechanical anchorage devices as described above that accommodate deflection while maintaining the fire-rating of the wall assembly.
    - a. Products:
      - 1) ClarkDietrich; BlazeFrame RipTrak: [www.clarkdietrich.com/#sle](http://www.clarkdietrich.com/#sle).
      - 2) FireTrak Corporation; Posi Klip.
      - 3) Metal-Lite, Inc; The System.
      - 4) Super Stud Building Products, Inc; Slotted Deflection Track: [www.buysuperstud.com/#sle](http://www.buysuperstud.com/#sle).
      - 5) Substitutions: See Section 01 6000 - Product Requirements.
  5. Provide top track preassembled with connection devices spaced to fit stud spacing indicated on drawings; minimum track length of 12 feet.
- E. Non-structural Framing Accessories:
  1. Ceiling Hangers: Type and size as specified in ASTM C754 for spacing required.
  2. Partial Height Wall Framing Support: Provides stud reinforcement and anchored connection to floor.
    - a. Materials: ASTM A36/A36M formed sheet steel support member with factory-welded ASTM A1003/A1003M steel plate base.
  3. Framing Connectors: ASTM A653/A653M G90 galvanized steel clips; secures cold rolled channel to wall studs for lateral bracing.
- F. Grid Suspension Systems: Steel grid system of main tees and support bars connected to structure using hanging wire.
  1. Products:
    - a. USG Corporation; Drywall Suspension System: [www.usg.com/#sle](http://www.usg.com/#sle).
    - b. Substitutions: See Section 01 6000 - Product Requirements.

### 2.03 BOARD MATERIALS

- A. Manufacturers - Gypsum-Based Board:
  1. American Gypsum Company: [www.americangypsum.com](http://www.americangypsum.com).
  2. CertainTeed Corporation: [www.certainteed.com](http://www.certainteed.com).
  3. Georgia-Pacific Gypsum: [www.gpgypsum.com](http://www.gpgypsum.com).
  4. Lafarge North America Inc: [www.lafargenorthamerica.com](http://www.lafargenorthamerica.com).
  5. National Gypsum Company: [www.nationalgypsum.com/#sle](http://www.nationalgypsum.com/#sle).
  6. PABCO Gypsum: [www.pabcogypsum.com](http://www.pabcogypsum.com).
  7. Temple-Inland Building Product by Georgia-Pacific, LLC: [www.temple.com](http://www.temple.com).
  8. USG Corporation: [www.usg.com](http://www.usg.com).
  9. Substitutions: See Section 01 6000 - Product Requirements.
- B. Gypsum Wallboard: Paper-faced gypsum panels as defined in ASTM C1396/C1396M; sizes to minimize joints in place; ends square cut.
  1. Application: Use for vertical surfaces and ceilings, unless otherwise indicated.
  2. Glass mat faced gypsum panels as defined in ASTM C1658/C1658M, suitable for paint finish, of the same core type and thickness may be substituted for paper-faced board.

3. Unfaced fiber-reinforced gypsum panels as defined in ASTM C1278/C1278M, suitable for paint finish, of the same core type and thickness may be substituted for paper-faced board.
4. Mold Resistance: Score of 10, when tested in accordance with ASTM D3273.
  - a. Mold-resistant board is required whenever board is being installed before the building is enclosed and conditioned.
5. At Assemblies Indicated with Fire-Rating: Use type required by indicated tested assembly; if no tested assembly is indicated, use Type X board, UL or WH listed.
6. Thickness:
  - a. Ceilings: 1/2 inch.
  - b. Multi-Layer Assemblies: Thicknesses as indicated on drawings.
7. Mold Resistant Paper Faced Products:
  - a. American Gypsum Company; M-Bloc.
  - b. American Gypsum Company; M-Bloc Type X.
  - c. CertainTeed Corporation; ProRoc Brand Moisture & Mold Resistant Gypsum Board.
  - d. Georgia-Pacific Gypsum; ToughRock Mold-Guard.
  - e. National Gypsum Company; Gold Bond XP Gypsum Board.
  - f. Lafarge North America Inc; Mold Defense Drywall.
  - g. Lafarge North America Inc; Protecta AR 100 Type X with Mold Defense.
  - h. National Gypsum Company; Gold Bond Brand XP Gypsum Board.
  - i. National Gypsum Company; Gold Bond Hi-Abuse Brand XP Wallboard.
  - j. Temple-Inland Building Product by Georgia-Pacific, LLC; ComfortGuard Mold Resistant Gypsum Board.
  - k. Temple-Inland Building Product by Georgia-Pacific, LLC; ComfortGuard AR Abuse Resistant.
  - l. USG Corporation; Sheetrock Brand Mold Tough Gypsum Panels.
  - m. USG Corporation; Sheetrock Brand Mold Tough Gypsum Panels AR.
8. Glass Mat Faced Products:
  - a. Georgia-Pacific Gypsum; DensArmor Plus.
  - b. Temple-Inland Building Product by Georgia-Pacific, LLC; GreenGlass Interior Gypsum Board.
  - c. National Gypsum Company; Gold Bond eXP Fire-Shield Interior Extreme Gypsum Panel.
  - d. Substitutions: See Section 01 6000 - Product Requirements.
9. Unfaced Products:
  - a. USG Corporation; Fiberock Aqua-Tough Interior Panels.
  - b. Substitutions: See Section 01 6000 - Product Requirements.
- C. Impact Resistant Wallboard:
  1. Application: High-traffic areas indicated.
  2. Surface Abrasion: Level 3, minimum, when tested in accordance with ASTM C1629/C1629M.
  3. Indentation: Level 1, minimum, when tested in accordance with ASTM C1629/C1629M.
  4. Soft Body Impact: Level 3, minimum, when tested in accordance with ASTM C1629/C1629M.
  5. Hard Body Impact: Level 2, minimum, when tested in accordance with ASTM C1629/C1629M.
  6. Mold Resistance: Score of 10, when tested in accordance with ASTM D3273.
  7. Glass Mat-Faced Type: Gypsum wallboard as defined in ASTM C1658/C1658M.
  8. Type: Fire resistance rated Type X, UL or WH listed.
  9. Thickness: 5/8 inch.
  10. Edges: Tapered.
  11. Paper-Faced Products:
    - a. American Gypsum Company; M-Bloc IR Type X.

- b. CertainTeed Corporation; Extreme Impact Resistant Drywall with M2Tech.
  - c. Continental Building Products; Protecta HIR 300 Type X with Mold Defense.
  - d. National Gypsum Company; Gold Bond Hi-Impact XP Gypsum Board.
  - e. Substitutions: See Section 01 6000 - Product Requirements.
12. Glass Mat Faced Products:
- a. Georgia-Pacific Gypsum; DensArmor Plus Impact-Resistant.
  - b. National Gypsum Company; Gold Bond eXP Interior Extreme IR Gypsum Panel.
  - c. Substitutions: See Section 01 6000 - Product Requirements.
- D. Backing Board For Non-Wet Areas: Water-resistant gypsum backing board as defined in ASTM C1396/C1396M; sizes to minimum joints in place; ends square cut.
- 1. Application: Vertical surfaces behind thinset tile, except in wet areas.
  - 2. Mold Resistance: Score of 10, when tested in accordance with ASTM D3273.
  - 3. At Assemblies Indicated with Fire-Rating: Use type required by indicated tested assembly; if no tested assembly is indicated, use Type X board, UL or WH listed.
  - 4. Type: Regular and Type X, in locations indicated.
  - 5. Type X Thickness: 5/8 inch.
  - 6. Regular Board Thickness: 5/8 inch.
  - 7. Edges: Tapered.
  - 8. Products:
    - a. American Gypsum Company; M-Bloc.
    - b. CertainTeed Corporation; ProRoc Brand Moisture & Mold Resistant Gypsum Board.
    - c. Georgia-Pacific Gypsum; DensShield Tile Backer.
    - d. Lafarge North America Inc; Mold Defense Drywall.
    - e. National Gypsum Company; Gold Bond Brand XP Gypsum Board.
    - f. Temple-Inland Building Product by Georgia-Pacific, LLC; ComfortGuard WR.
    - g. USG Corporation; Sheetrock Brand Mold Tough Gypsum Panels.
- E. Ceiling Board: Special sag resistant gypsum ceiling board as defined in ASTM C1396/C1396M; sizes to minimize joints in place; ends square cut.
- 1. Application: Ceilings, unless otherwise indicated.
  - 2. Thickness: 1/2 inch.
  - 3. Edges: Tapered.
  - 4. Products:
    - a. American Gypsum; Interior Ceiling Board.
    - b. CertainTeed Corporation; ProRoc Interior Ceiling.
    - c. Georgia-Pacific Gypsum; ToughRock Span 24 Ceiling Board.
    - d. Lafarge North America Inc; Sagcheck.
    - e. National Gypsum Company; High Strength Brand Ceiling Board.
    - f. Temple-Inland Building Products by Georgia-Pacific, LLC; Span24 Ceiling Board.
    - g. USG Corporation; Sheetrock Brand Sag-Resistant Interior Gypsum Ceiling Board.
    - h. Substitutions: See Section 01 6000 - Product Requirements.

#### **2.04 GYPSUM WALLBOARD ACCESSORIES**

- A. Acoustic Insulation: As specified in Section 07 2100.
- B. Water-Resistive Barrier: As specified in Section 07 2500.
- C. Finishing Accessories: ASTM C1047, galvanized steel or rolled zinc, unless noted otherwise.
  - 1. Types: As detailed or required for finished appearance.
  - 2. Special Shapes: In addition to conventional corner bead and control joints, provide U-bead at exposed panel edges.
  - 3. Products:
    - a. Same manufacturer as framing materials.
    - b. Substitutions: See Section 01 6000 - Product Requirements.

- D. Beads, Joint Accessories, and Other Trim: ASTM C1047, rigid plastic, galvanized steel, or rolled zinc, unless noted otherwise.
  - 1. Expansion Joints:
    - a. Type: V-shaped metal with factory-installed protective tape.
- E. Finishing Compound: Surface coat and primer, takes the place of skim coating.
  - 1. Products:
    - a. CertainTeed Corporation; Quick Prep Plus Interior Prep Coat: [www.certainteed.com/#sle](http://www.certainteed.com/#sle).
    - b. Substitutions: See Section 01 6000 - Product Requirements.
- F. High Build Drywall Surfer: Vinyl acrylic latex-based coating for spray application, designed to take the place of skim coating and separate paint primer in achieving Level 5 finish.
  - 1. Products:
    - a. PPG; Speedhide MaxBuild High Build Drywall Surfer: [www.ppg.com](http://www.ppg.com).
    - b. Sherwin Williams; PrepRite High Build Interior Latex Primer/Surfer B28W601: [www.sherwin-williams.com](http://www.sherwin-williams.com)
    - c. Masterchem Industries LLC; Kilz High Build Primer: [www.kilz.com](http://www.kilz.com).
- G. Screws for Fastening of Gypsum Panel Products to Cold-Formed Steel Studs Less than 0.033 inch in Thickness and Wood Members: ASTM C1002; self-piercing tapping screws, corrosion resistant.
- H. Screws for Fastening of Gypsum Panel Products to Steel Members from 0.033 to 0.112 inch in Thickness: ASTM C954; steel drill screws, corrosion resistant.
- I. Anchorage to Substrate: Tie wire, nails, screws, and other metal supports, of type and size to suit application; to rigidly secure materials in place.

### **PART 3 EXECUTION**

#### **3.01 EXAMINATION**

- A. Verify that project conditions are appropriate for work of this section to commence.

#### **3.02 FRAMING INSTALLATION**

- A. Metal Framing: Install in accordance with ASTM C754 and manufacturer's instructions.
- B. Suspended Ceilings and Soffits: Space framing and furring members as indicated.
  - 1. Level ceiling system to a tolerance of 1/1200.
  - 2. Laterally brace entire suspension system.
  - 3. Install bracing as required at exterior locations to resist wind uplift.
- C. Studs: Space studs at 16 inches on center.
  - 1. Extend partition framing to structure where indicated and to ceiling in other locations.
  - 2. Partitions Terminating at Ceiling: Attach ceiling runner securely to ceiling track in accordance with manufacturer's instructions.
  - 3. Partitions Terminating at Structure: Attach top runner to structure, maintain clearance between top of studs and structure, and connect studs to track using specified mechanical devices in accordance with manufacturer's instructions; verify free movement of top of stud connections; do not leave studs unattached to track.
- D. Openings: Reinforce openings as required for weight of doors or operable panels, using not less than double studs at jambs.
- E. Standard Wall Furring: Install at concrete walls scheduled to receive gypsum board, not more than 4 inches from floor and ceiling lines and abutting walls. Secure in place on alternate channel flanges at maximum 24 inches on center.
  - 1. Orientation: Horizontal.
  - 2. Spacing: As indicated.
- F. Acoustic Furring: Install resilient channels at maximum 24 inches on center. Locate joints over framing members.

- G. Furring for Fire Ratings: Install as required for fire resistance ratings indicated and to GA-600 requirements.
- H. Blocking: Install wood blocking for support of:
  - 1. Framed openings.
  - 2. Wall mounted cabinets.
  - 3. Plumbing fixtures.
  - 4. Toilet partitions.
  - 5. Toilet accessories.
  - 6. Wall mounted door hardware.

### **3.03 BOARD INSTALLATION**

- A. Comply with ASTM C840, GA-216, and manufacturer's instructions. Install to minimize butt end joints, especially in highly visible locations.
- B. Single-Layer Non-Rated: Install gypsum board in most economical direction, with ends and edges occurring over firm bearing.
  - 1. Exception: Tapered edges to receive joint treatment at right angles to framing.
- C. Fire-Rated Construction: Install gypsum board in strict compliance with requirements of assembly listing.
- D. Exposed Gypsum Board in Interior Wet Areas: Seal joints, cut edges, and holes with water-resistant sealant.
- E. Installation on Metal Framing: Use screws for attachment of gypsum board except face layer of non-rated double-layer assemblies, which may be installed by means of adhesive lamination.
- F. Curved Surfaces: Apply gypsum board to curved substrates in accordance with GA-226.

### **3.04 INSTALLATION OF TRIM AND ACCESSORIES**

- A. Control Joints: Place control joints consistent with lines of building spaces and as indicated.
  - 1. Not more than 30 feet apart on walls and ceilings over 50 feet long.
  - 2. At exterior soffits, not more than 30 feet apart in both directions.
- B. Corner Beads: Install at external corners, using longest practical lengths.
- C. Edge Trim: Install at locations where gypsum board abuts dissimilar materials.

### **3.05 JOINT TREATMENT**

- A. Glass Mat Faced Gypsum Board and Exterior Glass Mat Faced Sheathing: Use fiberglass joint tape, embed and finish with setting type joint compound.
- B. Paper Faced Gypsum Board: Use paper joint tape, embed with drying type joint compound and finish with drying type joint compound.
- C. Finish gypsum board in accordance with levels defined in ASTM C840, as follows:
  - 1. Level 5: Walls and ceilings to receive semi-gloss or gloss paint finish and other areas specifically indicated.
  - 2. Level 4: Walls and ceilings to receive paint finish or wall coverings, unless otherwise indicated.
  - 3. Level 2: In utility areas, behind cabinetry, and on backing board to receive tile finish.
  - 4. Level 1: Fire rated wall areas above finished ceilings, whether or not accessible in the completed construction.
  - 5. Level 0: Temporary partitions.
- D. Tape, fill, and sand exposed joints, edges, and corners to produce smooth surface ready to receive finishes.
  - 1. Feather coats of joint compound so that camber is maximum 1/32 inch.
  - 2. Taping, filling, and sanding is not required at surfaces behind fixed cabinetry.
  - 3. Taping, filling and sanding is not required at base layer of double layer applications.

- E. Where Level 5 finish is indicated, spray apply high build drywall surfacer over entire surface after joints have been properly treated; achieve a flat and tool mark-free finish.
- F. Fill and finish joints and corners of cementitious backing board as recommended by manufacturer.

**3.06 TOLERANCES**

- A. Maximum Variation of Finished Gypsum Board Surface from True Flatness: 1/8 inch in 10 feet in any direction.

**END OF SECTION**

**SECTION 09 3000**  
**TILING**

**PART 1 GENERAL**

**1.01 SECTION INCLUDES**

- A. Tile for wall applications.
- B. Cementitious backer board as tile substrate.
- C. Stone thresholds.
- D. Ceramic trim.

**1.02 RELATED REQUIREMENTS**

- A. Section 07 9200 - Joint Sealants: Sealing joints between tile work and adjacent construction and fixtures.

**1.03 REFERENCE STANDARDS**

- A. ANSI A108/A118/A136 - American National Standard Specifications for the Installation of Ceramic Tile (Compendium); 2017.
- B. ANSI A108/A118/A136.1 - American National Standard Specifications for the Installation of Ceramic Tile (Compendium); 2017.
  - 1. ANSI A108.1a - American National Standard Specifications for Installation of Ceramic Tile in the Wet-Set Method, with Portland Cement Mortar; 2014.
  - 2. ANSI A108.1b - American National Standard Specifications for Installation of Ceramic Tile on a Cured Portland Cement Mortar Setting Bed with Dry-Set or Latex-Portland Cement Mortar; 1999 (Reaffirmed 2010).
  - 3. ANSI A108.1c - Specifications for Contractors Option: Installation of Ceramic Tile in the Wet-Set Method with Portland Cement Mortar or Installation of Ceramic Tile on a Cured Portland Cement Mortar Bed with Dry-Set or Latex-Portland Cement; 1999 (Reaffirmed 2010).
  - 4. ANSI A108.4 - American National Standard Specifications for Installation of Ceramic Tile with Organic Adhesives or Water Cleanable Tile-Setting Epoxy Adhesive; 2009 (Revised).
  - 5. ANSI A108.5 - American National Standard Specifications for Installation of Ceramic Tile with Dry-Set Portland Cement Mortar or Latex-Portland Cement Mortar; 1999 (Reaffirmed 2010).
  - 6. ANSI A108.6 - American National Standard Specifications for Installation of Ceramic Tile with Chemical Resistant, Water Cleanable Tile-Setting and -Grouting Epoxy; 1999 (Reaffirmed 2010).
  - 7. ANSI A108.8 - American National Standard Specifications for Installation of Ceramic Tile with Chemical Resistant Furan Resin Mortar and Grout; 1999 (Reaffirmed 2010).
  - 8. ANSI A108.9 - American National Standard Specifications for Installation of Ceramic Tile with Modified Epoxy Emulsion Mortar/Grout; 1999 (Reaffirmed 2010).
  - 9. ANSI A108.10 - American National Standard Specifications for Installation of Grout in Tilework; 1999 (Reaffirmed 2010).
  - 10. ANSI A108.11 - American National Standard Specifications for Interior Installation of Cementitious Backer Units; 2010 (Reaffirmed 2016).
  - 11. ANSI A108.12 - American National Standard for Installation of Ceramic Tile with EGP (Exterior Glue Plywood) Latex-Portland Cement Mortar; 1999 (Reaffirmed 2010).
  - 12. ANSI A108.13 - American National Standard for Installation of Load Bearing, Bonded, Waterproof Membranes for Thin-Set Ceramic Tile and Dimension Stone; 2005 (Reaffirmed 2010).
  - 13. ANSI A118.7 - American National Standard Specifications for High Performance Cement Grouts for Tile Installation; 2010 (Reaffirmed 2016).
  - 14. ANSI A118.9 - American National Standard Specifications for Test Methods and Specifications for Cementitious Backer Units; 1999 (Reaffirmed 2016).

15. ANSI A118.10 - American National Standard Specifications for Load Bearing, Bonded, Waterproof Membranes For Thin-Set Ceramic Tile And Dimension Stone Installation; 2014.
  16. ANSI A118.12 - American National Standard Specifications for Crack Isolation Membranes for Thin-Set Ceramic Tile and Dimension Stone Installation; 2014.
  17. ANSI A118.15 - American National Standard Specifications for Improved Modified Dry-Set Cement Mortar; 2012.
  18. ANSI A137.1 - American National Standard Specifications for Ceramic Tile; 2012.
  19. ASTM C373 - Standard Test Methods for Determination of Water Absorption and Associated Properties by Vacuum Method for Pressed Ceramic Tiles and Glass Tiles and Boil Method for Extruded Ceramic Tiles and Non-tile Fired Ceramic Whiteware Products; 2017.
- C. TCNA (HB) - Handbook for Ceramic, Glass, and Stone Tile Installation; 2016.

#### **1.04 ADMINISTRATIVE REQUIREMENTS**

- A. Preinstallation Meeting: Convene a preinstallation meeting one week before starting work of this section; require attendance by all affected installers.

#### **1.05 SUBMITTALS**

- A. See Section 01 3000 - Administrative Requirements, for submittal procedures.
- B. Product Data: Provide manufacturers' data sheets on tile, mortar, grout, and accessories. Include instructions for using grouts and adhesives.
- C. Shop Drawings: Indicate tile layout, patterns, color arrangement, perimeter conditions, junctions with dissimilar materials, control and expansion joints, thresholds, ceramic accessories, and setting details.
- D. Samples: Mount tile and apply grout on two plywood panels, minimum 24 by 24 inches in size illustrating pattern, color variations, and grout joint size variations.
- E. Manufacturer's Certificate: Certify that products meet or exceed specified requirements.
- F. Master Grade Certificate: Submit for each type of tile, signed by the tile manufacturer and tile installer.
- G. Maintenance Data: Include recommended cleaning methods, cleaning materials, and stain removal methods.
- H. Maintenance Materials: Furnish the following for Owner's use in maintenance of project.
1. See Section 01 6000 - Product Requirements, for additional provisions.
  2. Extra Tile: 2 percent of each size, color, and surface finish combination, but not less than 1 box of each type.
  3. Extra Ceramic Base: 2 percent of each size, color, and surface finish combination, but not less than 1 box of each type.

#### **1.06 QUALITY ASSURANCE**

- A. Maintain one copy of and ANSI A108/A118/A136 and TCNA (HB) on site.
- B. Manufacturer Qualifications: Company specializing in manufacturing the types of products specified in this section, with minimum five years of documented experience.
- C. Installer Qualifications:
1. Company specializing in performing tile installation, with minimum of five years of documented experience.
    - a. Accredited Five-Star member of the National Tile Contractors Association (NTCA) or Trowel of Excellence member of the Tile Contractors' Association of America (TCAA).
- D. Tiles suitable for level interior spaces expected to be walked upon when wet shall have a wet DCOF of 0.42 or greater when tested per the DCOF AcuTest. Refer to Section 6.2.2.1.10 of ANSI A137.1 for further explanation and detail.



### 1.07 MOCK-UP

- A. See Section 01 4000 - Quality Requirements, for general requirements for mock-up.
- B. Construct tile mock-up where indicated on drawings, incorporating all components specified for the location.
  - 1. Minimum size of mock-up is indicated on drawings.
  - 2. Approved mock-up may remain as part of the Work.

### 1.08 DELIVERY, STORAGE, AND HANDLING

- A. Protect adhesives from freezing or overheating in accordance with manufacturer's instructions.

### 1.09 FIELD CONDITIONS

- A. Maintain ambient and substrate temperature above 50 degrees F and below 100 degrees F during installation and curing of setting materials.

## PART 2 PRODUCTS

### 2.01 TILE

- A. Ceramic Mosaic Tile, Type PWT2: ANSI A137.1, standard grade.
  - 1. Moisture Absorption: 0 to 0.5 percent as tested in accordance with ASTM C373.
  - 2. Size: 1/2 by 3 inch, nominal.
  - 3. Thickness: 5/16 inches.
  - 4. Shape: Rectangle.
  - 5. Edges: Non-rectified.
  - 6. Surface Finish: Glossy.
  - 7. Color(s): As indicated on drawings.
  - 8. Mounted Sheet Size: 12 by 12 inches.
  - 9. Products:
    - a. Concept Surfaces; Nimbus: [www.conceptsurfaces.com](http://www.conceptsurfaces.com).
    - b. Substitutions: See Section 01 6000 - Product Requirements.
- B. Porcelain Tile, Type PWT-1: ANSI A137.1, standard grade.
  - 1. Moisture Absorption: 0 to 0.5 percent as tested in accordance with ASTM C373.
  - 2. Size: 12 by 24 inch, nominal.
  - 3. Thickness: 5/16 inch.
  - 4. Surface Finish: Unglazed.
  - 5. Color(s): As indicated on drawings.
  - 6. Trim Units, Type PTB-1: Matching base shapes in 3 by 24 bullnose.
  - 7. Products:
    - a. South Cypress; Isle Porcelain Tile by Storka: [www.southcypress.com](http://www.southcypress.com).
    - b. Substitutions: See Section 01 6000 - Product Requirements.

### 2.02 TRIM AND ACCESSORIES

- A. Thresholds: Marble, white or gray, honed finish; 2 inches wide by full width of wall or frame opening; 1/2 inch thick; beveled one long edge with radiused corners on top side; without holes, cracks, or open seams.

### 2.03 SETTING MATERIALS

- A. Improved Latex-Portland Cement Mortar Bond Coat: ANSI A118.15.
  - 1. Applications: Use this type of bond coat where indicated and where no other type of bond coat is indicated.
  - 2. Products:
    - a. ARDEX Engineered Cements; S 28: [www.ardexamericas.com/#sle](http://www.ardexamericas.com/#sle).
    - b. Custom Building Products; Complete Contact-LFT Premium Rapid Setting Large Format Tile Mortar, with Multi-Surface Bonding Primer: [www.custombuildingproducts.com/#sle](http://www.custombuildingproducts.com/#sle).
    - c. LATICRETE International, Inc; LATICRETE 254 Platinum: [www.laticrete.com/#sle](http://www.laticrete.com/#sle).

- d. ProSpec, an Oldcastle brand; Permalastic System: [www.prospec.com](http://www.prospec.com).
- e. TEC, an H.B. Fuller Construction Products Brand; TEC 3N1 Performance Mortar: [www.tecspecialty.com/#sle](http://www.tecspecialty.com/#sle).
- f. Substitutions: See Section 01 6000 - Product Requirements.

#### 2.04 GROUTS

- A. High Performance Polymer Modified Grout: ANSI A118.7 polymer modified cement grout.
  - 1. Applications: Use this type of grout where indicated and where no other type of grout is indicated.
  - 2. Use sanded grout for joints 1/8 inch wide and larger; use unsanded grout for joints less than 1/8 inch wide.
  - 3. Color(s): As selected by Architect from manufacturer's full line.
  - 4. Products:
    - a. ARDEX Engineered Cements; ARDEX FL: [www.ardexamericas.com/#sle](http://www.ardexamericas.com/#sle).
    - b. Custom Building Products; Fusion Pro Single Component Grout: [www.custombuildingproducts.com/#sle](http://www.custombuildingproducts.com/#sle).
    - c. LATICRETE International, Inc; LATICRETE PERMACOLOR Grout: [www.laticrete.com/#sle](http://www.laticrete.com/#sle).
    - d. Merkrete, by Parex USA, Inc; Merkrete Pro Grout: [www.merkrete.com/#sle](http://www.merkrete.com/#sle).
    - e. ProSpec, an Oldcastle brand; ProColor Sanded Tile Grout: [www.prospec.com](http://www.prospec.com).
    - f. TEC, an H.B. Fuller Construction Products Brand; TEC AccuColor Plus Grout: [www.tecspecialty.com/#sle](http://www.tecspecialty.com/#sle).
    - g. Substitutions: See Section 01 6000 - Product Requirements.
- B. Stain Resistant Grout Additive: Liquid admixture for sanded and unsanded cement-based grouts; mix with dry grout material in place of water.
  - 1. Applications: Where indicated.
  - 2. Products:
    - a. ProSpec, an Oldcastle brand; ProColor Stain Guard Grout Additive: [www.prospec.com](http://www.prospec.com).
    - b. Substitutions: See Section 01 6000 - Product Requirements.

#### 2.05 MAINTENANCE MATERIALS

- A. Tile Sealant: Gunnable, silicone, or urethane sealant; moisture and mildew resistant type.
  - 1. Applications: Between tile and plumbing fixtures, at isolation and control joints.
  - 2. Color(s): As selected by Architect from manufacturer's full line.
  - 3. Products:
    - a. ARDEX Engineered Cements; ARDEX SX: [www.ardexamericas.com/#sle](http://www.ardexamericas.com/#sle).
    - b. Custom Building Products; Commercial 100% Silicone Caulk: [www.custombuildingproducts.com/#sle](http://www.custombuildingproducts.com/#sle).
    - c. LATICRETE International, Inc; LATICRETE LATASIL: [www.laticrete.com/#sle](http://www.laticrete.com/#sle).
    - d. Merkrete, by Parex USA, Inc; Merkrete Colored Caulking: [www.merkrete.com/#sle](http://www.merkrete.com/#sle).
    - e. ProSpec, an Oldcastle brand; ProColor Advantage Caulk: [www.prospec.com](http://www.prospec.com).
    - f. Substitutions: See Section 01 6000 - Product Requirements.
- B. Grout Release: Temporary, water-soluble pre-grout coating.
  - 1. Products:
    - a. Custom Building Products; Aqua Mix Grout Release: [www.custombuildingproducts.com/#sle](http://www.custombuildingproducts.com/#sle).
    - b. Substitutions: See Section 01 6000 - Product Requirements.

#### 2.06 ACCESSORY MATERIALS

- A. Concrete Floor Slab Crack Isolation Membrane: Material complying with ANSI A118.12; not intended as waterproofing.
  - 1. Type: Fluid-applied.
  - 2. Thickness: 40 mils, maximum.

3. Crack Resistance: No failure at 1/8 inch gap, minimum.
4. Products:
  - a. Basis of Design: Custom Building Products;; RedGard Crack Prevention and Waterproofing Membrane: [www.custombuildingproducts.com](http://www.custombuildingproducts.com).
  - b. LATICRETE International, Inc; LATICRETE Blue 92 Anti-Fracture Membrane: [www.laticrete.com/#sle](http://www.laticrete.com/#sle).
  - c. Merkrete, by Parex USA, Inc; Merkrete Fracture Guard: [www.merkrete.com/#sle](http://www.merkrete.com/#sle).
  - d. Substitutions: See Section 01 6000 - Product Requirements.
- B. Waterproofing Membrane at Showers and Tiled Tubs: Specifically designed for bonding to cementitious substrate under thick mortar bed or thin-set tile; complying with ANSI A118.10.
  1. Fluid or Trowel Applied Type:
    - a. Material: Synthetic rubber.
    - b. Thickness: 40 mils, minimum, dry film thickness.
    - c. Products:
      - 1) Custom Building Products; RedGard Crack Prevention and Waterproofing Membrane: [www.custombuildingproducts.com](http://www.custombuildingproducts.com).
      - 2) H.B. Fuller Construction Products Inc; TEC HydraFlex Waterproofing Crack Isolation Membrane: [www.tecspecialty.com/#sle](http://www.tecspecialty.com/#sle).
      - 3) LATICRETE International, Inc; LATICRETE HYDRO BAN: [www.laticrete.com/#sle](http://www.laticrete.com/#sle).
      - 4) Merkrete, by Parex USA, Inc; Merkrete Hydro Guard 2000: [www.merkrete.com/#sle](http://www.merkrete.com/#sle).
      - 5) Substitutions: See Section 01 6000 - Product Requirements.
- C. Backer Board: Cementitious type complying with ANSI A118.9; high density, glass fiber reinforced, 1/2 inch thick; 2 inch wide coated glass fiber tape for joints and corners.
  1. Products:
    - a. Custom Building Products; WonderBoard Lite Backerboard: [www.custombuildingproducts.com/#sle](http://www.custombuildingproducts.com/#sle).
    - b. James Hardie Corporation; HardieBacker: [www.jameshardie.com](http://www.jameshardie.com).
    - c. National Gypsum Corporation; PermaBase: [www.nationalgypsum.com](http://www.nationalgypsum.com).
    - d. Substitutions: See Section 01 6000 - Product Requirements.
- D. Mesh Tape: 2 inch wide self-adhesive fiberglass mesh tape.

## **PART 3 EXECUTION**

### **3.01 EXAMINATION**

- A. Verify that wall surfaces are smooth and flat within the tolerances specified for that type of work, are dust-free, and are ready to receive tile.
- B. Verify that sub-floor surfaces are dust-free and free of substances that could impair bonding of setting materials to sub-floor surfaces.

### **3.02 PREPARATION**

- A. Protect surrounding work from damage.
- B. Vacuum clean surfaces and damp clean.
- C. Seal substrate surface cracks with filler. Level existing substrate surfaces to acceptable flatness tolerances.
- D. Install backer board in accordance with ANSI A108.11 and board manufacturer's instructions. Tape joints and corners, cover with skim coat of setting material to a feather edge.
- E. Install cementitious backer board in accordance with ANSI A108.11 and board manufacturer's instructions. Tape joints and corners, cover with skim coat of dry-set mortar to a feather edge.

### **3.03 INSTALLATION - GENERAL**

- A. Install tile and thresholds and grout in accordance with applicable requirements of ANSI A108.1a through ANSI A108.13, manufacturer's instructions, and TCNA (HB) recommendations.
- B. Lay tile to pattern indicated. Do not interrupt tile pattern through openings.
- C. Cut and fit tile to penetrations through tile, leaving sealant joint space. Form corners and bases neatly. Align floor joints.
- D. Place tile joints uniform in width, subject to variance in tolerance allowed in tile size. Make grout joints without voids, cracks, excess mortar or excess grout, or too little grout.
- E. Form internal angles square and external angles bullnosed.
- F. Install ceramic accessories rigidly in prepared openings.
- G. Install thresholds where indicated.
- H. Sound tile after setting. Replace hollow sounding units.
- I. Keep control and expansion joints free of mortar, grout, and adhesive.
- J. Prior to grouting, allow installation to completely cure; minimum of 48 hours.
- K. Grout tile joints unless otherwise indicated. Use polymer modified grout unless otherwise indicated.
- L. At changes in plane and tile-to-tile control joints, use tile sealant instead of grout, with either bond breaker tape or backer rod as appropriate to prevent three-sided bonding. Comply with EJ171 Movement Joint Guidelines contained in TCNA (HB) as applicable to field conditions.

### **3.04 INSTALLATION - SHOWERS AND BATHTUB WALLS**

- A. At tiled shower receptors install in accordance with TCNA (HB) Method B415, mortar bed floor, and W244, thin-set over cementitious backer unit walls.
- B. At bathtub walls install in accordance with TCNA (HB) Method B412, over cementitious backer units with waterproofing membrane.
- C. Grout with standard grout as specified above.
- D. Grout with standard grout as specified above.

### **3.05 INSTALLATION - WALL TILE**

- A. Over cementitious backer units on studs, install in accordance with TCNA (HB) Method W244, using membrane at toilet rooms and locker rooms.
- B. Over interior concrete and masonry install in accordance with TCNA (HB) Method W202, thin-set with dry-set or latex-Portland cement bond coat.

### **3.06 CLEANING**

- A. Clean tile and grout surfaces.

### **3.07 PROTECTION**

- A. Do not permit traffic over finished floor surface for 4 days after installation.

### **3.08 SCHEDULE**

- A. See Finish Legend and Schedule, Drawing A9.10.

**END OF SECTION**

**SECTION 09 5100**  
**ACOUSTICAL CEILINGS**

**PART 1 GENERAL**

**1.01 SECTION INCLUDES**

- A. Suspended metal grid ceiling system.
- B. Acoustical units.

**1.02 RELATED REQUIREMENTS**

- A. Section 05 3100 - Steel Decking: Placement of special anchors or inserts for suspension system.
- B. Section 07 9005 - Joint Sealers: Acoustical sealant.
- C. Section 09 8400 - Acoustical Room Components: Vibration control hangers.
- D. Section 28 4600 - Fire Detection and Alarm: Fire alarm components in ceiling system.
- E. Section 23 3700 - Air Outlets and Inlets: Air diffusion devices in ceiling.
- F. Section 26 5100 - Interior Lighting: Light fixtures in ceiling system.
- G. Section 27 5116 - Public Address Systems: Speakers in ceiling system.

**1.03 REFERENCE STANDARDS**

- A. ASTM C635/C635M - Standard Specification for the Manufacture, Performance, and Testing of Metal Suspension Systems for Acoustical Tile and Lay-in Panel Ceilings; 2017.
- B. ASTM E119 - Standard Test Methods for Fire Tests of Building Construction and Materials; 2016a.
- C. ASTM E1264 - Standard Classification for Acoustical Ceiling Products; 2014.
- D. CHPS (HPPD) - High Performance Products Database; Current Edition at [www.chps.net/](http://www.chps.net/).
- E. ITS (DIR) - Directory of Listed Products; Intertek Testing Services NA, Inc.; current edition.
- F. UL (FRD) - Fire Resistance Directory; Current Edition.
- G. UL (GGG) - GREENGUARD Gold Certified Products; current listings at <http://http://productguide.ulenvironment.com/QuickSearch.aspx>.

**1.04 ADMINISTRATIVE REQUIREMENTS**

- A. Sequence work to ensure acoustical ceilings are not installed until building is enclosed, sufficient heat is provided, dust generating activities have terminated, and overhead work is completed, tested, and approved.
- B. Do not install acoustical units until after interior wet work is dry.

**1.05 SUBMITTALS**

See Section 01 3000 - Administrative Requirements, for submittal procedures.

- A. Shop Drawings: Indicate grid layout and related dimensioning.
- B. Product Data: Provide data on suspension system components and acoustical units.
- C. Samples: Submit two samples 8 by 8 inch in size illustrating material and finish of acoustical units.
- D. Samples: Submit two samples each, \_\_\_\_ inches long, of suspension system main runner, cross runner, and perimeter molding.
- E. Manufacturer's Installation Instructions: Indicate special procedures and perimeter conditions requiring special attention.
- F. Maintenance Materials: Furnish the following for Owner's use in maintenance of project.
  - 1. See Section 01 6000 - Product Requirements, for additional provisions.

2. Extra Acoustical Units: Quantity equal to 2 percent of total installed of each color and pattern.

#### **1.06 QUALITY ASSURANCE**

- A. Fire-Resistive Assemblies: Complete assembly listed and classified by approved testing agency for the fire resistance indicated.
- B. Suspension System Manufacturer Qualifications: Company specializing in manufacturing the products specified in this section with minimum five years documented experience.
- C. Acoustical Unit Manufacturer Qualifications: Company specializing in manufacturing the products specified in this section with minimum five years documented experience.

#### **1.07 FIELD CONDITIONS**

- A. Maintain uniform temperature of minimum 60 degrees F, and maximum humidity of 40 percent prior to, during, and after acoustical unit installation.

#### **1.08 PROJECT CONDITIONS**

- A. Sequence work to ensure acoustical ceilings are not installed until building is enclosed, sufficient heat is provided, dust generating activities have terminated, and overhead work is completed, tested, and approved.
- B. Install acoustical units after interior wet work is dry.

### **PART 2 PRODUCTS**

#### **2.01 MANUFACTURERS**

- A. Acoustic Tiles/Panels:
  1. Basis of Design: Armstrong World Industries, Inc: [www.armstrong.com](http://www.armstrong.com).
  2. Subject to requirements, provide equal products by one of the following approved manufacturers:
    - a. Acoustic Ceiling Products, Inc: [www.acpideas.com](http://www.acpideas.com).
    - b. CertainTeed Corporation: [www.certainteed.com](http://www.certainteed.com).
    - c. USG: [www.usg.com](http://www.usg.com).
    - d. Substitutions: See Section 01 6000 - Product Requirements.
- B. Suspension Systems:
  1. Same as for acoustical units.
  2. Substitutions: See Section 01 6000 - Product Requirements.

#### **2.02 PERFORMANCE REQUIREMENTS**

- A. Fire-Resistance Rating: Determined in accordance with test procedures in ASTM E119 and complying with the following:

#### **2.03 ACOUSTICAL UNITS**

- A. Acoustical Units - General: ASTM E1264, Class A.
  1. Units for Installation in Fire-Rated Suspension System: Listed and classified for the fire-resistive assembly as part of suspension system.
  2. VOC Content: Certified as Low Emission by one of the following:
    - a. Product listing in UL (GGG).
    - b. Product listing in CHPS (HPPD).
- B. Acoustical Panels Type A1: Painted mineral fiber, ASTM E 1264 Type III, with the following characteristics:
  1. Size: 24 x 24 inches.
  2. Thickness: 5/8 inches.
  3. Composition: Wet felted.
  4. Light Reflectance: 0.83 percent, determined as specified in ASTM E 1264.
  5. NRC Range: 0.50, determined as specified in ASTM E 1264.
  6. Ceiling Attenuation Class (CAC): 35, determined as specified in ASTM E 1264.

7. Flame Spread: Class A per ASTM E1264.
  8. Edge: Beveled reveal edge.
  9. Surface Color: White.
  10. Surface Pattern: Fine texture, non-directional.
  11. Additional Features:
    - a. Anti moisture/anti sag feature.
    - b. Anti mold/mildew treatment.
    - c. Anti odor/stain/bacteria treatment.
    - d. Impact-resistant.
  12. Product: 1774 Dune by Armstrong World Industries, Inc.
    - a. Substitutions: See Section 01 6000 - Product Requirements.
  13. Suspension System: Exposed grid Type 1.
- C. Acoustical Panels Type A2: Painted mineral fiber, ASTM E 1264 Type XX with the following characteristics:
1. Size: 24 x 24 inches.
  2. Thickness: 5/8 inches.
  3. Composition: Wet felted.
  4. Light Reflectance: 0.82 percent, determined as specified in ASTM E 1264.
  5. NRC Range: 0.55, determined as specified in ASTM E 1264.
  6. Ceiling Attenuation Class (CAC): 40, determined as specified in ASTM E 1264.
  7. Flame Spread: Class A per ASTM E1264.
  8. Edge: Square.
  9. Surface Color: White.
  10. Surface Pattern: Random perforated.
  11. Additional Features:
    - a. Anti moisture/water repellent.
    - b. Humidity resistant.
    - c. Anti mold/mildew-inherent.
    - d. Washable
  12. Product: 607 Ceramaguard by Armstrong World Industries.
  13. Suspension System: Exposed grid Type 1.

#### **2.04 SUSPENSION SYSTEM(S)**

- A. Manufacturers:
  1. Same as for acoustical units.
  2. Substitutions: See Section 01 6000 - Product Requirements.
- B. Metal Suspension Systems - General: Complying with ASTM C635/C635M; die cut and interlocking components, with perimeter moldings, hold down clips, stabilizer bars, clips, and splices as required.
- C. Exposed Steel Suspension System Type 1: Formed galvanized steel, commercial quality cold rolled; intermediate-duty.
  1. Profile: Tee; 15/16 inch wide face.
  2. Construction: Double web.
  3. Finish: White painted.
  4. Products:
    - a. 15/16 Prelude XL by Armstrong World Industries.
    - b. Substitutions: See Section 01 6000 - Product Requirements.

#### **2.05 ACCESSORIES**

- A. Support Channels and Hangers: Galvanized steel; size and type to suit application, seismic requirements, and ceiling system flatness requirement specified.
- B. Hanger Wire: 12-gage 0.08 inch galvanized steel wire.
- C. Perimeter Moldings: Same metal and finish as grid.

1. At Exposed Grid: Provide L-shaped molding for mounting at same elevation as face of grid.
- D. Gasket For Perimeter Moldings: Closed cell rubber sponge tape.
- E. Touch-up Paint: Type and color to match acoustical and grid units.

### **PART 3 EXECUTION**

#### **3.01 EXAMINATION**

- A. Verify existing conditions before starting work.
- B. Verify that layout of hangers will not interfere with other work.

#### **3.02 INSTALLATION - SUSPENSION SYSTEM**

- A. Install suspension system in accordance with ASTM C 636, ASTM E 580, and manufacturer's instructions and as supplemented in this section.
- B. Rigidly secure system, including integral mechanical and electrical components, for maximum deflection of 1:360.
- C. Locate system on room axis according to reflected ceiling plan.
- D. Perimeter Molding: Install at intersection of ceiling and vertical surfaces and at junctions with other interruptions.
  1. Use longest practical lengths.
- E. Install after major above-ceiling work is complete. Coordinate the location of hangers with other work.
- F. Provide hanger clips during steel deck erection. Provide additional hangers and inserts as required.
- G. Suspension System, Non-Seismic: Hang suspension system independent of walls, columns, ducts, pipes and conduit. Where carrying members are spliced, avoid visible displacement of face plane of adjacent members.
- H. Where ducts or other equipment prevent the regular spacing of hangers, reinforce the nearest affected hangers and related carrying channels to span the extra distance.
- I. Do not support components on main runners or cross runners if weight causes total dead load to exceed deflection capability.
- J. Support fixture loads using supplementary hangers located within 6 inches of each corner, or support components independently.
- K. Do not eccentrically load system or induce rotation of runners.
- L. Perimeter Molding: Install at intersection of ceiling and vertical surfaces and at junctions with other interruptions.
  1. Install with continuous gasket.
  2. Use longest practical lengths.
  3. Overlap and rivet corners.
- M. Form expansion joints as detailed. Form to accommodate plus or minus 1 inch movement. Maintain visual closure.
- N. Install light fixture boxes constructed of gypsum board above light fixtures in accordance with fire rated assembly requirements and light fixture ventilation requirements.

#### **3.03 INSTALLATION - ACOUSTICAL UNITS**

- A. Install acoustical units in accordance with manufacturer's instructions.
- B. Fit acoustical units in place, free from damaged edges or other defects detrimental to appearance and function.
- C. Fit border trim neatly against abutting surfaces.
- D. Install units after above-ceiling work is complete.



- E. Install acoustical units level, in uniform plane, and free from twist, warp, and dents.
- F. Cutting Acoustical Units:
  - 1. Cut to fit irregular grid and perimeter edge trim.
  - 2. Make field cut edges of same profile as factory edges.
- G. Where round obstructions occur, provide preformed closures to match perimeter molding.
- H. Install hold-down clips on each panel to retain panels tight to grid system; comply with fire rating requirements.
- I. Install hold-down clips on panels within 20 ft of an exterior door.

### **3.04 TOLERANCES**

- A. Maximum Variation from Flat and Level Surface: 1/8 inch in 10 feet.
- B. Maximum Variation from Plumb of Grid Members Caused by Eccentric Loads: 2 degrees.

### **3.05 SCHEDULE**

- A. See Finish Legend on Drawings.

**END OF SECTION**

**SECTION 09 6500**  
**RESILIENT FLOORING**

**PART 1 GENERAL**

**1.01 SECTION INCLUDES**

- A. Resilient tile flooring.
- B. Resilient base.
- C. Installation accessories.

**1.02 RELATED REQUIREMENTS**

- A. Section 03 3000 - Cast-in-Place Concrete: Restrictions on curing compounds for concrete slabs and floors to receive adhesive-applied resilient flooring.
- B. Section 26 0526 - Grounding and Bonding for Electrical Systems: Grounding and bonding of static control flooring to building grounding system.

**1.03 REFERENCE STANDARDS**

- A. ASTM F710 - Standard Practice for Preparing Concrete Floors to Receive Resilient Flooring; 2011.
- B. ASTM F1066 - Standard Specification for Vinyl Composition Floor Tile; 2004 (Reapproved 2014).
- C. ASTM F1861 - Standard Specification for Resilient Wall Base; 2008 (Reapproved 2012).
- D. ASTM F1869 - Standard Test Method for Measuring Moisture Vapor Emission Rate of Concrete Subfloor Using Anhydrous Calcium Chloride; 2011.
- E. ASTM F2170 - Standard Test Method for Determining Relative Humidity in Concrete Floor Slabs Using in situ Probes; 2016a.

**1.04 SUBMITTALS**

- A. See Section 01 3000 - Administrative Requirements, for submittal procedures.
- B. Product Data: Provide data on specified products, describing physical and performance characteristics; including sizes, patterns and colors available; and installation instructions.
- C. Shop Drawings: Indicate seaming plans and floor patterns.
- D. Selection Samples: Submit manufacturer's complete set of color samples for Architect's initial selection.
- E. Verification Samples: Submit two samples, 6 by 36 inch in size illustrating color and pattern for each resilient flooring product specified.
- F. Maintenance Data: Include maintenance procedures, recommended maintenance materials, and suggested schedule for cleaning, stripping, and re-waxing.
- G. Maintenance Materials: Furnish the following for Owner's use in maintenance of project.
  - 1. See Section 01 6000 - Product Requirements, for additional provisions.
  - 2. Extra Resilient Flooring Materials: Provide 2 percent of each type, color, and pattern of resilient flooring and base.

**1.05 DELIVERY, STORAGE, AND HANDLING**

- A. Upon receipt, immediately remove any shrink-wrap and check materials for damage and the correct style, color, quantity and run numbers.
- B. Store all materials off of the floor in an acclimatized, weather-tight space.
- C. Maintain temperature in storage area between 55 degrees F and 90 degrees F.
- D. Protect roll materials from damage by storing on end.
- E. Do not double stack pallets.

## 1.06 FIELD CONDITIONS

- A. Store materials for not less than 48 hours prior to installation in area of installation at a temperature of 70 degrees F to achieve temperature stability. Thereafter, maintain conditions above 55 degrees F.

## PART 2 PRODUCTS

### 2.01 TILE FLOORING

- A. Vinyl Composition Tile Type VCT-1: Homogeneous, with color extending throughout thickness.
  - 1. Manufacturers:
    - a. Armstrong Flooring, Inc; Standard Execelon Imperial Texture: [www.armstrongflooring.com/#sle](http://www.armstrongflooring.com/#sle).
    - b. Substitutions: See Section 01 6000 - Product Requirements.
  - 2. Minimum Requirements: Comply with ASTM F1066, of Class corresponding to type specified.
  - 3. Size: 12 by 12 inch.
  - 4. VOC Content Limits: As specified in Section 01 6116.
  - 5. Thickness: 0.125 inch.
  - 6. Pattern: Thru-chip.
  - 7. Color: As indicated on drawings.
- B. Feature Strips: Of same material as tile, \_\_\_\_ inch wide.

### 2.02 RESILIENT BASE

- A. Resilient Base Type RB-1: ASTM F1861, Type TS rubber, vulcanized thermoset; top set Style B, Cove.
  - 1. Manufacturers:
    - a. Burke Flooring; Commercial Wall Base - TS: [www.burkeflooring.com/#sle](http://www.burkeflooring.com/#sle).
    - b. Basis of Design: Johnsonite, a Tarkett Company; Baseworks Rubber Wall Base: [www.johnsonite.com](http://www.johnsonite.com).
    - c. Roppe Corp; Pinnacle: [www.roppe.com](http://www.roppe.com).
    - d. Substitutions: See Section 01 6000 - Product Requirements.
  - 2. Height: 4 inch.
  - 3. Thickness: 0.125 inch.
  - 4. Finish: Satin.
  - 5. Length: Roll.
  - 6. Color: As indicated on drawings.
  - 7. Accessories: Premolded external corners and end stops.
- B. Resilient Base Type CRB-1: ASTM F 1861, Type TS rubber, vulcanized thermoset; top set custom profile, and as follows:
  - 1. Height Type CRB-1: 6 inch.
  - 2. Thickness: 3/16 inch thick.
  - 3. Finish: Satin.
  - 4. Length: 8 foot (2.4 m) sections.
  - 5. Color: As scheduled. See Finish Schedule.
  - 6. Manufacturers:
    - a. Johnsonite, Inc; Product Millwork Style "Mandalay" Rubber Wall Base: [www.johnsonite.com](http://www.johnsonite.com).
    - b. Substitutions: See Section 01 6000 - Product Requirements.

### 2.03 ACCESSORIES

- A. Subfloor Filler: White premix latex; type recommended by adhesive material manufacturer.
- B. Primers, Adhesives, and Seam Sealer: Waterproof; types recommended by flooring manufacturer.

- C. Moldings, Transition and Edge Strips: Same material as flooring.
- D. Filler for Coved Base: Plastic.

### **PART 3 EXECUTION**

#### **3.01 EXAMINATION**

- A. Verify that surfaces are flat to tolerances acceptable to flooring manufacturer, free of cracks that might telegraph through flooring, clean, dry, and free of curing compounds, surface hardeners, and other chemicals that might interfere with bonding of flooring to substrate.
- B. Verify that wall surfaces are smooth and flat within the tolerances specified for that type of work, are dust-free, and are ready to receive resilient base.
- C. Cementitious Subfloor Surfaces: Verify that substrates are ready for resilient flooring installation by testing for moisture and alkalinity (pH).
  - 1. Test as Follows:
    - a. Alkalinity (pH): ASTM F710.
    - b. Internal Relative Humidity: ASTM F2170.
    - c. Moisture Vapor Emission: ASTM F1869.
  - 2. Obtain instructions if test results are not within limits recommended by resilient flooring manufacturer and adhesive materials manufacturer.
- D. Verify that required floor-mounted utilities are in correct location.

#### **3.02 PREPARATION**

- A. Prepare floor substrates as recommended by flooring and adhesive manufacturers.
- B. Remove subfloor ridges and bumps. Fill minor low spots, cracks, joints, holes, and other defects with subfloor filler to achieve smooth, flat, hard surface.
- C. Prohibit traffic until filler is fully cured.
- D. Clean substrate.

#### **3.03 INSTALLATION - GENERAL**

- A. Starting installation constitutes acceptance of subfloor conditions.
- B. Install in accordance with manufacturer's written instructions.
- C. Adhesive-Applied Installation:
  - 1. Spread only enough adhesive to permit installation of materials before initial set.
  - 2. Place copper grounding strip in conductive adhesive and apply additional adhesive to top side of strip before installing static control flooring. Allow strip to extend beyond flooring in accordance with static control flooring manufacturer's instructions. Refer to Section 26 0526 for grounding and bonding to building grounding system.
  - 3. Fit joints and butt seams tightly.
  - 4. Set flooring in place, press with heavy roller to attain full adhesion.
- D. Where type of floor finish, pattern, or color are different on opposite sides of door, terminate flooring under centerline of door.
- E. Install edge strips at unprotected or exposed edges, where flooring terminates, and where indicated.
- F. Scribe flooring to walls, columns, cabinets, floor outlets, and other appurtenances to produce tight joints.
- G. At movable partitions, install flooring under partitions without interrupting floor pattern.
- H. Install feature strips where indicated.

#### **3.04 INSTALLATION - TILE FLOORING**

- A. Mix tile from container to ensure shade variations are consistent when tile is placed, unless otherwise indicated in manufacturer's installation instructions.

- B. Lay flooring with joints and seams parallel to building lines to produce symmetrical pattern.
- C. Install square tile to ashlar pattern. Allow minimum 1/2 full size tile width at room or area perimeter.

**3.05 INSTALLATION - RESILIENT BASE**

- A. Fit joints tightly and make vertical. Maintain minimum dimension of 48 inches between joints.
- B. Miter internal corners. At external corners, use premolded units. At exposed ends, use premolded units.
- C. Install base on solid backing. Bond tightly to wall and floor surfaces.
- D. Scribe and fit to door frames and other interruptions.

**3.06 CLEANING**

- A. Remove excess adhesive from floor, base, and wall surfaces without damage.
- B. Clean in accordance with manufacturer's written instructions.

**3.07 PROTECTION**

- A. Prohibit traffic on resilient flooring for 48 hours after installation.

**END OF SECTION**

**SECTION 09 6566.13**  
**RESILIENT ATHLETIC SHEET FLOORING**

**PART 1 GENERAL**

**1.01 SECTION INCLUDES**

- A. Sheet vinyl resilient athletic flooring.
- B. Sheet rubber resilient athletic flooring.
- C. Accessories.

**1.02 RELATED REQUIREMENTS**

- A. Section 03 3000 - Cast-in-Place Concrete: Restrictions on curing compounds for concrete slabs and floors.
- B. Section 09 0561 - Common Work Results for Flooring Preparation: Independent agency testing of concrete slabs, removal of existing floor coverings, cleaning, and preparation.
- C. Section 09 6513 - Resilient Base and Accessories.

**1.03 REFERENCE STANDARDS**

- A. ASTM D2240 - Standard Test Method for Rubber Property--Durometer Hardness; 2015.
- B. ASTM E648 - Standard Test Method for Critical Radiant Flux of Floor-Covering Systems Using a Radiant Heat Energy Source; 2015.
- C. ASTM F1869 - Standard Test Method for Measuring Moisture Vapor Emission Rate of Concrete Subfloor Using Anhydrous Calcium Chloride; 2011.
- D. ASTM F2170 - Standard Test Method for Determining Relative Humidity in Concrete Floor Slabs Using in situ Probes; 2016a.
- E. ASTM F2772 - Standard Specification for Athletic Performance Properties of Indoor Sports Floor Systems; 2011.
- F. ASTM D412 - Standard Test Methods for Vulcanized Rubber and Thermoplastic Elastomers--Tension; 2016.
- G. ASTM D2240 - Standard Test Method for Rubber Property--Durometer Hardness; 2015.
- H. ASTM F3041 - Standard Specification for Bonded Rubber Crumb Floor Coverings; 2014.

**1.04 SUBMITTALS**

- A. See Section 01 3000 - Administrative Requirements, for submittal procedures.
- B. Product Data: Provide data for flooring, floor finish materials, cushion blocks, and game insert or socket devices.
- C. Selection Samples: Manufacturer's color charts for flooring materials specified and game line paints, indicating full range of colors and textures available.
- D. Samples: Submit two samples 12 x 12 inch in size illustrating floor finish, color, and sheen.
- E. Shop Drawings: Indicate floor joint pattern and termination details.
  - 1. Indicate provisions for expansion and contraction, base, base corner details, and game insert or socket devices.
  - 2. Indicate location, size, design, and color of game markings.
  - 3. Installation Instructions: Indicate standard and special installation procedures, perimeter conditions requiring special attention, and manufacturer's recommendations for accessory products.
  - 4. Maintenance Data: Include maintenance procedures, recommended maintenance materials, a suggested schedule for cleaning, stripping and re-finishing recommendations, and polishes and waxes.
  - 5. Provide certification of testing per ASTM F2772 indicating the product being furnished complies with the all requirements of ASTM Indoor Sport Floor Classification, including

CLASS 3 shock absorption. Third-party testing certification required; sales literature is not sufficient.

- F. Closeout Submittals
  - 1. Manufacturer maintenance instructions.
  - 2. Manufacturer warranty for material defects, high moisture tolerance and not promoting mold growth on, within and directly under the installed flooring.
  - 3. Installer installation warranty.
- G. Maintenance Materials
  - 1. See Section 01 6000 - Product Requirements, for additional provisions.
  - 2. Supply 10 Square Yards of Extra Vinyl Flooring Material.

#### **1.05 QUALITY ASSURANCE**

- A. Installer Qualifications: Company specializing in performing work of this section with minimum five years documented experience and approved by manufacturer.
- B. ISO 9001 Certified Installer
- C. ISO 4001 Certified Installer
- D. Fire Test Characteristics: As determined by testing identical products according to ASTM E648, Class 1, by a qualified testing agency acceptable to authorities having jurisdiction.
- E. Athletic Performance Properties: Comply with ASTM F2772 Performance Level CLASS 3 for force reduction, ball bounce, vertical deformation and surface friction.

#### **1.06 DELIVERY, STORAGE, AND HANDLING**

- A. Materials are to arrive at project site in unopened containers clearly labeled with manufacturer's name and identification of contents.
- B. Store materials in dry and clean location until needed for installation. During installation, handle in a manner that will prevent marring and soiling of finished surfaces.
- C. Store flooring and installation materials in protected dry spaces, with ambient temperatures maintained within range recommended by manufacturer, but not less than 55 deg F no more than 85 deg F.
- D. Store the indoor resilient athletic surfacing rolls in an upright position on a smooth flat surface immediately upon delivery to Project.

#### **1.07 FIELD CONDITIONS**

- A. Do not install wood flooring until wet construction work is complete and ambient air at installation space has moisture content stabilized at maximum moisture content of 40 percent.
- B. Verify that all overhead mechanical work, lighting, backstops and scoreboards are installed.
- C. Do not install floor system until concrete has cured 60 days and requirements in paragraph 1.04 are obtained.
- D. General Contractor is responsible to ensure slab is clean and free of all dirt and debris prior to floor installation beginning.
- E. Maintain temperature in spaces to receive adhesively installed resilient flooring within range of 70-95 degrees F for not less than 48 hours before the beginning of installation and for not less than 48 hours after installation has been completed. Subsequently, do not allow temperature in installed spaces to drop below 65 degrees F or to go above 100 degrees F.
- F. Prohibit traffic during flooring installation and for at least 48 hours after flooring installation.
- G. Install flooring only after other finishing work, including painting and overhead work, has been completed.
- H. Do not let any construction materials or debris be dragged or lay on the floor once installed.

- I. If additional works need to occur after floor is installed Contractor must protect floor with a fabric cover where ever that work is to take place as to not allow any damage to occur to the finish surface of the flooring.
- J. Contractor will be responsible for keeping the floor in new condition until transfer of the building over to the Owner.

### **1.08 WARRANTY**

- A. Manufacturer's standard form in which manufacturer agrees to repair or replace sports flooring that fails within specified warranty period.
  1. Material warranty must be direct from the product manufacturer.
    - a. Material warranties from private label distributors are not valid.
    - b. Failures include, but are not limited to, the following:
      - 1) Material and manufacturing defects.
      - 2) Failure due to high moisture vapor emissions from the concrete slab up to 100% relative humidity (RH) when tested according to ASTM F2170 or 25 pounds moisture vapor emission rate when tested according to ASTM F1869.
      - 3) System is warranted not to promote mold growth on, within and directly under the installed flooring.
    - c. Warranty Period: 15 years from date of Substantial Completion.
  2. Limited Warranty: Installer's standard form in which installer agrees to repair or replace sports flooring that fails due to poor workmanship or faulty installation within the specified warranty period.
    - a. Warranty Period: 2 years from date of Substantial Completion.

## **PART 2 PRODUCTS**

### **2.01 SHEET VINYL ATHLETIC FLOORING**

- A. Vinyl Sheet Flooring; Type RAF-1:
  1. Thickness: Minimum .3 inch.
  2. Wear-Layer Thickness: Minimum .08 Inch
  3. Backing: Dual Layer closed cell foam
    - a. Two Layers of fiberglass reinforced for dimensional stability and indentation resistance.
    - b. One Layer of Woven Grid Fiberglass and an additional layer of non-woven fiberglass.
  4. Seaming Method: Hold Weld
  5. Roll Length for Wood Pattern Visual: Minimum 80 feet.
  6. Roll Length for Solid Color: Minimum of 40 feet.
  7. Sheet Width: Minimum 48 inches.
  8. Comply with ASTM F2772.
    - a. Shock Absorption/Force Reduction: Class C3 (34% to 46%).
    - b. Ball Bounce: Minimum 90%
    - c. Surface effect/Coefficient of Friction: Between 80-110
    - d. Vertical deformation: Maximum 3.5mm
  9. Colors and striping colors as selected by Architect. See Finish Legend and Court Marking Diagram, Sheet A9.10.
    - a. Type VAF-1WP: Color - Wood Visual (Maple and manufacturer to provide multi-color court striping colors.)
    - b. Type VAF-2: Color - Navy Blue
  10. Color pattern shall replicate random-length stock by simulating non-uniform board lengths ranging from 18 inches to 48 inches with a maximum board width of 2-1/2 inches.
  11. No two identical seams should align.
  12. Accessories:
    - a. Trowelable patching compound for standard slab surface preparation: Latex-modified, hydraulic-cement-based formulation provided by flooring manufacturer.



- 1) Basis-of-Design Product: GerPatch, Gerflor's patching compound.
  - (a) Slab moisture tolerance: Same slab moisture tolerance as the adhesive.
- b. Adhesives: Water-resistant type recommended by athletic flooring manufacturer for substrate and conditions indicated.
  - 1) Basis-of-Design Product: Gerflor Gerpur adhesive for Dry-Tex.
    - (a) Moisture Resistance Limit: 100% relative humidity (RH) when tested according to ASTM F 2170 or 25 pounds moisture vapor emission rate when tested according to ASTM F 1869.
    - (b) Coverage Type: Full-spread application for 100% coverage.
  - c. Heat Welding Rod: As supplied by indoor resilient athletic flooring manufacturer. Color shall blend with resilient athletic flooring color.
  - d. Game-Line and Marker Paint: Complete system including primer, compatible with flooring and recommended by flooring and paint manufacturers.
13. Base Bid Manufacturer:
  - a. GERFLOR, Taraflex Sport M Plus DRY-TEX Sports Flooring: [www.gerflorusa.com](http://www.gerflorusa.com)
14. Other Acceptable Manufacturers:
  - a. Tarkett Flooring; TarkettSPORTS: [www.tarkettsportsindoor.com](http://www.tarkettsportsindoor.com)
  - b. Connor Sports Surface Solutions; Conner Sports: [www.connersports.com](http://www.connersports.com)
  - c. Substitutions: See Section 01 6000 - Product Requirements.

## 2.02 ACCESSORIES

- A. Trowelable patching compound for standard slab surface preparation: Latex-modified, hydraulic-cement-based formulation provided by flooring manufacturer.
  1. Basis-of-Design Product: GerPatch, Gerflor's patching compound.
    - a. Slab moisture tolerance: Same slab moisture tolerance as the adhesive.
    - b.
- B. Adhesives: Water-resistant type recommended by athletic flooring manufacturer for substrate and conditions indicated.
  1. Basis-of-Design Product: Gerflor Gerpur adhesive for Dry-Tex.
    - a. Moisture Resistance Limit: 100% relative humidity (RH) when tested according to ASTM F 2170 or 25 pounds moisture vapor emission rate when tested according to ASTM F 1869.
    - b. Coverage Type: Full-spread application for 100% coverage.
- C. Heat Welding Rod: As supplied by indoor resilient athletic flooring manufacturer. Color shall blend with resilient athletic flooring color.
- D. Game-Line and Marker Paint: Complete system including primer, compatible with flooring and recommended by flooring and paint manufacturers.

## 2.03 RESILIENT RUBBER ATHLETIC FLOORING

- A. Rubber Sheet Flooring Type RSF-X: Two-layer vulcanized rubber.
  1. Thickness: Minimum 0.394 inch.
  2. Sheet Size: 6'-1" by 42'-7".
  3. Durometer Hardness, Type A: Minimum of 75, when tested in accordance with ASTM D2240.
  4. Surface Texture: Hammered.
  5. Color: As indicated on drawings.
    - a. Type RSF-1: See Finish Legend.
    - b. Type RSF-2: See Finish Legend.
  6. Leveling Compound: Latex-modified cement formulation as recommended by flooring manufacturer for substrate conditions.
  7. Flooring Adhesive: Waterproof; types recommended by flooring manufacturer.
  8. Products:
    - a. Mondo Sport & Flooring: Ram-Flex 10 mm: [www.mondoworldwide.com](http://www.mondoworldwide.com).

- b. Substitutions: See Section 01 6000 - Product Requirements.

### **PART 3 EXECUTION**

#### **3.01 EXAMINATION**

- A. Verify existing conditions before starting work.
- B. Permanent heat, lighting and ventilation systems are installed and operable.
- C. Verify that concrete subfloor surface is smooth and flat to plus or minus 1/8 inch in 10 feet.
- D. Verify that moisture content of the concrete slab does not exceed 85% using ASTM F 2170 In-Slab Relative Humidity test. Obtain flooring system manufacturer's approval prior to beginning work.
- E. Broom-clean floor.
- F. Verify that required floor-mounted utilities are in correct location.
- G. Verify that surfaces are flat to tolerances acceptable to flooring manufacturer, free of cracks that might telegraph through flooring, clean, dry, and free of curing compounds, surface hardeners, and other chemicals that might interfere with bonding of athletic flooring to substrate.
- H. Cementitious Sub-floor Surfaces: Verify that substrates are dry enough and ready for resilient flooring installation by testing for moisture and pH.
  - 1. Obtain instructions if test results are not within limits recommended by resilient flooring manufacturer and adhesive materials manufacturer.
- I. The area in which the indoor resilient athletic flooring will be installed is dry, weather-tight and in compliance with specified requirements.
- J. Other work, including overhead work, that could cause damage, dirt, dust or otherwise interrupt installation has been completed or suspended.
- K. No foreign materials or objects are present on the substrate and that it is clean and ready for preparation and installation.
- L. The concrete slab surface deviation is no greater than 3/16 inch within 10 feet (3.2 mm within 3 m) when measured according to ASTM E 1155.

#### **3.02 PREPARATION**

- A. Place flooring and installation materials into spaces where they will be installed at least 48 hours before installation.
- B. Following the 48 hours Installation can begin once the materials have reached the same temperature as space where they are to be installed.

#### **3.03 INSTALLATION**

- A. Starting installation constitutes acceptance of sub-floor conditions.
- B. Comply with manufacturer's recommendations.
- C. Take necessary precautions to minimize noise, odors, dust and inconvenience during installation.
- D. Resilient Vinyl Sheet Flooring:
  - 1. Unroll flooring and allow to relax before beginning installation.
  - 2. Mix adhesive thoroughly and apply to substrate with notched trowel. Roll flooring into fresh adhesive, overlapping end seams and double cutting, butting factory edges and compression fitting.
  - 3. Roll entire flooring surface with steel roller to assure adhesion to substrate and eliminate air bubbles.
  - 4. Immediately remove any adhesive from flooring surface, using chemical recommended by flooring manufacturer.
  - 5. Fit flooring neatly and tightly to vertical surfaces, equipment anchors, floor outlets, and other interruptions of floor surface.

6. Extend flooring into toe spaces, door reveals, closets, and similar openings unless otherwise indicated.
  7. Weld seams using techniques and equipment recommended by manufacturer.
    - a. Finish seams to produce surfaces flush with adjoining flooring surfaces.
    - b. Comply with ASTM F 1516. Rout joints and use heat welding rod to permanently and seamlessly fuse sections together.
  8. Lay out game lines using tape and taping machine approved by flooring manufacturer.
    - a. Mask flooring at game lines and logos, and apply paint of color indicated to produce clean, sharp and distinct edges.
  9. Paint:
    - a. Apply game line paint with roller, and allow to dry before removing tape.
    - b. Apply transparent top coat over flooring if recommended by manufacturer, to achieve a uniform finished appearance.
- E. Resilient Rubber Flooring:
1. Lay out center lines in spaces to receive tile flooring, based on location of principal walls. Start tile installation from center, and adjust as necessary to avoid tiles less than one-half width at perimeter.
  2. Spread only enough adhesive to permit installation of materials before initial set.
  3. Fit joints and butt seams tightly; press with heavy roller to attain full adhesion.

#### **3.04 CLEANING**

- A. Clean flooring using methods recommended by manufacturer.
- B. Rubber Flooring: Always wait at least a minimum of 72 hours after the resilient athletic flooring has been completely installed before performing initial maintenance. Always maintain the resilient athletic flooring following Manufacturer's current printed guidelines.

#### **3.05 PROTECTION**

- A. Protect finished athletic flooring from construction traffic to ensure that it is without damage upon Date of Substantial Completion.
- B. Rubber Flooring: As needed, protect resilient athletic flooring with 1/8" Masonite during and after the installation, prior to
  1. Preserve the integrity of the installation and protect against direct sunlight/UV exposure; always ensure that windows and glass doors have inherent UV protection and/or are fitted with blinds/UV film.

**END OF SECTION**

**SECTION 09 6700**  
**FLUID-APPLIED FLOORING**

**PART 1 GENERAL**

**1.01 SECTION INCLUDES**

- A. Fluid-applied flooring.

**1.02 RELATED REQUIREMENTS**

- A. Section 07 9200 - Joint Sealants: Sealing joints between fluid-applied flooring and adjacent construction and fixtures.

**1.03 REFERENCE STANDARDS**

- A. ASTM F710 - Standard Practice for Preparing Concrete Floors to Receive Resilient Flooring; 2011.
- B. ASTM F1869 - Standard Test Method for Measuring Moisture Vapor Emission Rate of Concrete Subfloor Using Anhydrous Calcium Chloride; 2011.
- C. ASTM F2170 - Standard Test Method for Determining Relative Humidity in Concrete Floor Slabs Using in situ Probes; 2016a.
- D. ICRI 310.2R - Selecting and Specifying Concrete Surface Preparation for Sealers, Coatings, Polymer Overlays, and Concrete Repair; 2013.

**1.04 ADMINISTRATIVE REQUIREMENTS**

- A. Preinstallation Meeting: Conduct a preinstallation meeting one week prior to the start of the work of this section; require attendance by all affected installers.

**1.05 SUBMITTALS**

- A. See Section 01 3000 - Administrative Requirements, for submittal procedures.
- B. Product Data: Provide data on specified products, describing physical and performance characteristics; sizes, patterns and colors available.
- C. Samples: Provide chip samples for each color group for selection prior to preparing flooring samples. Owner reserves the right to adjust color pallet at no additional charge.
- D. Flooring Samples: Submit two samples, 16 by 16 inch in size illustrating color and pattern for each floor material for each color specified.
- E. Concrete Subfloor Test Report: Submit a copy of the moisture and alkalinity (pH) test reports to Architect and flooring system manufacturer.
- F. Manufacturer's Installation Instructions: Indicate special procedures, perimeter conditions requiring special attention, and required curing times.
- G. Manufacturer's Qualification Statement.
- H. Applicator's Qualification Statement.
- I. Maintenance Data: Include maintenance procedures, recommended maintenance materials, procedures for stain removal, repairing surface, and suggested schedule for cleaning.

**1.06 QUALITY ASSURANCE**

- A. Manufacturer Qualifications: Company specializing in manufacturing products specified in this section with minimum ten years documented experience.
- B. Manufacturer Field Technical Service Representatives: Resinous flooring manufacture shall retain the services of Field Technical Service Representatives who are trained specifically on installing the system to be used on the project.
  - 1. Field Technical Services Representatives shall be employed by the system manufacturer to assist in the quality assurance and quality control process of the installation and shall be available to perform field problem solving issues with the installer.

- C. Applicator Qualifications: Company specializing in performing the work of this section.
  - 1. Applicators to be experienced in applying resinous flooring systems similar in material, design, and extent to those indicated for this Project, whose work has resulted in applications with a record of successful in-service performance
  - 2. Minimum five years of documented experience.
  - 3. Approved by manufacturer.
- D. Supervisor Qualifications: Trained by product manufacturer.

#### **1.07 MOCK-UP**

- A. Construct mock-up(s) of fluid applied flooring to serve as basis for evaluation of texture and workmanship.
- B. General:
  - 1. Use same materials and methods for use in the work.
  - 2. See Section 01 4000 - Quality Requirements for additional requirements.
  - 3. Obtain approval of mock-up by Architect before proceeding with work.
- C. Number of Mock-Ups to be Prepared: As follows.
  - 1. Mock up for Flooring Type PRF-1 and Type PRF-2:
    - a. Locate where directed.
    - b. Minimum Size: 48 inches square.
    - c. Approved mock up may remain a part of the Work.
- D. Obtain approval of mock-up by Architect before proceeding with work.

#### **1.08 DELIVERY, STORAGE, AND HANDLING**

- A. Deliver materials in original packages and containers, with seals unbroken, bearing manufacturer's labels indicating brand name and directions for storage and mixing with other components.
- B. All materials used shall be factory pre-weighed and pre-packaged in single, easy to manage batches to eliminate on site mixing errors. No on site weighing or volumetric measurements allowed.
- C. Store resin materials in a dry, secure area. Store materials to prevent deterioration from moisture, heat, cold, direct sunlight, or other detrimental effects.
- D. Store materials for three days prior to installation in area of installation to achieve temperature stability.

#### **1.09 FIELD CONDITIONS**

- A. Maintain minimum temperature in storage area of 50 to 90 degrees F. Keep out of direct sunlight. Keep resins, hardeners, and solvents separated from each other and away from sources of ignition.
- B. Store materials in area of installation for minimum period of 24 hours prior to installation.
- C. Maintain ambient temperature required by manufacturer 72 hours prior to, during, and 24 hours after installation of materials.
- D. Provide permanent lighting or, if permanent lighting is not in place, simulate permanent lighting conditions during resinous flooring application.
- E. Concrete substrate shall be properly cured for a minimum of 30 days. A vapor barrier must be present for concrete subfloors on or below grade. Otherwise, an osmotic pressure resistant grout must be installed prior to the resinous flooring

### **PART 2 PRODUCTS**

#### **2.01 MANUFACTURERS**

- A. Basis of Design: Sherwin Williams Company: General Polymers Brand; Decorative Mosaic Floor Coatings System: [www.generalpolymers.com](http://www.generalpolymers.com).

- B. Other Acceptable Manufacturers: Subject to requirements, provide equivalent products of the following manufacturers with written approval of Architect.
  - 1. Crossfield Products Corp: [www.crossfieldproducts.com](http://www.crossfieldproducts.com).
  - 2. Key Resin Company: [www.keyresin.com](http://www.keyresin.com).
  - 3. Stonhard, Inc: [www.stonhard.com](http://www.stonhard.com).
  - 4. Stratashield Div. Tnemec Company, Inc: [www.stratashield.com](http://www.stratashield.com).
  - 5. Substitutions: See Section 01 6000 - Product Requirements.
- C. Source Limitations: Obtain primary resinous flooring materials, including primers, resins, hardening agents, grouting coats, and topcoats, through one source from a single manufacturer. Provide secondary materials, including patching and fill material, joint sealant, and repair materials, of type and from source recommended by manufacturer of primary materials.

## 2.02 FLUID-APPLIED FLOORING SYSTEMS

- A. Fluid-Applied Flooring Type PEF-X: Solvent based epoxy, moisture tolerant, with broadcast aggregate.
  - 1. Aggregate: Vinyl flakes.
  - 2. Texture: Slip resistant.
  - 3. System Thickness: 20 - 30 mils, nominal, when dry.
  - 4. Texture: Slip resistant.
  - 5. Sheen: Gloss.
  - 6. Flake Size: 1/4 inch.
  - 7. Flake Color:
    - a. Type PEF-1:
      - 1) SW6797 (45%).
      - 2) SW7018 (35%).
      - 3) SW7757 (20%)
    - b. Type PEF-2:
      - 1) SW7015 (45%).
      - 2) SW7017 (35%)
      - 3) SW7757 (20%)
  - 8. Primer:
    - a. Resin: Epoxy; two-component.
    - b. Formulation Description: 96 percent solids.
    - c. Application Method: Squeegee and roller.
    - d. Number of Coats: (1) one.
      - 1) 6 - 20 wet mils; 200-300 square feet per gallon.
    - e. Product: 3579 Epoxy Primer/Binder by General Polymers.
  - 9. Body Coats:
    - a. Resin: Epoxy 2 component.
    - b. Formulation Description: 99% volume solids.
    - c. Application Method: Squeegee or trowel; backroll with 3/8 inch nap roller.
    - d. Number of Coats: (1) One.
      - 1) 10 - 30 wet mils; 200 to 300 square feet per gallon.
    - e. Product: 3746 High Performance Epoxy by General Polymers.
  - 10. Broadcast: Vinyl Flake.
    - a. Formulation Description: Vinyl Flake.
    - b. Flake size and color indicated above.
    - c. Type: Tweed (chips to be pre-mixed at mfg. facility)
    - d. Finish: standard.
    - e. Number of Coats: one, broadcast to refusal into wet body coat.
  - 11. Grout Coat:
    - a. Resin: Epoxy 2 component.

- b. Formulation Description: 99% volume solids.
- c. Application Method: Squeegee or trowel; backroll with 3/8 inch nap roller.
- d. Number of Coats: (1) One.
  - 1) 10 - 30 wet mils; 160 to 250 square feet per gallon.
- e. Product: 3746 High Performance Epoxy by General Polymers.
- 12. Topcoat: Sealing or finish coats.
  - a. Resin: Ultra High Solids Aliphatic Urethane.
  - b. Formulation Description: Two (2) component, UV stable, urethane, aliphatic isocyanate, 94 percent solids .
  - c. Type: Clear.
  - d. Finish: Gloss.
  - e. Wearing Surface: #60 grit white aluminum oxide in one of two topcoats.
  - f. Application Method: 1/4 inch nap roller.
  - g. Number of Coats: One (1).
    - 1) 4 - 6 wet mils per coat; 250 to 400 square feet per gallon.
  - h. Product: 4686 UHS Aliphatic Urethane by General Polymers.
- 13. System Physical Properties: Provide resinous flooring system with the following minimum physical property requirements when tested according to test methods indicated:
  - a. Flexural Strength: 10,000 psi per ASTM C 580.
  - b. Impact Resistance: Direct, 160 in/lbs per MIL D3134J; reverse, inch pounds greater than 80, passes .
  - c. Abrasion Resistance: 100 mg maximum weight loss per ASTM D 4060 CS-17 Wheel, 1000 cycles.
  - d. Adhesion: 350 psi per ACI 503R (100% Concrete Failure).
  - e. Flammability: Self-extinguishing over concrete.
  - f. Resistance to elevated temperatures: No slip or flow at required temperature of 158F per MIL D3134J.

### **2.03 ACCESSORIES**

- A. Reinforcing Membrane: Flexible resin formulation that is recommended by manufacturer for substrate and primer and body coats indicated and that prevents substrate cracks from reflecting through resinous flooring.
- B. Subfloor Filler: Resinous product; type recommended by flooring material manufacturer.
- C. Primer: Type recommended by fluid-applied flooring manufacturer.
- D. Joint Sealant: Type recommended or produced by resinous flooring manufacturer for type of service and joint condition indicated.

### **PART 3 EXECUTION**

#### **3.01 EXAMINATION**

- A. Verify that subfloor surfaces are smooth and flat within the tolerances specified for that type of work and are ready to receive flooring.
- B. Verify that subfloor surfaces are dust-free and free of substances that could impair bonding of materials to subfloor surfaces.
- C. Cementitious Subfloor Surfaces: Verify that substrates are ready for fluid-applied flooring installation by testing for moisture and alkalinity (pH).
  - 1. Test as Follows:
    - a. Alkalinity (pH): ASTM F710.
    - b. Internal Relative Humidity: ASTM F2170.
    - c. Moisture Vapor Emission: ASTM F1869.
  - 2. Obtain instructions if test results are not within limits recommended by fluid-applied flooring manufacturer.
- D. Verify that required floor-mounted utilities are in correct location.

### **3.02 PREPARATION**

- A. Remove subfloor ridges and bumps. Fill low spots, cracks, joints, holes, and other defects with subfloor filler.
- B. Roughen concrete substrates as follows:
  - 1. Shot-blast surfaces with an apparatus that abrades the concrete surface, contains the dispensed shot within the apparatus, and recirculates the shot by vacuum pickup.
  - 2. Comply with ASTM C 811 requirements unless manufacturer's written instructions are more stringent.
- C. Prepare concrete surfaces according to ICRI 310.2R.
- D. Apply, trowel, and float filler to achieve smooth, flat, hard surface. Grind irregularities above the surface level. Prohibit traffic until filler is cured.
- E. Vacuum clean substrate.
- F. Apply primer to surfaces required by flooring manufacturer.

### **3.03 INSTALLATION - FLOORING**

- A. Apply in accordance with manufacturer's instructions.
  - 1. Coordinate application of components to provide optimum adhesion of resinous flooring system to substrate, and optimum intercoat adhesion.
  - 2. Cure resinous flooring components according to manufacturer's written instructions. Prevent contamination during application and curing processes.
  - 3. At substrate expansion and isolation joints, provide joint in resinous flooring to comply with resinous flooring manufacturer's written recommendations.
  - 4. Apply joint sealant to comply with manufacturer's written recommendations.
- B. Apply each coat to minimum thickness required by manufacturer.
- C. Finish to smooth level surface.
- D. Where directed, broadcast aggregate to refusal in strict accord with manufacturer's required procedures.
- E. Install flooring in recessed type floor access covers.

### **3.04 TERMINATIONS**

- A. Chase edges to "lock" the coating system into the concrete substrate along lines of termination.
- B. Penetration Treatment: Lap and seal coating onto the perimeter of the penetrating item by bridging over compatible elastomer at the interface to compensate for possible movement. Install thermal isolation construction detail where applicable and indicated in detail drawings.
- C. Trenches: Continue coating system into trenches to maintain monolithic protection. Treat cold joints to assure bridging of potential cracks.
- D. Treat floor drains by chasing the coating to lock in place at point of termination. Install thermal isolation construction detail where applicable and indicated in detail drawings.

### **3.05 JOINTS AND CRACKS**

- A. Treat control joints to bridge potential cracks and to maintain monolithic protection.
- B. Treat cold joints and construction joints to bridge potential cracks and to maintain monolithic protection on horizontal and vertical surfaces as well as horizontal and vertical interfaces.

### **3.06 FIELD QUALITY CONTROL**

- A. See Section 01 4000 - Quality Requirements, for additional requirements.
- B. Material Sampling: Owner may at any time and any numbers of times during resinous flooring application require material samples for testing for compliance with requirements.

### **3.07 PROTECTION**

- A. Prohibit traffic on floor finish for 48 hours after installation.



- B. Barricade area to protect flooring until fully cured.
- C. Protect resinous flooring materials from damage and wear during construction operation. Where temporary covering is required for this purpose, comply with manufacturer's recommendations for protective materials and method of application.

**END OF SECTION**

**SECTION 09 6813**  
**TILE CARPETING**

**PART 1 GENERAL**

**1.01 SECTION INCLUDES**

- A. Carpet tile, fully adhered.

**1.02 RELATED REQUIREMENTS**

- A. Section 03 3000 - Cast-in-Place Concrete: Restrictions on curing compounds for concrete slabs and floors to receive adhesive-applied flooring.

**1.03 REFERENCE STANDARDS**

- A. ASTM D2859 - Standard Test Method for Ignition Characteristics of Finished Textile Floor Covering Materials; 2016.
- B. ASTM E648 - Standard Test Method for Critical Radiant Flux of Floor-Covering Systems Using a Radiant Heat Energy Source; 2015.
- C. ASTM F710 - Standard Practice for Preparing Concrete Floors to Receive Resilient Flooring; 2011.
- D. NFPA 253 - Standard Method of Test for Critical Radiant Flux of Floor Covering Systems Using a Radiant Heat Energy Source; 2015.

**1.04 SUBMITTALS**

- A. See Section 01 3000 - Administrative Requirements, for submittal procedures.
- B. Product Data: Provide data on specified products, describing physical and performance characteristics; sizes, patterns, colors available, and method of installation.
- C. Shop Drawings: Indicate layout of joints.
- D. Samples: Submit two carpet tiles illustrating color and pattern design for each carpet color selected.
- E. Submit two, 12 inch long samples of edge strip.
- F. Manufacturer's Installation Instructions: Indicate special procedures and perimeter conditions requiring special attention.
- G. Maintenance Data: Include maintenance procedures, recommended maintenance materials, and suggested schedule for cleaning.
- H. Maintenance Materials: Furnish the following for Owner's use in maintenance of project.
  - 1. See Section 01 6000 - Product Requirements, for additional provisions.
  - 2. Extra Carpet Tiles: Quantity equal to 2 percent of total installed of each color and pattern installed.

**1.05 QUALITY ASSURANCE**

- A. Manufacturer Qualifications: Company specializing in manufacturing specified carpet tile with minimum five years documented experience.
- B. Installer Qualifications: Company specializing in installing carpet tile with minimum five years documented experience and approved by carpet tile manufacturer.

**1.06 FIELD CONDITIONS**

- A. Store materials in area of installation for minimum period of 24 hours prior to installation.

**PART 2 PRODUCTS**

**2.01 MANUFACTURERS**

- A. Tile Carpeting:
  - 1. J & J Flooring: [www.jjflooringgroup.com](http://www.jjflooringgroup.com).
  - 2. Substitutions: See Section 01 6000 - Product Requirements.

## **2.02 MATERIALS**

- A. Tile Carpeting, Type WOC-1: Textured patterned loop, manufactured in one color dye lot.
  - 1. Product: Incognito Walk-Off Modular manufactured by J&J Flooring.
  - 2. Tile Size: 24 by 24 inch, nominal.
  - 3. Critical Radiant Flux: Minimum of 0.45 watts/sq cm, when tested in accordance with ASTM E648 or NFPA 253.
  - 4. Surface Flammability Ignition: Pass ASTM D2859 (the "pill test").
  - 5. Fiber System: Encore SD.
  - 6. Dye Method: 100 percent solution dyed.
  - 7. Construction: Textured Patterned Loop.
  - 8. Maximum Electrostatic Charge: 3 Kv. at 20 percent relative humidity.
  - 9. Pile Height: 0.187 inch.
  - 10. Gage: 1/12 inch.
  - 11. Stitches: 12 per inch.
  - 12. Pile Weight: 29 oz/sq yd.
  - 13. Pile Density: 8717 oz/cu. yd.
  - 14. Backing: Nexus Modular.

## **2.03 ACCESSORIES**

- A. Subfloor Filler: White premix latex; type recommended by flooring material manufacturer.
- B. Edge Strips: Rubber, color as selected by Architect.
- C. Carpet Tile Adhesive: Recommended by carpet tile manufacturer; releasable type.

## **PART 3 EXECUTION**

### **3.01 EXAMINATION**

- A. Verify that subfloor surfaces are smooth and flat within tolerances specified for that type of work and are ready to receive carpet tile.
- B. Verify that subfloor surfaces are dust-free and free of substances that could impair bonding of adhesive materials to subfloor surfaces.
- C. Cementitious Subfloor Surfaces: Verify that substrates are ready for flooring installation by testing for moisture and alkalinity (pH).
  - 1. Test in accordance with ASTM F710.
  - 2. Obtain instructions if test results are not within limits recommended by flooring material manufacturer and adhesive materials manufacturer.
- D. Verify that required floor-mounted utilities are in correct location.

### **3.02 PREPARATION**

- A. Prepare floor substrates as recommended by flooring and adhesive manufacturers.
- B. Remove subfloor ridges and bumps. Fill minor or local low spots, cracks, joints, holes, and other defects with subfloor filler.
- C. Apply, trowel, and float filler to achieve smooth, flat, hard surface. Prohibit traffic until filler is cured.
- D. Vacuum clean substrate.

### **3.03 INSTALLATION**

- A. Starting installation constitutes acceptance of subfloor conditions.
- B. Install carpet tile in accordance with manufacturer's instructions.
- C. Blend carpet from different cartons to ensure minimal variation in color match.
- D. Cut carpet tile clean. Fit carpet tight to intersection with vertical surfaces without gaps.

- E. Lay carpet tile in square pattern, with pile direction parallel to next unit, set parallel to building lines.
- F. Trim carpet tile neatly at walls and around interruptions.
- G. Complete installation of edge strips, concealing exposed edges.

**3.04 INSTALLATION ON STAIRS**

- A. Use one piece of carpet for each tread and the riser below. Apply seam adhesive to all cut edges.
- B. Lay carpet with pile direction in the length of the stair.
- C. Adhere carpet tight to stair treads and risers.

**3.05 CLEANING**

- A. Remove excess adhesive without damage, from floor, base, and wall surfaces.
- B. Clean and vacuum carpet surfaces.

**END OF SECTION**

**SECTION 09 8430**  
**SOUND-ABSORBING WALL AND CEILING UNITS**

**PART 1 GENERAL**

**1.01 SECTION INCLUDES**

- A. Cement - wood fiber panels, acoustic insulation and mounting accessories.

**1.02 RELATED REQUIREMENTS**

- A. Section 06 4100 - Architectural Wood Casework.

**1.03 PRICE AND PAYMENT PROCEDURES**

- A. Alternates: See Section 01 2300 - Alternates, for product alternatives affecting this section.  
1. This section describes an alternative product; No acoustical panels will be required under Base Bid.

**1.04 REFERENCE STANDARDS**

- A. ASTM E84 - Standard Test Method for Surface Burning Characteristics of Building Materials; 2018b.

**1.05 SUBMITTALS**

- A. See Section 01 3000 - Administrative Requirements, for submittal procedures.

**PART 2 PRODUCTS**

**2.01 CEMENT-WOOD FIBER SOUND-ABSORBING UNITS**

- A. Manufacturers:  
1. Basis of Design: Armstrong Ceiling and Wall Solutions; Tectum Kerfed V-Line Acoustical Wall Panels: [www.armstrongceilings.com/tectum](http://www.armstrongceilings.com/tectum).  
2. Acoustical Surfaces Inc; Envirocoustic Wood Wool: [www.acousticalsurfaces.com](http://www.acousticalsurfaces.com).  
3. Troy Acoustics Corporation; Troy Board Waterproof Cementitious Wood Fiber Board: [www.troyacoustics.com](http://www.troyacoustics.com).  
4. Substitutions: See Section 01 6000 - Product Requirements.
- B. Provide all cement - wood fiber acoustic panels by one manufacturer.
- C. Provide acoustical wall panel assembly designed and tested to provide surface burning characteristics (ASTM E84) as follows:  
1. Flamespread: 0 - 25.  
2. Smoke Developed: 0-5.
- D. Provide acoustical wall panel system which has been manufactured, fabricated and installed to provide Noise Reduction Coefficient (NRC) rating as follows:  
1. NRC = 0.70.
- E. Tectum Wall Panels Type CWFP.  
1. Panel Thickness: 2 inches. Edge bevel all 4 sides.  
2. Panel Size: As detailed.  
3. Finish: Provide factory custom painted finish. Provide 3 factory custom colors as selected by Architect.  
4. Furring: 7/8 inch light gage metal hat channel furring.  
5. Mounting: Tectum mounting type D-20 (1" thick panels on 7/8 inch light gage hat channel furring. Provide all fasteners and metal furring. Fasteners to be 2-1/4 inch screws.

**2.02 FABRICATION**

- A. Tolerances: Fabricate to finished tolerance of plus or minus 1/16 inch for thickness, overall length and width, and squareness from corner to corner.

## **2.03 ACCESSORIES**

### **PART 3 EXECUTION**

#### **3.01 EXAMINATION**

- A. Examine substrates for conditions detrimental to installation of acoustical units. Proceed with installation only after unsatisfactory conditions have been corrected.

#### **3.02 INSTALLATION**

- A. Install acoustical units in locations as indicated, following manufacturer's installation instructions.
- B. Align panels accurately, with edges plumb and top edges level. Scribe to fit accurately at adjoining work and penetrations.
- C. Install acoustical units to construction tolerances of plus or minus 1/16 inch for the following:
  - 1. Plumb and level.
  - 2. Flatness.
  - 3. Width of joints.

#### **3.03 CLEANING**

- A. Clean fabric facing upon completion of installation from dust and other foreign materials, following manufacturer's instructions.

#### **3.04 PROTECTION**

- A. Provide protection of installed acoustical panels until Date of Substantial Completion.
- B. Replace panels that cannot be cleaned and repaired to satisfaction of the Architect.

**END OF SECTION**

**SECTION 09 9113**  
**EXTERIOR PAINTING**

**PART 1 GENERAL**

**1.01 SECTION INCLUDES**

- A. Surface preparation.
- B. Field application of paints, stains, and varnishes.
- C. Materials for backpriming woodwork.
- D. Scope: Finish exterior surfaces exposed to view, unless fully factory-finished and unless otherwise indicated, including the following:
  - 1. Both sides and edges of plywood backboards for electrical and telecom equipment before installing equipment.
  - 2. Exposed surfaces of steel lintels and ledge angles.
  - 3. Mechanical and Electrical:
    - a. On the roof and outdoors, paint equipment that is exposed to weather or to view, including factory-finished materials.
- E. Do Not Paint or Finish the Following Items:
  - 1. Items factory-finished unless otherwise indicated; materials and products having factory-applied primers are not considered factory finished.
  - 2. Items indicated to receive other finishes.
  - 3. Items indicated to remain unfinished.
  - 4. Fire rating labels, equipment serial number and capacity labels, and operating parts of equipment.
  - 5. Non-metallic roofing and flashing.
  - 6. Stainless steel, anodized aluminum, bronze, terne coated stainless steel, zinc, and lead.
  - 7. Marble, granite, slate, and other natural stones.
  - 8. Floors, unless specifically indicated.
  - 9. Ceramic and other types of tiles.
  - 10. Brick, glass unit masonry, architectural concrete, cast stone, integrally colored plaster and stucco.
  - 11. Glass.
  - 12. Concealed pipes, ducts, and conduits.

**1.02 RELATED REQUIREMENTS**

- A. Section 05 5000 - Metal Fabrications: Shop-primed items.
- B. Section 09 9123 - Interior Painting.
- C. Section 09 9600 - High-Performance Coatings.
- D. Section 21 0553 - Identification for Fire Suppression Piping and Equipment: Color coding scheme for items to be painted under this section.
- E. Section 22 0553 - Identification for Plumbing Piping and Equipment: Painted identification.
- F. Section 23 0553 - Identification for HVAC Piping and Equipment: Painted identification.

**1.03 DEFINITIONS**

- A. Conform to ASTM D16 for interpretation of terms used in this section.

**1.04 REFERENCE STANDARDS**

- A. 40 CFR 59, Subpart D - National Volatile Organic Compound Emission Standards for Architectural Coatings; U.S. Environmental Protection Agency; current edition.
- B. ASTM D16 - Standard Terminology for Paint, Related Coatings, Materials, and Applications; 2016.

- C. ASTM D4258 - Standard Practice for Surface Cleaning Concrete for Coating; 2005 (Reapproved 2017).
- D. MPI (APSM) - Master Painters Institute Architectural Painting Specification Manual; Current Edition, [www.paintinfo.com](http://www.paintinfo.com).
- E. SSPC-SP 1 - Solvent Cleaning; 2015.
- F. SSPC-SP 2 - Hand Tool Cleaning; 1982 (Ed. 2004).
- G. SSPC-SP 6 - Commercial Blast Cleaning; 2007.
- H. SSPC-SP 13 - Surface Preparation of Concrete; (Reaffirmed 2015); 2003.

#### **1.05 SUBMITTALS**

- A. See Section 01 3000 - Administrative Requirements, for submittal procedures.
- B. Product Data: Provide complete list of products to be used, with the following information for each:
  - 1. Manufacturer's name, product name and/or catalog number, and general product category (e.g. "alkyd enamel").
  - 2. MPI product number (e.g. MPI #47).
  - 3. Cross-reference to specified paint system(s) product is to be used in; include description of each system.
  - 4. Manufacturer's installation instructions.
  - 5. If proposal of substitutions is allowed under submittal procedures, explanation of substitutions proposed.
- C. Samples: Submit three paper "draw down" samples, 8-1/2 by 11 inches in size, illustrating range of colors available for each finishing product specified.
  - 1. Where sheen is specified, submit samples in only that sheen.
  - 2. Where sheen is not specified, submit each color in each sheen available.
  - 3. Allow 30 days for approval process, after receipt of complete samples by Architect.
  - 4. Paint color submittals will not be considered until color submittals for major materials not to be painted, such as masonry, have been approved.
- D. Samples: Submit two painted samples, illustrating selected colors and textures for each color and system selected with specified coats cascaded. Submit on aluminum sheet, 8 by 12 inch in size.
- E. Certification: By manufacturer that paints and finishes comply with VOC limits specified.
- F. Manufacturer's Instructions: Indicate special surface preparation procedures.
- G. Maintenance Data: Submit data including finish schedule showing where each product/color/finish was used, product technical data sheets, material safety data sheets (MSDS), care and cleaning instructions, touch-up procedures, repair of painted and finished surfaces, and color samples of each color and finish used.
- H. Maintenance Materials: Furnish the following for Owner's use in maintenance of project.
  - 1. See Section 01 6000 - Product Requirements, for additional provisions.
  - 2. Extra Paint and Finish Materials: 5 percent but not less than 1 gallons of each color; from the same product run, store where directed.
  - 3. Label each container with color in addition to the manufacturer's label.

#### **1.06 QUALITY ASSURANCE**

- A. Manufacturer Qualifications: Company specializing in manufacturing the products specified, with minimum ten years documented experience.
- B. Applicator Qualifications: Company specializing in performing the type of work specified with minimum five years experience and approved by manufacturer.

#### **1.07 MOCK-UP**

- A. See Section 01 4000 - Quality Requirements, for general requirements for mock-up.



- B. Provide panel, 8 feet long by 8 feet wide, illustrating paint color, texture, and finish.
- C. Provide door and frame assembly illustrating paint color, texture, and finish.
- D. Locate where directed by Architect.
- E. Mock-up may remain as part of the work.

#### **1.08 DELIVERY, STORAGE, AND HANDLING**

- A. Deliver products to site in sealed and labeled containers; inspect to verify acceptability.
- B. Container Label: Include manufacturer's name, type of paint, brand name, lot number, brand code, coverage, surface preparation, drying time, cleanup requirements, color designation, and instructions for mixing and reducing.
- C. Paint Materials: Store at minimum ambient temperature of 45 degrees F and a maximum of 90 degrees F, in ventilated area, and as required by manufacturer's instructions.

#### **1.09 FIELD CONDITIONS**

- A. Do not apply materials when surface and ambient temperatures are outside the temperature ranges required by the paint product manufacturer.
- B. Follow manufacturer's recommended procedures for producing best results, including testing of substrates, moisture in substrates, and humidity and temperature limitations.
- C. Do not apply exterior paint and finishes during rain or snow, or when relative humidity is outside the humidity ranges required by the paint product manufacturer.
- D. Minimum Application Temperatures for Latex Paints: 50 degrees F for exterior; unless required otherwise by manufacturer's instructions.
- E. Minimum Application Temperature for Varnish Finishes: 65 degrees F for exterior, unless required otherwise by manufacturer's instructions.
- F. Provide lighting level of 80 ft candles measured mid-height at substrate surface.

### **PART 2 PRODUCTS**

#### **2.01 MANUFACTURERS**

- A. Provide paints and finishes from the same manufacturer to the greatest extent possible.
  - 1. In the event that a single manufacturer cannot provide specified products, minor exceptions will be permitted provided approval by Architect is obtained using the specified procedures for substitutions.
  - 2. Substitution of MPI-approved products by a different manufacturer is preferred over substitution of unapproved products by the same manufacturer.
  - 3. Substitution of a different paint system using MPI-approved products by the same manufacturer will be considered.
- B. Paints:
  - 1. Base Manufacturer: Sherwin-Williams Company.
  - 2. Behr Process Corporation: [www.behr.com/#sle](http://www.behr.com/#sle).
  - 3. PPG Paints: [www.ppgpaints.com/#sle](http://www.ppgpaints.com/#sle).
  - 4. Pratt & Lambert Paints: [www.prattandlambert.com/#sle](http://www.prattandlambert.com/#sle).
  - 5. Sherwin-Williams Company: [www.sherwin-williams.com/#sle](http://www.sherwin-williams.com/#sle).
  - 6. Valspar Corporation: [www.valsparpaint.com/#sle](http://www.valsparpaint.com/#sle).
- C. Primer Sealers: Same manufacturer as top coats.
- D. Substitutions: See Section 01 6000 - Product Requirements.

#### **2.02 PAINTS AND FINISHES - GENERAL**

- A. Paints and Finishes: Ready mixed, unless required to be a field-catalyzed paint.
  - 1. Provide paints and finishes of a soft paste consistency, capable of being readily and uniformly dispersed to a homogeneous coating, with good flow and brushing properties, and capable of drying or curing free of streaks or sags.

2. Provide materials that are compatible with one another and the substrates indicated under conditions of service and application, as demonstrated by manufacturer based on testing and field experience.
  3. For opaque finishes, tint each coat including primer coat and intermediate coats, one-half shade lighter than succeeding coat, with final finish coat as base color.
  4. Supply each paint material in quantity required to complete entire project's work from a single production run.
  5. Do not reduce, thin, or dilute paint or finishes or add materials unless such procedure is specifically described in manufacturer's product instructions.
- B. Volatile Organic Compound (VOC) Content:
1. Provide paints and finishes that comply with the most stringent requirements specified in the following:
    - a. 40 CFR 59, Subpart D--National Volatile Organic Compound Emission Standards for Architectural Coatings.
    - b. Architectural coatings VOC limits of the State in which the Project is located.
  2. Determination of VOC Content: Testing and calculation in accordance with 40 CFR 59, Subpart D (EPA Method 24), exclusive of colorants added to a tint base and water added at project site; or other method acceptable to authorities having jurisdiction.
- C. Flammability: Comply with applicable code for surface burning characteristics.
- D. Sheens: Provide the sheens specified; where sheen is not specified, sheen will be selected later by Architect from the manufacturer's full line.
- E. Colors: As indicated on drawings.

### **2.03 PAINT SYSTEMS - EXTERIOR**

- A. Paint E-OP - Exterior Surfaces to be Painted, Unless Otherwise Indicated: Including concrete, concrete masonry units, and primed metal.
1. Two top coats and one coat primer.
  2. Top Coat(s): Exterior Latex; MPI #11, 15, 119.
    - a. Products:
      - 1) Sherwin-Williams Solo Interior/Exterior Acrylic Semi-Gloss.
      - 2) Sherwin-Williams A-100 Exterior Latex Gloss.
      - 3) Substitutions: Section 01 6000 - Product Requirements.
  3. Top Coat Sheen:
    - a. Semi-Gloss: MPI gloss level 5; use this sheen where selected by Architect.
    - b. Gloss: MPI gloss level 6; use this sheen where selected by Architect.
- B. Paint I-OP-MD-DT - Medium Duty Door/Trim: For surfaces subject to frequent contact by occupants, including metals:
1. Medium duty applications include doors, door frames, railings, handrails, and guardrails.
  2. Two top coats and one coat primer.
  3. Top Coat(s): Exterior Light Industrial Coating, Water Based.
    - a. Products:
      - 1) Sherwin-Williams Pro Industrial Waterbased Alkyd Urethane Enamel. Gloss.
      - 2) Sherwin-Williams Pro Industrial Waterbased Alkyd Urethane Enamel. Semi-Gloss.
      - 3) Sherwin-Williams Pro Industrial Waterbased Alkyd Urethane Enamel. Low Sheen.
      - 4) Substitutions: Section 01 6000 - Product Requirements.
    - b. Top Coat Sheen:
      - 1) Eggshell: MPI gloss level 3; use this sheen where directed by Architect.
      - 2) Semi-Gloss: MPI gloss level 5; use this sheen where directed by Architect.
      - 3) Gloss: MPI gloss level 6; use this sheen where directed by Architect.
    - c. Primer: As specified under "PRIMERS" below.

- C. Paint E-Pav - Pavement Marking Paint:
  - 1. Yellow: One coat, with reflective particles; Sherwin-Williams Pro-Park Waterborne Traffic Marking Paint.
  - 2. White: One coat, with reflective particles; Sherwin-Williams Pro-Park Waterborne Traffic Marking Paint.
  - 3. Blue: One coat, with reflective particles; Sherwin-Williams Pro-Park Waterborne Traffic Marking Paint.

#### **2.04 PRIMERS**

- A. Primers: Provide the following unless other primer is required or recommended by manufacturer of top coats.
  - 1. Interior/Exterior Latex Block Filler; MPI #4.
    - a. Products:
      - 1) Sherwin-Williams Pro Industrial Heavy Duty Block Filler. (MPI #4)
      - 2) Substitutions: Section 01 6000 - Product Requirements.
  - 2. Water Based Primer for Galvanized Metal; MPI #134.
    - a. Products:
      - 1) Sherwin-Williams Pro Industrial Pro-Cryl Universal Primer (MPI #107, 134)
      - 2) Substitutions: Section 01 6000 - Product Requirements.
  - 3. Rust-Inhibitive Water Based Primer; MPI #107.
    - a. Products:
      - 1) Sherwin-Williams Pro Industrial Pro-Cryl Universal Primer (MPI #107, 134)
      - 2) Substitutions: Section 01 6000 - Product Requirements.
  - 4. Interior/Exterior Quick Dry Primer for Aluminum.
    - a. Products:
      - 1) Sherwin-Williams Pro Industrial Pro-Cryl Universal Primer (MPI #107, 134)

#### **2.05 ACCESSORY MATERIALS**

- A. Accessory Materials: Provide primers, sealers, cleaning agents, cleaning cloths, sanding materials, and clean-up materials as required for final completion of painted surfaces.
- B. Patching Material: Latex filler.
- C. Fastener Head Cover Material: Latex filler.

### **PART 3 EXECUTION**

#### **3.01 EXAMINATION**

- A. Do not begin application of paints and finishes until substrates have been properly prepared.
- B. Verify that surfaces are ready to receive work as instructed by the product manufacturer.
- C. Examine surfaces scheduled to be finished prior to commencement of work. Report any condition that may potentially effect proper application.
- D. If substrate preparation is the responsibility of another installer, notify Architect of unsatisfactory preparation before proceeding.
- E. Test shop-applied primer for compatibility with subsequent cover materials.
- F. Measure moisture content of surfaces using an electronic moisture meter. Do not apply finishes unless moisture content of surfaces are below the following maximums:
  - 1. Exterior Plaster and Stucco: 12 percent.
  - 2. Masonry, Concrete, and Concrete Masonry Units: 12 percent.

#### **3.02 PREPARATION**

- A. Clean surfaces thoroughly and correct defects prior to application.
- B. Prepare surfaces using the methods recommended by the manufacturer for achieving the best result for the substrate under the project conditions.

- C. Remove or mask surface appurtenances, including electrical plates, hardware, light fixture trim, escutcheons, and fittings, prior to preparing surfaces for finishing.
- D. Seal surfaces that might cause bleed through or staining of topcoat.
- E. Remove mildew from impervious surfaces by scrubbing with solution of tetra-sodium phosphate and bleach. Rinse with clean water and allow surface to dry.
- F. Concrete:
  - 1. Remove release agents, curing compounds, efflorescence, and chalk. Do not coat surfaces if moisture content or alkalinity of surfaces to be coated exceeds that permitted in manufacturer's written instructions.
  - 2. Clean concrete according to ASTM D4258. Allow to dry.
  - 3. Prepare surface as recommended by top coat manufacturer and according to SSPC-SP 13.
- G. Masonry:
  - 1. Remove efflorescence and chalk. Do not coat surfaces if moisture content or alkalinity of surfaces or if alkalinity of mortar joints exceed that permitted in manufacturer's written instructions. Allow to dry.
  - 2. Prepare surface as recommended by top coat manufacturer.
- H. Exterior Gypsum Board: Fill minor defects with exterior filler compound. Spot prime defects after repair.
- I. Exterior Plaster: Fill hairline cracks, small holes, and imperfections with exterior patching plaster. Make smooth and flush with adjacent surfaces. Wash and neutralize high alkali surfaces.
- J. Asphalt, Creosote, or Bituminous Surfaces: Remove foreign particles to permit adhesion of finishing materials. Apply compatible sealer or primer.
- K. Insulated Coverings: Remove dirt, grease, and oil from canvas and cotton.
- L. Aluminum: Remove surface contamination and oils and wash with solvent according to SSPC-SP 1.
- M. Galvanized Surfaces:
  - 1. Remove surface contamination and oils and wash with solvent according to SSPC-SP 1.
  - 2. Prepare surface according to SSPC-SP 2.
- N. Ferrous Metal:
  - 1. Solvent clean according to SSPC-SP 1.
  - 2. Shop-Primed Surfaces: Sand and scrape to remove loose primer and rust. Feather edges to make touch-up patches inconspicuous. Clean surfaces with solvent. Prime bare steel surfaces. Re-prime entire shop-primed item.
  - 3. Remove rust, loose mill scale, and other foreign substances using using methods recommended in writing by paint manufacturer and blast cleaning according to SSPC-SP 6 "Commercial Blast Cleaning". Protect from corrosion until coated.
- O. Metal Doors to be Painted: Prime metal door top and bottom edge surfaces.

### **3.03 APPLICATION**

- A. Remove unfinished louvers, grilles, covers, and access panels on mechanical and electrical components and paint separately.
- B. Apply products in accordance with manufacturer's written instructions and recommendations in "MPI Architectural Painting Specification Manual".
- C. Where adjacent sealant is to be painted, do not apply finish coats until sealant is applied.
- D. Do not apply finishes to surfaces that are not dry. Allow applied coats to dry before next coat is applied.
- E. Apply each coat to uniform appearance.

- F. Dark Colors and Deep Clear Colors: Regardless of number of coats specified, apply additional coats until complete hide is achieved.
- G. Vacuum clean surfaces of loose particles. Use tack cloth to remove dust and particles just prior to applying next coat.
- H. Reinstall electrical cover plates, hardware, light fixture trim, escutcheons, and fittings removed prior to finishing.

**3.04 FIELD QUALITY CONTROL**

- A. See Section 01 4000 - Quality Requirements, for general requirements for field inspection.
- B. Owner will provide field inspection.

**3.05 CLEANING**

- A. Collect waste material that could constitute a fire hazard, place in closed metal containers, and remove daily from site.

**3.06 PROTECTION**

- A. Protect finishes until completion of project.
- B. Touch-up damaged finishes after Substantial Completion.

**END OF SECTION**

**SECTION 09 9123**  
**INTERIOR PAINTING**

**PART 1 GENERAL**

**1.01 SECTION INCLUDES**

- A. Surface preparation.
- B. Field application of paints.
- C. Materials for backpriming woodwork.
- D. Scope: Finish interior surfaces exposed to view, unless fully factory-finished and unless otherwise indicated.
  - 1. Both sides and edges of plywood backboards for electrical and telecom equipment before installing equipment.
  - 2. Access ladders.
  - 3. Surfaces inside cabinets.
  - 4. Prime surfaces to receive wall coverings.
  - 5. Mechanical and Electrical:
    - a. In finished areas, paint insulated and exposed pipes, conduit, boxes, insulated and exposed ducts, hangers, brackets, collars and supports, mechanical equipment, and electrical equipment, unless otherwise indicated.
    - b. In finished areas, paint shop-primed items.
    - c. Paint interior surfaces of air ducts and convector and baseboard heating cabinets that are visible through grilles and louvers with one coat of flat black paint to visible surfaces.
    - d. Paint dampers exposed behind louvers, grilles, to match face panels.
- E. Do Not Paint or Finish the Following Items:
  - 1. Items factory-finished unless otherwise indicated; materials and products having factory-applied primers are not considered factory finished.
  - 2. Items indicated to receive other finishes.
  - 3. Items indicated to remain unfinished.
  - 4. Fire rating labels, equipment serial number and capacity labels, bar code labels, and operating parts of equipment.
  - 5. Stainless steel, anodized aluminum, bronze, terne coated stainless steel, and lead items.
  - 6. Marble, granite, slate, and other natural stones.
  - 7. Floors, unless specifically indicated.
  - 8. Ceramic and other tiles.
  - 9. Brick, architectural concrete, cast stone, integrally colored plaster and stucco.
  - 10. Glass.
  - 11. Concealed pipes, ducts, and conduits.

**1.02 RELATED REQUIREMENTS**

- A. Section 05 5000 - Metal Fabrications: Shop-primed items.
- B. Section 05 5100 - Metal Stairs: Shop-primed items.
- C. Section 09 9113 - Exterior Painting.
- D. Section 09 9600 - High-Performance Coatings.
- E. Section 21 0553 - Identification for Fire Suppression Piping and Equipment: Painted identification.
- F. Section 22 0553 - Identification for Plumbing Piping and Equipment: Painted identification.
- G. Section 23 0553 - Identification for HVAC Piping and Equipment: Painted identification.
- H. Section 26 0553 - Identification for Electrical Systems: Painted identification.

### 1.03 DEFINITIONS

- A. Comply with ASTM D16 for interpretation of terms used in this section.

### 1.04 REFERENCE STANDARDS

- A. 40 CFR 59, Subpart D - National Volatile Organic Compound Emission Standards for Architectural Coatings; U.S. Environmental Protection Agency; current edition.
- B. ASTM D16 - Standard Terminology for Paint, Related Coatings, Materials, and Applications; 2016.
- C. ASTM D4258 - Standard Practice for Surface Cleaning Concrete for Coating; 2005 (Reapproved 2017).
- D. ASTM D4442 - Standard Test Methods for Direct Moisture Content Measurement of Wood and Wood-Based Materials; 2016.
- E. MPI (APSM) - Master Painters Institute Architectural Painting Specification Manual; Current Edition, [www.paintinfo.com](http://www.paintinfo.com).
- F. SSPC-SP 1 - Solvent Cleaning; 2015.
- G. SSPC-SP 2 - Hand Tool Cleaning; 1982 (Ed. 2004).
- H. SSPC-SP 6 - Commercial Blast Cleaning; 2007.
- I. SSPC-SP 13 - Surface Preparation of Concrete; (Reaffirmed 2015); 2003.

### 1.05 SUBMITTALS

- A. See Section 01 3000 - Administrative Requirements, for submittal procedures.
- B. Product Data: Provide complete list of products to be used, with the following information for each:
  - 1. Manufacturer's name, product name and/or catalog number, and general product category (e.g. "alkyd enamel").
  - 2. MPI product number (e.g. MPI #47).
  - 3. Cross-reference to specified paint system(s) product is to be used in; include description of each system.
  - 4. Manufacturer's installation instructions.
  - 5. If proposal of substitutions is allowed under submittal procedures, explanation of substitutions proposed.
- C. Samples: Submit three paper "draw down" samples, 8-1/2 by 11 inches in size, illustrating range of colors available for each finishing product specified.
  - 1. Where sheen is specified, submit samples in only that sheen.
  - 2. Where sheen is not specified, submit each color in each sheen available.
  - 3. Allow 30 days for approval process, after receipt of complete samples by Architect.
  - 4. Paint color submittals will not be considered until color submittals for major materials not to be painted, such as masonry, have been approved.
- D. Samples: Submit two painted samples, illustrating selected colors and textures for each color and system selected with specified coats cascaded. Submit on aluminum sheet, 8 by 12 inch in size.
- E. Certification: By manufacturer that paints and finishes comply with VOC limits specified.
- F. Manufacturer's Instructions: Indicate special surface preparation procedures.
- G. Maintenance Data: Submit data including finish schedule showing where each product/color/finish was used, product technical data sheets, material safety data sheets (MSDS), care and cleaning instructions, touch-up procedures, repair of painted and finished surfaces, and color samples of each color and finish used.
- H. Maintenance Materials: Furnish the following for Owner's use in maintenance of project.
  - 1. See Section 01 6000 - Product Requirements, for additional provisions.

2. Extra Paint and Finish Materials: 5 percent but not less than 1 gallons of each color; from the same product run, store where directed.
3. Label each container with color in addition to the manufacturer's label.

#### **1.06 QUALITY ASSURANCE**

- A. Manufacturer Qualifications: Company specializing in manufacturing the products specified, with minimum ten years documented experience.
- B. Applicator Qualifications: Company specializing in performing the type of work specified with minimum five years experience and approved by manufacturer.

#### **1.07 MOCK-UP**

- A. See Section 01 4000 - Quality Requirements, for general requirements for mock-up.
- B. Provide panel, 8 feet long by 8 feet wide, illustrating paint color, texture, and finish.
- C. Provide door and frame assembly illustrating paint color, texture, and finish.
- D. Locate where directed by Architect.
- E. Mock-up may remain as part of the work.

#### **1.08 DELIVERY, STORAGE, AND HANDLING**

- A. Deliver products to site in sealed and labeled containers; inspect to verify acceptability.
- B. Container Label: Include manufacturer's name, type of paint, brand name, lot number, brand code, coverage, surface preparation, drying time, cleanup requirements, color designation, and instructions for mixing and reducing.
- C. Paint Materials: Store at minimum ambient temperature of 45 degrees F and a maximum of 90 degrees F, in ventilated area, and as required by manufacturer's instructions.

#### **1.09 FIELD CONDITIONS**

- A. Do not apply materials when surface and ambient temperatures are outside the temperature ranges required by the paint product manufacturer.
- B. Follow manufacturer's recommended procedures for producing best results, including testing of substrates, moisture in substrates, and humidity and temperature limitations.
- C. Do not apply materials when relative humidity exceeds 85 percent; at temperatures less than 5 degrees F above the dew point; or to damp or wet surfaces.
- D. Minimum Application Temperatures for Paints: 50 degrees F for interiors unless required otherwise by manufacturer's instructions.
- E. Provide lighting level of 80 ft candles measured mid-height at substrate surface.

### **PART 2 PRODUCTS**

#### **2.01 MANUFACTURERS**

- A. Provide paints and finishes from the same manufacturer to the greatest extent possible.
  1. In the event that a single manufacturer cannot provide specified products, minor exceptions will be permitted provided approval by Architect is obtained using the specified procedures for substitutions.
  2. Substitution of MPI-approved products by a different manufacturer is preferred over substitution of unapproved products by the same manufacturer.
  3. Substitution of a different paint system using MPI-approved products by the same manufacturer will be considered.
- B. Paints:
  1. Base Manufacturer: Sherwin-Williams Company.
  2. Behr Process Corporation: [www.behr.com/#sle](http://www.behr.com/#sle).
  3. PPG Paints: [www.ppgpaints.com/#sle](http://www.ppgpaints.com/#sle).
  4. Pratt & Lambert Paints: [www.prattandlambert.com/#sle](http://www.prattandlambert.com/#sle).
  5. Sherwin-Williams Company: [www.sherwin-williams.com/#sle](http://www.sherwin-williams.com/#sle).



6. Valspar Corporation: [www.valsparpaint.com/#sle](http://www.valsparpaint.com/#sle).
- C. Primer Sealers: Same manufacturer as top coats.
- D. Substitutions: See Section 01 6000 - Product Requirements.

## 2.02 PAINTS AND FINISHES - GENERAL

- A. Paints and Finishes: Ready mixed, unless intended to be a field-catalyzed paint.
  1. Provide paints and finishes of a soft paste consistency, capable of being readily and uniformly dispersed to a homogeneous coating, with good flow and brushing properties, and capable of drying or curing free of streaks or sags.
  2. Supply each paint material in quantity required to complete entire project's work from a single production run.
  3. Do not reduce, thin, or dilute paint or finishes or add materials unless such procedure is specifically described in manufacturer's product instructions.
- B. Volatile Organic Compound (VOC) Content:
  1. Provide paints and finishes that comply with the most stringent requirements specified in the following:
    - a. 40 CFR 59, Subpart D--National Volatile Organic Compound Emission Standards for Architectural Coatings.
    - b. Architectural coatings VOC limits of State in which the project is located.
  2. Determination of VOC Content: Testing and calculation in accordance with 40 CFR 59, Subpart D (EPA Method 24), exclusive of colorants added to a tint base and water added at project site; or other method acceptable to authorities having jurisdiction.
- C. Flammability: Comply with applicable code for surface burning characteristics.
- D. Sheens: Provide the sheens specified; where sheen is not specified, sheen will be selected later by Architect from the manufacturer's full line.
- E. Colors: To be selected from manufacturer's full range of available colors.
  1. Selection to be made by Architect after award of contract.
  2. Extend colors to surface edges; colors may change at any edge as directed by Architect.
  3. In finished areas, finish pipes, ducts, conduit, and equipment the same color as the wall/ceiling they are mounted on/under.
  4. In utility areas, finish equipment, piping, conduit, and exposed duct work in colors according to the color coding scheme indicated.

## 2.03 PAINT SYSTEMS - INTERIOR

- A. Paint I-OP - Interior Surfaces to be Painted, Unless Otherwise Indicated: Including gypsum board, concrete masonry units, uncoated steel, shop primed steel, galvanized steel, and aluminum except as indicated in I-OP-MD-DT.
  1. Two top coats and one coat primer.
  2. Top Coat(s): Institutional Low Odor/VOC Interior Latex.
    - a. Products:
      - 1) Sherwin-Williams ProMar 200 Zero VOC Interior Latex, Low Sheen. (MPI #144)
      - 2) Sherwin-Williams ProMar 200 Zero VOC Interior Latex, Semi-Gloss.
      - 3) Substitutions: Section 01 6000 - Product Requirements.
  3. Top Coat Sheen:
    - a. Satin: MPI gloss level 4; use this sheen where selected by Architect.
    - b. Semi-Gloss: MPI gloss level 5; use this sheen where selected by Architect.
- B. Paint I-OP-MD-DT - Medium Duty Door/Trim: For surfaces subject to frequent contact by occupants, including metals and wood:
  1. Medium duty applications include doors, door frames, railings, handrails, guardrails, and fixed ladders.
  2. Two top coats and one coat primer.
  3. Top Coat(s): Interior Light Industrial Coating, Water Based.

- a. Products:
  - 1) Sherwin-Williams Pro Industrial Waterbased Alkyd Urethane Enamel. Gloss.
  - 2) Sherwin-Williams Pro Industrial Waterbased Alkyd Urethane Enamel. Semi-Gloss.
  - 3) Sherwin-Williams Pro Industrial Waterbased Alkyd Urethane Enamel. Low Sheen.
  - 4) Substitutions: Section 01 6000 - Product Requirements.
4. Top Coat Sheen:
  - a. Eggshell: MPI gloss level 3; use this sheen where selected by Architect.
  - b. Semi-Gloss: MPI gloss level 5; use this sheen where selected by Architect.
  - c. Gloss: MPI gloss level 6; use this sheen where selected by Architect.
5. Primer: As specified under "PRIMERS" below.
- C. Paint I-OP-MD-WC - Medium Duty Vertical and Overhead: Including gypsum board, plaster, concrete, and concrete masonry units.
  1. Two top coats and one coat primer.
  2. Top Coat(s): Institutional Low Odor/VOC Interior Latex; MPI #143, 144, 145, 146, 147, or 148.
    - a. Products:
      - 1) Sherwin-Williams Pro Industrial Acrylic Coating, Eg-Shel.
      - 2) Sherwin-Williams Pro Industrial Acrylic Coating, Gloss. (MPI #148)
      - 3) Sherwin-Williams Pro Industrial Acrylic Coating, Semi-Gloss. (MPI #147)
      - 4) Sherwin-Williams Harmony Interior Acrylic Latex, Flat. (MPI #143)
  3. Top Coat Sheen:
    - a. Flat: MPI gloss level 1; use this sheen for ceilings and other overhead surfaces.
    - b. Eggshell: MPI gloss level 3; use this sheen where selected by Architect.
    - c. Semi-Gloss: MPI gloss level 5; use this sheen where selected by Architect.
    - d. Gloss: MPI gloss level 6; use this sheen where selected by Architect.
  4. Primer: As recommended by top coat manufacturer for specific substrate.
- D. Paint I-OP-DF - Dry Fall: Metals; exposed structure and overhead-mounted services in utilitarian spaces, including shop primed steel deck, structural steel, metal fabrications, galvanized ducts, galvanized conduit, galvanized piping, and other indicated overhead surfaces.
  1. Shop primer by others.
  2. Top Coat: Alkyd Dry Fall; MPI #55, 89, or 225.
    - a. Products:
      - 1) Sherwin-Williams Super Save-Lite Dryfall, Semi-Gloss. (MPI #89)
      - 2) Substitutions: Section 01 6000 - Product Requirements.
  3. Top Coat Sheen:
    - a. Semi-Gloss: MPI gloss level 5; use this sheen at all locations.
  4. Primer: As recommended by top coat manufacturer for specific substrate.

#### **2.04 PRIMERS**

- A. Primers: Provide the following unless other primer is required or recommended by manufacturer of top coats.
  1. Interior/Exterior Latex Block Filler; MPI #4.
    - a. Products:
      - 1) Sherwin-Williams Pro Industrial Heavy Duty Block Filler. (MPI #4)
      - 2) Substitutions: Section 01 6000 - Product Requirements.
  2. Interior Drywall Primer Sealer.
    - a. Products:
      - 1) Sherwin-Williams ProMar 200 Zero VOC Primer.
      - 2) Substitutions: Section 01 6000 - Product Requirements.
  3. Interior Rust-Inhibitive Water Based Primer; MPI #107, 134.
    - a. Products:

- 1) Sherwin-Williams Pro Industrial Pro-Cryl Universal Primer (MPI #107, 134)
- 2) Substitutions: Section 01 6000 - Product Requirements.
4. Interior Water Based Primer for Galvanized Metal; MPI #134.
  - a. Products:
    - 1) Sherwin-Williams Pro Industrial Pro-Cryl Universal Primer (MPI #107, 134)
    - 2) Substitutions: Section 01 6000 - Product Requirements.
5. Interior Water Based Primer for Aluminum.
  - a. Products:
    - 1) Sherwin-Williams Pro Industrial Pro-Cryl Universal Primer (MPI #107, 134)
    - 2) Substitutions: Section 01 6000 - Product Requirements.

## **2.05 ACCESSORY MATERIALS**

- A. Accessory Materials: Provide primers, sealers, cleaning agents, cleaning cloths, sanding materials, and clean-up materials as required for final completion of painted surfaces.
- B. Patching Material: Latex filler.
- C. Fastener Head Cover Material: Latex filler.

## **PART 3 EXECUTION**

### **3.01 EXAMINATION**

- A. Do not begin application of paints and finishes until substrates have been properly prepared.
- B. Verify that surfaces are ready to receive work as instructed by the product manufacturer.
- C. Examine surfaces scheduled to be finished prior to commencement of work. Report any condition that may potentially effect proper application.
- D. If substrate preparation is the responsibility of another installer, notify Architect of unsatisfactory preparation before proceeding.
- E. Test shop-applied primer for compatibility with subsequent cover materials.
- F. Measure moisture content of surfaces using an electronic moisture meter. Do not apply finishes unless moisture content of surfaces are below the following maximums:
  1. Gypsum Wallboard: 12 percent.
  2. Plaster and Stucco: 12 percent.
  3. Masonry, Concrete, and Concrete Masonry Units: 12 percent.
  4. Interior Wood: 15 percent, measured in accordance with ASTM D4442.
  5. Concrete Floors and Traffic Surfaces: 8 percent.

### **3.02 PREPARATION**

- A. Clean surfaces thoroughly and correct defects prior to application.
- B. Prepare surfaces using the methods recommended by the manufacturer for achieving the best result for the substrate under the project conditions.
- C. Remove or mask surface appurtenances, including electrical plates, hardware, light fixture trim, escutcheons, and fittings, prior to preparing surfaces or finishing.
- D. Seal surfaces that might cause bleed through or staining of topcoat.
- E. Concrete:
  1. Remove release agents, curing compounds, efflorescence, and chalk. Do not coat surfaces if moisture content or alkalinity of surfaces to be coated exceeds that permitted in manufacturer's written instructions.
  2. Clean concrete according to ASTM D4258. Allow to dry.
  3. Prepare surface as recommended by top coat manufacturer and according to SSPC-SP 13.
- F. Masonry:

1. Remove efflorescence and chalk. Do not coat surfaces if moisture content or alkalinity of surfaces or if alkalinity of mortar joints exceed that permitted in manufacturer's written instructions. Allow to dry.
2. Prepare surface as recommended by top coat manufacturer.
- G. Concrete Floors and Traffic Surfaces: Remove contamination, acid etch, and rinse floors with clear water. Verify required acid-alkali balance is achieved. Allow to dry.
- H. Gypsum Board: Fill minor defects with filler compound. Spot prime defects after repair.
- I. Plaster: Fill hairline cracks, small holes, and imperfections with latex patching plaster. Make smooth and flush with adjacent surfaces. Wash and neutralize high alkali surfaces.
- J. Insulated Coverings: Remove dirt, grease, and oil from canvas and cotton.
- K. Aluminum: Remove surface contamination and oils and wash with solvent according to SSPC-SP 1.
- L. Galvanized Surfaces:
  1. Remove surface contamination and oils and wash with solvent according to SSPC-SP 1.
  2. Prepare surface according to SSPC-SP 2.
- M. Ferrous Metal:
  1. Solvent clean according to SSPC-SP 1.
  2. Shop-Primed Surfaces: Sand and scrape to remove loose primer and rust. Feather edges to make touch-up patches inconspicuous. Clean surfaces with solvent. Prime bare steel surfaces. Re-prime entire shop-primed item.
  3. Remove rust, loose mill scale, and other foreign substances using using methods recommended in writing by paint manufacturer and blast cleaning according to SSPC-SP 6 "Commercial Blast Cleaning". Protect from corrosion until coated.
- N. Wood Surfaces to Receive Opaque Finish: Wipe off dust and grit prior to priming. Seal knots, pitch streaks, and sappy sections with sealer. Fill nail holes and cracks after primer has dried; sand between coats. Back prime concealed surfaces before installation.
- O. Wood Doors to be Field-Finished: Seal wood door top and bottom edge surfaces with tinted primer.

### **3.03 APPLICATION**

- A. Remove unfinished louvers, grilles, covers, and access panels on mechanical and electrical components and paint separately.
- B. Apply products in accordance with manufacturer's written instructions and recommendations in "MPI Architectural Painting Specification Manual".
- C. Do not apply finishes to surfaces that are not dry. Allow applied coats to dry before next coat is applied.
- D. Apply each coat to uniform appearance in thicknesses specified by manufacturer.
- E. Dark Colors and Deep Clear Colors: Regardless of number of coats specified, apply as many coats as necessary for complete hide.
- F. Sand wood and metal surfaces lightly between coats to achieve required finish.
- G. Vacuum clean surfaces of loose particles. Use tack cloth to remove dust and particles just prior to applying next coat.
- H. Reinstall electrical cover plates, hardware, light fixture trim, escutcheons, and fittings removed prior to finishing.

### **3.04 FIELD QUALITY CONTROL**

- A. See Section 01 4000 - Quality Requirements, for general requirements for field inspection.
- B. Owner will provide field inspection.

**3.05 CLEANING**

- A. Collect waste material that could constitute a fire hazard, place in closed metal containers, and remove daily from site.

**3.06 PROTECTION**

- A. Protect finishes until completion of project.
- B. Touch-up damaged finishes after Substantial Completion.

**END OF SECTION**

**SECTION 09 9600**  
**HIGH-PERFORMANCE COATINGS**

**PART 1 GENERAL**

**1.01 SECTION INCLUDES**

- A. High performance coatings.
- B. Surface preparation.

**1.02 RELATED REQUIREMENTS**

- A. Section 09 9113 - Exterior Painting.
- B. Section 09 9123 - Interior Painting: Requirements for mechanical and electrical equipment surfaces.

**1.03 REFERENCE STANDARDS**

- A. 40 CFR 59, Subpart D - National Volatile Organic Compound Emission Standards for Architectural Coatings; U.S. Environmental Protection Agency; current edition.
- B. ASTM D4258 - Standard Practice for Surface Cleaning Concrete for Coating; 2005 (Reapproved 2017).
- C. MPI (APL) - Master Painters Institute Approved Products List; Master Painters and Decorators Association; current edition, [www.paintinfo.com](http://www.paintinfo.com).
- D. MPI (APSM) - Master Painters Institute Architectural Painting Specification Manual; Current Edition, [www.paintinfo.com](http://www.paintinfo.com).
- E. SSPC-SP 1 - Solvent Cleaning; 2015.
- F. SSPC-SP 2 - Hand Tool Cleaning; 1982 (Ed. 2004).
- G. SSPC-SP 6 - Commercial Blast Cleaning; 2007.
- H. SSPC-SP 13 - Surface Preparation of Concrete; (Reaffirmed 2015); 2003.

**1.04 SUBMITTALS**

- A. See Section 01 3000 - Administrative Requirements for submittal procedures.
- B. Product Data: Provide complete list of all products to be used, with the following information for each:
  - 1. Manufacturer's name, product name and/or catalog number, and general product category (e.g. "alkyd enamel").
  - 2. MPI product number (e.g. MPI #47).
  - 3. Cross-reference to specified coating system(s) product is to be used in; include description of each system.
  - 4. Manufacturer's installation instructions.
  - 5. If proposal of substitutions is allowed under submittal procedures, explanation of all substitutions proposed.
- C. Samples: Submit two samples 4 by 4 inch in size illustrating colors available for selection.
- D. Manufacturer's Certificate: Certify that products meet or exceed specified requirements.
- E. Manufacturer's Installation Instructions: Indicate special procedures and perimeter conditions requiring special attention.
- F. Maintenance Data: Include cleaning procedures and repair and patching techniques.
- G. Maintenance Materials: Furnish the following for Owner's use in maintenance of project.
  - 1. See Section 01 6000 - Product Requirements, for additional provisions.
  - 2. Extra Coating Materials: 5 percent but not less than 1 gallon of each type and color.
  - 3. Label each container with manufacturer's name, product number, color number, and room names and numbers where used.

### **1.05 QUALITY ASSURANCE**

- A. Manufacturer Qualifications: Company specializing in manufacturing the Products specified in this section with minimum five years documented experience.
- B. Applicator Qualifications: Company specializing in performing the work of this section with minimum five years documented experience.

### **1.06 DELIVERY, STORAGE, AND HANDLING**

- A. Deliver products to site in sealed and labeled containers; inspect to verify acceptability.
- B. Container Label: Include manufacturer's name, type of coating, brand name, lot number, brand code, coverage, surface preparation, drying time, cleanup requirements, color designation, and instructions for mixing and reducing.
- C. Coating Materials: Store at minimum ambient temperature of 45 degrees F and a maximum of 90 degrees F, in ventilated area, and as required by manufacturer's instructions.

### **1.07 FIELD CONDITIONS**

- A. Follow manufacturer's recommended procedures for producing best results, including testing of substrates, moisture in substrates, and humidity and temperature limitations.
- B. Do not apply exterior coatings during rain or snow, or when relative humidity is outside the humidity ranges required by the coating product manufacturer.
- C. Do not install materials when temperature is below 55 degrees F or above 90 degrees F.
- D. Maintain this temperature range, 24 hours before, during, and 72 hours after installation of coating.
- E. Provide lighting level of 80 ft candles measured mid-height at substrate surface.
- F. Restrict traffic from area where coating is being applied or is curing.

### **1.08 WARRANTY**

- A. See Section 01 7800 - Closeout Submittals, for additional warranty requirements.
- B. Correct defective Work within a five year period after Date of Substantial Completion.
- C. Warranty: Include coverage for bond to substrate.

## **PART 2 PRODUCTS**

### **2.01 MANUFACTURERS**

- A. Provide high performance coating products from the same manufacturer to the greatest extent possible.
  - 1. In the event that a single manufacturer cannot provide specified products, minor exceptions will be permitted provided approval by Architect is obtained using the specified procedures for substitutions.
  - 2. Substitution of MPI-approved products by a different manufacturer is preferred over substitution of unapproved products by the same manufacturer.
  - 3. Substitution of a different high performance coating system using MPI-approved products by the same manufacturer will be considered.
- B. High-Performance Coatings:
  - 1. Base Manufacturer: Sherwin Williams Company.
  - 2. PPG Paints: [www.ppgpaints.com/#sle](http://www.ppgpaints.com/#sle).
  - 3. Precision Coatings: [www.precisioncoatingsinc.com](http://www.precisioncoatingsinc.com).
  - 4. Sherwin-Williams Company: [www.protective.sherwin-williams.com/industries](http://www.protective.sherwin-williams.com/industries).
  - 5. Tnemec Company, Inc: [www.tnemec.com/#sle](http://www.tnemec.com/#sle).
  - 6. Substitutions: Section 01 6000 - Product Requirements.

## **2.02 HIGH-PERFORMANCE COATINGS**

### **2.03 TOP COAT MATERIALS**

- A. Coatings - General: Provide complete multi-coat systems formulated and recommended by manufacturer for the applications indicated, in the thicknesses indicated; number of coats specified does not include primer or filler coat.
  - 1. Lead Content: Not greater than 0.06 percent by weight of total nonvolatile content.
  - 2. Chromium Content, as Hexavalent Chromium, Zinc Chromate, or Strontium Chromate: None.
  - 3. Volatile Organic Compound (VOC) Content:
    - a. Provide coatings that comply with the most stringent requirements specified in the following:
      - 1) 40 CFR 59, Subpart D--National Volatile Organic Compound Emission Standards for Architectural Coatings.
      - 2) Architectural coatings VOC limits of the State in which the Project is located.
    - b. Determination of VOC Content: Testing and calculation in accordance with 40 CFR 59, Subpart D (EPA Method 24), exclusive of colorants added to a tint base and water added at project site; or other method acceptable to authorities having jurisdiction.
  - 4. Colors: Selected from manufacturer's standard colors.
- B. Urethane Coating for exterior masonry, steel, galvanized steel and aluminum:
  - 1. Number of Coats: Two.
  - 2. Product Characteristics:
    - a. Percentage of solids by volume: 44, minimum.
    - b. Dry film thickness, per coat: 2.5 mils, minimum.
  - 3. Top Coat(s): Acrylic Urethane, Water Based, Two-Component.
    - a. Sheen: High Gloss.
    - b. Products:
      - 1) Sherwin-Williams; Pro Industrial Waterbased Acrolon 100: [www.protective.sherwin-williams.com/#sle](http://www.protective.sherwin-williams.com/#sle).
      - 2) Substitutions: Section 01 6000 - Product Requirements.
  - 4. Primer: As specified under "PRIMERS" below.
- C. Shellac: Pure, white type.

### **2.04 PRIMERS**

- A. Primers: Provide the following unless other primer is required or recommended by coating manufacturer.
  - 1. Block Filler, Latex; MPI #4.
    - a. Products:
      - 1) Sherwin-Williams Pro Industrial Heavy Duty Block Filler. (MPI #4)
      - 2) Substitutions: Section 01 6000 - Product Requirements.
  - 2. Rust-Inhibitive, Water Based; ferrous metal, galvanized metal and aluminum.
    - a. Products:
      - 1) Sherwin-Williams; Pro Industrial Pro-Cryl Universal Primer; MPI #107: [www.protective.sherwin-williams.com/#sle](http://www.protective.sherwin-williams.com/#sle).
      - 2) Substitutions: Section 01 6000 - Product Requirements.

### **2.05 ACCESSORY MATERIALS**

- A. Accessory Materials: Provide all primers, sealers, cleaning agents, cleaning cloths, sanding materials, and clean-up materials as required for final completion of coated surfaces.

## **PART 3 EXECUTION**

### **3.01 EXAMINATION**

- A. Verify existing conditions before starting work.



- B. Do not begin application of coatings until substrates have been properly prepared.
- C. Verify that substrate surfaces are ready to receive work as instructed by the coating manufacturer. Obtain and follow manufacturer's instructions for examination and testing of substrates.
- D. Examine surfaces scheduled to be finished prior to commencement of work. Report any condition that may potentially affect proper application.
- E. If substrate preparation is the responsibility of another installer, notify Architect of unsatisfactory preparation before proceeding.
- F. Test shop-applied primer for compatibility with subsequent cover materials.
- G. Measure moisture content of surfaces using an electronic moisture meter. Do not apply finishes unless moisture content of surfaces are below the following maximums:
  - 1. Cementitious Substrates: Do not begin application until substrate has cured 28 days minimum and measured moisture content is not greater than 12 percent.
  - 2. Plaster and Stucco: 12 percent.
  - 3. Masonry, Concrete, and Concrete Unit Masonry: 12 percent.
  - 4. Concrete Floors and Traffic Surfaces: 8 percent.
  - 5. Wood: Do not begin application if substrate has moisture content over 12 percent.
- H. Proceed with coating application only after unacceptable conditions have been corrected.
  - 1. Commencing coating application constitutes Contractor's acceptance of substrates and conditions.

### **3.02 PREPARATION**

- A. Clean surfaces of loose foreign matter.
- B. Remove substances that would bleed through finished coatings. If unremovable, seal surface with shellac.
- C. Remove finish hardware, fixture covers, and accessories and store.
- D. Concrete:
  - 1. Remove release agents, curing compounds, efflorescence, and chalk. Do not coat surfaces if moisture content or alkalinity of surfaces to be coated exceeds that permitted in manufacturer's written instructions.
  - 2. Clean concrete according to ASTM D4258. Allow to dry.
  - 3. Prepare surface as recommended by coating manufacturer and according to SSPC-SP 13.
- E. Masonry:
  - 1. Remove efflorescence and chalk. Do not coat surfaces if moisture content or alkalinity of surfaces or if alkalinity of mortar joints exceed that permitted in manufacturer's written instructions. Allow to dry.
  - 2. Prepare surface as recommended by coating manufacturer.
- F. Aluminum: Remove surface contamination and oils and wash with solvent according to SSPC-SP 1.
- G. Galvanized Surfaces:
  - 1. Remove surface contamination and oils and wash with solvent according to SSPC-SP 1.
  - 2. Prepare surface according to SSPC-SP 2.
- H. Ferrous Metal:
  - 1. Solvent clean according to SSPC-SP 1.
  - 2. Shop-Primed Surfaces: Sand and scrape to remove loose primer and rust. Feather edges to make touch-up patches inconspicuous. Clean surfaces with solvent. Prime bare steel surfaces. Re-prime entire shop-primed item.
  - 3. Remove rust, loose mill scale, and other foreign substances using using methods recommended in writing by paint manufacturer and blast cleaning according to SSPC-SP 6 "Commercial Blast Cleaning", and protect from corrosion until coated.

- I. Protect adjacent surfaces and materials not receiving coating from spatter and overspray; mask if necessary to provide adequate protection. Repair damage.

### **3.03 PRIMING**

- A. Apply primer to all surfaces, unless specifically not required by coating manufacturer. Apply in accordance with coating manufacturer's instructions.
- B. Wood: Prior to priming patch with filler to produce smooth, even surface.
- C. Concrete: Prior to priming, patch with masonry filler to produce smooth surface.
- D. Concrete Masonry: Apply masonry filler to thickness required to fill holes and produce smooth surface; minimum thickness of 30 mils.

### **3.04 COATING APPLICATION**

- A. Apply coatings in accordance with manufacturer's written instructions, to thicknesses specified and recommendations in "MPI Architectural Painting and Specification Manual".
- B. Apply in uniform thickness coats, without runs, drips, pinholes, brush marks, or variations in color, texture, or finish. Finish edges, crevices, corners, and other changes in dimension with full coating thickness.

### **3.05 CLEANING**

- A. Collect waste material that could constitute a fire hazard, place in closed metal containers, and remove daily from site.
- B. Clean surfaces immediately of overspray, splatter, and excess material.
- C. After coating has cured, clean and replace finish hardware, fixtures, and fittings previously removed.

### **3.06 PROTECTION**

- A. Protect finished work from damage.

### **3.07 SCHEDULE**

- A. Colors and Glosses: As indicated on Finish Schedule or as otherwise selected by Architect.
- B. Exterior exposed structural steel: Urethane Coating.
- C. Miscellaneous exposed exterior steel: Urethane Coating.

**END OF SECTION**

**SECTION 10 1400**  
**SIGNAGE**

**PART 1 GENERAL**

**1.01 SECTION INCLUDES**

- A. Room and door signs.
- B. Interior directional and informational signs.
- C. Emergency evacuation maps.
- D. Building identification signs.
- E. Flat plate metal cut logo signage.
- F. Plaque.

**1.02 RELATED REQUIREMENTS**

- A. Section 22 0553 - Identification for Plumbing Piping and Equipment.
- B. Section 26 0553 - Identification for Electrical Systems.
- C. Section 26 5100 - Interior Lighting: Exit signs required by code.

**1.03 REFERENCE STANDARDS**

- A. 36 CFR 1191 - Americans with Disabilities Act (ADA) Accessibility Guidelines for Buildings and Facilities; Architectural Barriers Act (ABA) Accessibility Guidelines; current edition.
- B. ADA Standards - Americans with Disabilities Act (ADA) Standards for Accessible Design; 2010.
- C. ICC A117.1 - Accessible and Usable Buildings and Facilities; 2017.

**1.04 SUBMITTALS**

- A. See Section 01 3000 - Administrative Requirements, for submittal procedures.
- B. Product Data: Manufacturer's printed product literature for each type of sign, indicating sign styles, font, foreground and background colors, locations, overall dimensions of each sign.
- C. Signage Schedule: Provide information sufficient to completely define each sign for fabrication, including room number, room name, other text to be applied, sign and letter sizes, fonts, and colors.
  - 1. When room numbers to appear on signs differ from those on drawings, include the drawing room number on schedule.
  - 2. When content of signs is indicated to be determined later, request such information from Owner through Architect at least 2 months prior to start of fabrication; upon request, submit preliminary schedule.
  - 3. Submit for approval by Owner through Architect prior to fabrication.
- D. Samples: Submit two samples of each type of sign, of size similar to that required for project, illustrating sign style, font, and method of attachment.
- E. Selection Samples: Where colors are not specified, submit two sets of color selection charts or chips.
- F. Verification Samples: Submit samples showing colors specified.
- G. Manufacturer's Installation Instructions: Include installation templates and attachment devices.

**1.05 QUALITY ASSURANCE**

- A. Manufacturer Qualifications: Company specializing in manufacturing the products specified in this section with minimum five years of documented experience.

**1.06 DELIVERY, STORAGE, AND HANDLING**

- A. Package signs as required to prevent damage before installation.
- B. Package room and door signs in sequential order of installation, labeled by floor or building.

- C. Store tape adhesive at normal room temperature.

### **1.07 FIELD CONDITIONS**

- A. Do not install tape adhesive when ambient temperature is lower than recommended by manufacturer.
- B. Maintain this minimum temperature during and after installation of signs.

## **PART 2 PRODUCTS**

### **2.01 MANUFACTURERS**

- A. Flat Signs:
  - 1. Best Sign Systems, Inc: [www.bestsigns.com](http://www.bestsigns.com).
  - 2. Coastal Sign Concepts LLC: [coastalsignconcepts.com](http://coastalsignconcepts.com).
  - 3. Cosco Industries : [www.coscoarchitecturalsigns.com](http://www.coscoarchitecturalsigns.com).
  - 4. Leeds Architectural Letters, Inc: [www.leedsletters.com](http://www.leedsletters.com).
  - 5. Mohawk Sign Systems, Inc: [www.mohawksign.com](http://www.mohawksign.com).
- B. Dimensional Letter, Fabricated and Cut Flat Plate Signs:
  - 1. A.R.C. Ramos Signage Systems: [www.arccramos.com](http://www.arccramos.com)
  - 2. Cosco Industries: [www.coscoarchitecturalsigns.com](http://www.coscoarchitecturalsigns.com).
  - 3. Leeds Architectural Letters, Inc: [www.leedsletters.com](http://www.leedsletters.com).
  - 4. Woodland Manufacturing Co: [www.woodlandmanufacturing.com](http://www.woodlandmanufacturing.com).
  - 5. Coastal Sign Concepts LLC: [coastalsignconcepts.com](http://coastalsignconcepts.com).
  - 6. Substitutions: See Section 01 6000 - Product Requirements.
- C. Plaques:
  - 1. A.R.K. Ramos Architectural Signage Systems; Cast Bronze Plaque: [www.arkramos.com/#sle](http://www.arkramos.com/#sle).
  - 2. Cosco Industries; Cast Bronze: [www.coscoarchitecturalsigns.com/#sle](http://www.coscoarchitecturalsigns.com/#sle).
  - 3. Substitutions: See Section 01 6000 - Product Requirements.

### **2.02 SIGNAGE APPLICATIONS**

- A. Accessibility Compliance: Signs are required to comply with ADA Standards and ICC A117.1 and applicable building codes, unless otherwise indicated; in the event of conflicting requirements, comply with the most comprehensive and specific requirements.
- B. Room and Door Signs: Provide a sign for every doorway, whether it has a door or not, not including corridors, lobbies, and similar open areas.
  - 1. Sign Type: Flat signs with applied character panel media as specified.
  - 2. Provide "tactile" signage, with letters raised minimum 1/32 inch and Grade II braille.
  - 3. Character Height: 1 inch.
  - 4. Sign Height: 2 inches, unless otherwise indicated.
  - 5. Sign Dimensions: As shown.
  - 6. Office Doors: Identify with room numbers to be determined later, not the numbers indicated on drawings; in addition, provide "window" section for replaceable occupant name.
  - 7. Conference and Meeting Rooms: Identify with room numbers to be determined later, not the numbers indicated on drawings; in addition, provide "window" section with sliding "In Use/Vacant" indicator.
  - 8. Service Rooms: Identify with room names and numbers to be determined later, not those indicated on drawings.
  - 9. Rest Rooms: Identify with pictograms, the names "MEN" and "WOMEN", room numbers to be determined later, and braille.
- C. Interior Directional and Informational Signs:
  - 1. Sign Type: Flat signs with engraved panel media as specified.
  - 2. Sizes: As indicated on drawings.

- D. Emergency Evacuation Maps:
- E. Building Identification Signs:
  - 1. Use individual metal letters.
  - 2. Mount on outside wall in location indicated on drawings.
- F. Other Dimensional Letter Signs: Wall-mounted.
- G. Flat Plate Cut Signage:
  - 1. Provide 1/4 inch thick aluminum plate letters in sizes and font indicated on Drawings.
  - 2. Cut edges square and smooth.
  - 3. Mounting Standoffs: Provide 1 inch standoffs.
  - 4. Finish: Provide even and uniform brushed satin finish; matte edges.
- H. Plaque: 16 inch diameter etched brass plaque of City of Orange Beach Logo.
  - 1. See drawings. Electronic images of logos will be provided.
  - 2. Mounting: Pin mounted.
  - 3. Mounting Standoffs: Provide 1 inch standoffs.

### **2.03 SIGN TYPES**

- A. Flat Signs: Signage media without frame.
  - 1. Edges: Square.
  - 2. Corners: Radiused.
  - 3. Wall Mounting of One-Sided Signs: 3/8 inch stand-off at each corner.
  - 4. Wall and Ceiling Mounting of Two-Sided Signs: Aluminum wall bracket, powder coated, color selected from manufacturer's standard colors, attached with screws in predrilled mounting holes, set in clear silicone sealant.
- B. Color and Font: Unless otherwise indicated:
  - 1. Character Font: Helvetica, Arial, or other sans serif font.
  - 2. Character Case: Upper case only.
  - 3. Background Color: As scheduled.
  - 4. Character Color: Contrasting color.

### **2.04 TACTILE SIGNAGE MEDIA**

- A. Applied Character Panels: Acrylic plastic base, with applied acrylic plastic letters and braille.
  - 1. Total Thickness: 1/4 inch.
  - 2. Letter Thickness: 1/16 inch.
  - 3. Letter Edges: Square.

### **2.05 PLAQUES**

### **2.06 ACCESSORIES**

- A. Stand-Offs: 1 inch natural matte finish aluminum stand-offs.
- B. Exposed Screws: Chrome plated.
- C. Tape Adhesive: Double sided tape, permanent adhesive.

## **PART 3 EXECUTION**

### **3.01 EXAMINATION**

- A. Verify that substrate surfaces are ready to receive work.

### **3.02 INSTALLATION**

- A. Install in accordance with manufacturer's instructions.
- B. Install neatly, with horizontal edges level.
- C. Locate signs and mount at heights indicated on drawings and in accordance with ADA Standards and ICC A117.1.

D. Protect from damage until Substantial Completion; repair or replace damaged items.

**END OF SECTION**

**SECTION 10 2113.19**  
**PLASTIC TOILET COMPARTMENTS**

**PART 1 GENERAL**

**1.01 SECTION INCLUDES**

- A. Solid plastic toilet compartments.
- B. Urinal screens.

**1.02 RELATED REQUIREMENTS**

- A. Section 06 1000 - Rough Carpentry: Blocking and supports.
- B. Section 10 2800 - Toilet, Bath, and Laundry Accessories.

**1.03 REFERENCE STANDARDS**

- A. NFPA 286 - Standard Methods of Fire Tests for Evaluating Contribution of Wall and Ceiling Interior Finish to Room Fire Growth; 2015.

**1.04 ADMINISTRATIVE REQUIREMENTS**

- A. Coordination: Coordinate the work with placement of support framing and anchors in walls and ceilings.

**1.05 SUBMITTALS**

- A. See Section 01 3000 - Administrative Requirements, for submittal procedures.
- B. Product Data: Provide data on panel construction, hardware, and accessories.
- C. Shop Drawings: Indicate partition plan, elevation views, dimensions, details of wall supports, door swings.
- D. Samples: Submit two samples of partition panels, 8 by 8 inch in size illustrating panel finish, color, and sheen.
- E. Manufacturer's Installation Instructions: Indicate special procedures.

**PART 2 PRODUCTS**

**2.01 MANUFACTURERS**

- A. Solid Plastic Toilet Compartments:
  - 1. All American Metal Corp - AAMCO; Solid Plastic (HDPE): [www.allamericanmetal.com/#sle](http://www.allamericanmetal.com/#sle).
  - 2. Ampco Products, Inc; Plastic Toilet Compartments: [www.ampco.com/#sle](http://www.ampco.com/#sle).
  - 3. Metpar Corp; Solid Plastic: [www.metpar.com/#sle](http://www.metpar.com/#sle).
  - 4. Partition Systems International of South Carolina; PolyLife HDPE Toilet Partitions: [www.psisc.com/#sle](http://www.psisc.com/#sle).
  - 5. Scranton Products (Santana/Comtec/Capital); Hiny Hiders HDPE: [www.scrantonproducts.com/#sle](http://www.scrantonproducts.com/#sle).
  - 6. Substitutions: Section 01 6000 - Product Requirements.

**2.02 PLASTIC TOILET COMPARTMENTS**

- A. Solid Plastic Toilet Compartments Type SPTP: Factory fabricated doors, pilasters, and divider panels made of solid molded high density polyethylene (HDPE), tested in accordance with NFPA 286; floor-mounted headrail-braced.
  - 1. Color: As selected by Architect from manufacturer's standard offerings.
  - 2. Doors:
    - a. Thickness: 1 inch.
    - b. Width: 24 inch.
    - c. Width for Handicapped Use: 36 inch, out-swinging.
    - d. Height: 55 inch.
  - 3. Panels:

- a. Thickness: 1 inch.
- b. Height: 55 inch.
- c. Depth: As indicated on drawings.
4. Pilasters:
  - a. Thickness: 1 inch.
  - b. Width: As required to fit space; minimum 3 inch.
5. Screens: Without doors; to match compartments; mounted to wall with two panel brackets.

## **2.03 ACCESSORIES**

- A. Pilaster Shoes: Stainless steel, satin finish, 3 inches high; concealing floor fastenings.
  1. Provide adjustment for floor variations with screw jack through steel saddles integral with pilaster.
- B. Head Rails: Extruded aluminum, anti-grip profile.
  1. Size: Manufacturer's standard size.
- C. Wall and Pilaster Brackets: Stainless steel; manufacturer's standard type for conditions indicated on drawings.
- D. Attachments, Screws, and Bolts: Stainless steel, tamper proof type.
  1. For attaching panels and pilasters to brackets: Through-bolts and nuts; tamper proof.
- E. Hinges: Stainless steel, manufacturer's standard finish.
  1. Pivot hinges, gravity type, adjustable for door close positioning; two per door.
- F. Door Hardware: Stainless steel, manufacturer's standard finish.
  1. Door Latch: Slide type with exterior emergency access feature.
  2. Door Strike and Keeper with Rubber Bumper: Mount on pilaster in alignment with door latch.
  3. Provide door pull for outswinging doors.
- G. Coat Hook: One per compartment, mounted on door.

## **PART 3 EXECUTION**

### **3.01 EXAMINATION**

- A. Verify that field measurements are as indicated.
- B. Verify correct spacing of and between plumbing fixtures.
- C. Verify correct location of built-in framing, anchorage, and bracing.

### **3.02 INSTALLATION**

- A. Install partitions secure, rigid, plumb, and level in accordance with manufacturer's instructions.
- B. Maintain 3/8 inch to 1/2 inch space between wall and panels and between wall and end pilasters.
- C. Attach panel brackets securely to walls using anchor devices.
- D. Attach panels and pilasters to brackets. Locate head rail joints at pilaster center lines.
- E. Field touch-up of scratches or damaged finish will not be permitted. Replace damaged or scratched materials with new materials.

### **3.03 TOLERANCES**

- A. Maximum Variation From True Position: 1/4 inch.
- B. Maximum Variation From Plumb: 1/8 inch.

### **3.04 ADJUSTING**

- A. Adjust and align hardware to uniform clearance at vertical edge of doors, not exceeding 3/16 inch.



- B. Adjust hinges to position doors in partial opening position when unlatched. Return out-swinging doors to closed position.
- C. Adjust adjacent components for consistency of line or plane.

**END OF SECTION**

**SECTION 10 2233**  
**ACCORDION FOLDING PARTITIONS**

**PART 1 GENERAL**

**1.01 SECTION INCLUDES**

- A. Accordion folding partitions.
- B. Track and operating hardware.
- C. Sound-rated construction above ceiling to structure.

**1.02 RELATED REQUIREMENTS**

- A. Section 06 1000 - Rough Carpentry: Wood blocking and shimming for track support.
- B. Section 08 7100 - Door Hardware: Lock cylinders.
- C. Section 26 0533.13 - Conduit for Electrical Systems.
- D. Section 26 0583 - Wiring Connections: Electrical characteristics and wiring connections.

**1.03 REFERENCE STANDARDS**

- A. ASTM E84 - Standard Test Method for Surface Burning Characteristics of Building Materials; 2018b.
- B. ASTM E90 - Standard Test Method for Laboratory Measurement of Airborne Sound Transmission Loss of Building Partitions and Elements; 2009 (Reapproved 2016).
- C. ASTM E413 - Classification for Rating Sound Insulation; 2016.
- D. ASTM E557 - Standard Guide for Architectural Design and Installation Practices for Sound Isolation between Spaces Separated by Operable Partitions; 2012.
- E. ASTM F793/F793M - Standard Classification of Wall Coverings by Use Characteristics; 2015.
- F. NEMA MG 1 - Motors and Generators; 2016.
- G. NFPA 70 - National Electrical Code; Most Recent Edition Adopted by Authority Having Jurisdiction, Including All Applicable Amendments and Supplements.

**1.04 SUBMITTALS**

- A. See Section 01 3000 - Administrative Requirements, for submittal procedures.
- B. Product Data: Provide data on partition operation, hardware and accessories, electric operating components, track switching components, colors and finishes available.
- C. Shop Drawings: Indicate opening sizes, track layout, details of track and required supports, static and dynamic loads, adjacent construction and finish trim, and stacking sizes.
- D. Samples: Submit two samples of full manufacturer's color range for selection of colors.
- E. Samples: Submit two samples of surface finish, 12 by 12 inches size, illustrating quality.
- F. Manufacturer's Installation Instructions: Indicate special procedures.
- G. Manufacturer's Certificate: Certify that partition system meets or exceeds specified acoustic requirements.
- H. Maintenance Data: Describe cleaning materials detrimental to vinyl fabric surfaces and hardware finish. Include recommended cleaning methods, cleaning materials, and stain removal methods.

**1.05 QUALITY ASSURANCE**

- A. Sound Transmission Class (STC): As indicated, calculated in accordance with ASTM E413, based on tests performed in accordance with ASTM E90, on panel size of 100 sq ft.
- B. Design Requirements: Design partition track and anchors to support imposed loads with maximum deflection of 1/360 of span, attached to structural members indicated.

- C. Manufacturer Qualifications: Company specializing in manufacturing the Products specified in this section with minimum 5 years documented experience.
- D. Installer Qualifications: Company specializing in performing the work of this section with minimum 5 years experience.

## **PART 2 PRODUCTS**

### **2.01 MANUFACTURERS**

- A. Basis of Design: Wan-Door Durasound Acoustical Accordion Door: [www.wondoors.com](http://www.wondoors.com).

### **2.02 ACCORDION FOLDING PARTITIONS**

- A. Partition Construction: Acoustical.
  - 1. Frame: \_\_\_\_ gage, \_\_\_\_ inch steel pantograph hinge plates; \_\_\_\_ inch diameter vertical rods, galvanized; limiting mechanism; stacking straps and snaps.
  - 2. Surfacing: 22 gage, 0.0299 inch steel panels with sound absorbent liner.
  - 3. Finish: Vinyl coated fabric; color as selected.
  - 4. Internal air release mechanism.
  - 5. Acoustic seals at top, meeting mullions, jambs, and bottom.
  - 6. Sound Transmission Class (STC): 48.
  - 7. Trim: Jamb and meeting mullions.
  - 8. Electric operation.
- B. Track: Formed steel; 1-1/4 by 1-1/4 inches size; thickness and profile designed to support loads; track connectors.
- C. Carriers: Nylon wheels on trolley carrier at top center of every \_\_\_\_\_ fold, with threaded pendant bolt for vertical adjustment.
- D. Above Ceiling Sound Baffle: \_\_\_\_ inch thick lead sheet, from top of track to structure above; installed as indicated.

### **2.03 FINISH MATERIALS**

- A. Vinyl Coated Fabric: ASTM F793 Category VI, polyvinyl fluoride finish.
  - 1. Surface Burning Characteristics: Flame spread/Smoke developed index of 25/50, maximum, when tested in accordance with ASTM E84.
  - 2. Color: As selected from manufacturer's standard range.

### **2.04 COMPONENTS**

- A. Trim: Aluminum moldings, clear anodized.
- B. Pocket Enclosures: Door, frame, and trim to match adjacent walls; design trailing jamb to latch on face of closed pocket door.
- C. Lock Cylinders: Specified in Section 08 7100.
- D. Hardware: Latching door handles of cast steel, satin chrome finish; master keyed to building keying system; jamb lock and pull bars.

### **2.05 ELECTRICAL CHARACTERISTICS AND COMPONENTS**

- A. Electrical Characteristics:
- B. Motor: NEMA MG 1, \_\_\_\_.
- C. Electric Operator: 12 inches per second travelling speed; adjustable friction clutch brake actuated by solenoid controlled motor starter; enclosed limit switch; enclosed magnetic reversing starter.
- D. Control Station: 1 standard keyed three button OPEN-STOP-CLOSE constant pressure type; 24 volt circuit; surface mounted.
- E. Conduit and Outlet Boxes: Surface type in accordance with Section 26 0533.13.

- F. Wiring Terminations: Provide terminal lugs to match branch circuit conductor quantities, sizes, and materials indicated. Enclose terminal lugs in terminal box sized to NFPA 70.
- G. Disconnect Switch: Factory mount disconnect switch in control panel.
- H. Limit Switches: Automatic type, at both extremes of travel, to prevent over-travel.
- I. Emergency Release: Mechanism to disengage motor drive system and permit manual operation.
- J. Pocket Door Interlock: Mechanism to prevent operation of panels unless storage pocket doors are fully open.

### **PART 3 EXECUTION**

#### **3.01 EXAMINATION**

- A. Verify existing conditions before starting work.
- B. Verify that field measurements are as indicated.
- C. Verify track supports are laterally braced and will permit track to be leveled within 1/4 inch of required position and parallel to the floor surface.
- D. Verify floor flatness of 1/8 in 10 feet, non-cumulative.
- E. Verify wall plumbness of 1/8 in 10 feet, non-cumulative.

#### **3.02 PREPARATION**

- A. Verify that required utilities are available, of the correct characteristics, in proper location, and ready for use.

#### **3.03 INSTALLATION**

- A. Install partition in accordance with manufacturer's instructions and ASTM E557.
- B. Install electric operator, wiring, and controls. Locate control station(s) as indicated.
- C. Fit and align partition assembly level and plumb.
- D. Lubricate moving components.
- E. Coordinate electrical connections.

#### **3.04 ADJUSTING**

- A. Adjust partition assembly to provide smooth operation from stacked to full open position.
- B. Visually inspect partition in full open position for light leaks to identify a potential acoustical leak. Adjust to achieve light tight seal.

#### **3.05 CLOSEOUT ACTIVITIES**

- A. Demonstrate operation of partition and identify potential operational problems.

**END OF SECTION**

**SECTION 10 2601**  
**WALL AND CORNER GUARDS**

**PART 1 GENERAL**

**1.01 SECTION INCLUDES**

- A. Corner guards.
- B. Sheet Wall Protection.

**1.02 RELATED REQUIREMENTS**

**1.03 PRICE AND PAYMENT PROCEDURES**

- A. Alternates: See Section 01 2300 - Alternates, for product alternatives affecting this section.
  - 1. This section describes an alternative product; No wall protection panels will be required under Base Bid.

**1.04 REFERENCE STANDARDS**

- A. ASTM E84 - Standard Test Method for Surface Burning Characteristics of Building Materials; 2018b.

**1.05 SUBMITTALS**

- A. See Section 01 3000 - Administrative Requirements, for submittal procedures.
- B. Product Data: Indicate physical dimensions, features, anchorage details, and rough-in measurements.
- C. Manufacturer's Instructions: Indicate special procedures, perimeter conditions requiring special attention.
- D. Maintenance Materials: Furnish the following for Owner's use in maintenance of project:
  - 1. See Section 01 6000 - Product Requirements, for additional provisions.
  - 2. Extra Stock Materials: Two percent of each color. Provide whole sheets..

**PART 2 PRODUCTS**

**2.01 MANUFACTURERS**

- A. Wall Protection and Corner Guards:
  - 1. Construction Specialties, Inc: [www.c-sgroup.com/#sle](http://www.c-sgroup.com/#sle).
  - 2. Substitutions: See Section 01 6000 - Product Requirements.

**2.02 COMPONENTS**

- A. Corner Guards - Surface Mounted: Extruded one-piece unit without splices, installed with tape.
  - 1. Material: PETG (Polyethylene Terephthalate Glycol), rigid; textured surface.
    - a. Extruded material to be high-impact Acrovyn 4000 with shadowgrain texture, 0.090 thick with factory applied adhesive tape.
  - 2. Width of Wings: 2-1/2 inches.
  - 3. Color: As selected from manufacturer's standard colors.
  - 4. Surface Burning Characteristics: Provide assemblies with flame spread index of 25 or less and smoke developed index of 450 or less, when tested in accordance with ASTM E84.
  - 5. Products:
    - a. Basis of Design: Construction Specialties Inc; Acrovyn VA-250N Corner Guards: [www.c-sgroup.com](http://www.c-sgroup.com).
- B. Plastic Protective Wall Coverings; Type PWP-1:
  - 1. Material: PETG (Polyethylene Terephthalate Glycol), rigid sheet; textured surface.
  - 2. Thickness: 0.060 inch for heavy duty use.
  - 3. Color: As selected from manufacturer's standard colors.
  - 4. Surface Burning Characteristics: Provide assemblies with flame spread index of 25 or less and smoke developed index of 450 or less, when tested in accordance with ASTM E84.
  - 5. Provide wall protection sheet, trim and attachment from single source.

6. Products:
  - a. Basis of Design: Construction Specialties Inc; Acrovyn 4000 0.060 Sheet: [www.c-sgroup.com](http://www.c-sgroup.com)..
  - b. Substitutions: See Section 01 6000 - Product Requirements.
7. Accessories:
  - a. Trim: Provide manufacturer's standard Acrovyn trim at all inside and outside corners, seams and edges, both vertical and horizontal.
  - b. Adhesives: Provide manufacturer's recommended adhesives.

### **2.03 FABRICATION**

- A. Fabricate components with tight joints, corners and seams.
- B. Form end trim closure by capping and finishing smooth.

## **PART 3 EXECUTION**

### **3.01 EXAMINATION**

- A. Verify that rough openings, concealed blocking, and anchors are correctly sized and located.
- B. Verify that field measurements are as indicated on Drawings.

### **3.02 INSTALLATION**

- A. Install components in accordance with manufacturer's instructions, level and plumb, secured rigidly in position to wall framing members only.
- B. D. Position corner guard from top of base to top of wall protection panel.

### **3.03 TOLERANCES**

- A. Maximum Variation From Required Height: 1/4 inch.
- B. Maximum Variation From Level or Plane For Visible Length: 1/4 inch.

**END OF SECTION**

**SECTION 10 2800**  
**TOILET, BATH, AND LAUNDRY ACCESSORIES**

**PART 1 GENERAL**

**1.01 SECTION INCLUDES**

- A. Commercial toilet accessories.
- B. Commercial shower and bath accessories.
- C. Electric hand dryers.

**1.02 RELATED REQUIREMENTS**

- A. Section 06 1000 - Rough Carpentry: Concealed supports for accessories, including in wall framing and plates and above ceiling framing.
- B. Section 10 2113.19 - Plastic Toilet Compartments.
- C. Section 22 4000 - Plumbing Fixtures: Under-lavatory pipe and supply covers.

**1.03 REFERENCE STANDARDS**

- A. ADA Standards - Americans with Disabilities Act (ADA) Standards for Accessible Design; 2010.
- B. ASTM A123/A123M - Standard Specification for Zinc (Hot-Dip Galvanized) Coatings on Iron and Steel Products; 2017.
- C. ASTM A269/A269M - Standard Specification for Seamless and Welded Austenitic Stainless Steel Tubing for General Service; 2015a (Reapproved 2019).
- D. ASTM A653/A653M - Standard Specification for Steel Sheet, Zinc-Coated (Galvanized) or Zinc-Iron Alloy-Coated (Galvannealed) by the Hot-Dip Process; 2018.
- E. ASTM A666 - Standard Specification for Annealed or Cold-Worked Austenitic Stainless Steel Sheet, Strip, Plate, and Flat Bar; 2015.
- F. ASTM B456 - Standard Specification for Electrodeposited Coatings of Copper Plus Nickel Plus Chromium and Nickel Plus Chromium; 2017.
- G. ASTM C1036 - Standard Specification for Flat Glass; 2016.
- H. ASTM C1048 - Standard Specification for Heat-Strengthened and Fully Tempered Flat Glass; 2012.
- I. ASTM C1503 - Standard Specification for Silvered Flat Glass Mirror; 2008 (Reapproved 2013).
- J. GSA CID A-A-3002 - Mirrors, Glass; U.S. General Services Administration; 1996.

**1.04 ADMINISTRATIVE REQUIREMENTS**

- A. Coordinate the work with the placement of internal wall reinforcement, concealed ceiling supports, and reinforcement of toilet partitions to receive anchor attachments.

**1.05 SUBMITTALS**

- A. See Section 01 3000 - Administrative Requirements, for submittal procedures.
- B. Product Data: Submit data on accessories describing size, finish, details of function, and attachment methods.
- C. Manufacturer's Installation Instructions: Indicate special procedures and conditions requiring special attention.

**1.06 COORDINATION**

- A. Coordinate the work with the placement of internal wall reinforcement, concealed ceiling supports, and reinforcement of toilet partitions to receive anchor attachments.

**PART 2 PRODUCTS**

**2.01 MANUFACTURERS**

- A. Basis of Design: Bobrick Washroom Equipment Inc.

- B. Other Acceptable Manufacturers:
  - 1. AJW Architectural Products: [www.ajw.com](http://www.ajw.com).
  - 2. ASI - American Specialties, Inc: [www.americanspecialties.com](http://www.americanspecialties.com).
  - 3. Bobrick Washroom Equipment Inc: [www.bobrick.com](http://www.bobrick.com).
  - 4. Bradley Corporation: [www.bradleycorp.com](http://www.bradleycorp.com).
  - 5. Substitutions: Section 01 6000 - Product Requirements.
- C. Teak Shower Seats:
  - 1. Basis of Design: Teakworks4U: [www.teakworks4u.com](http://www.teakworks4u.com).
  - 2. Substitutions: Section 01 6000 - Product Requirements.
- D. Electric Hand/Hair Dryers:
  - 1. Basis of Design: Excel Dryer; ThinAir Series: [www.exceldryer.com/#sle](http://www.exceldryer.com/#sle).
  - 2. American Dryer, Inc: [www.americandryer.com](http://www.americandryer.com).
  - 3. Vortex Industries: [www.vortexdryers.com/#sle](http://www.vortexdryers.com/#sle).
  - 4. World Dryer Corporation: [www.worlddryer.com](http://www.worlddryer.com).
  - 5. Substitutions: Section 01 6000 - Product Requirements.
- E. Provide products of each category type by single manufacturer.

## 2.02 MATERIALS

- A. Accessories - General: Shop assembled, free of dents and scratches and packaged complete with anchors and fittings, steel anchor plates, adapters, and anchor components for installation.
  - 1. Grind welded joints smooth.
  - 2. Fabricate units made of metal sheet of seamless sheets, with flat surfaces.
- B. Keys: Provide 6 keys for each accessory to Owner; master key lockable accessories.
- C. Stainless Steel Sheet: ASTM A666, Type 304.
- D. Stainless Steel Tubing: ASTM A269/A269M, Grade TP304 or TP316.
- E. Galvanized Sheet Steel: Hot-dipped galvanized steel sheet, ASTM A653/A653M, with G90/Z275 coating.
- F. Mirror Glass: Annealed float glass, ASTM C1036 Type I, Class 1, Quality Q2, with silvering, protective and physical characteristics complying with ASTM C1503.
- G. Mirror Glass: Tempered safety glass, ASTM C1048; and ASTM C1036 Type I, Class 1, Quality Q2, with silvering as required.
- H. Adhesive: Two component epoxy type, waterproof.
- I. Fasteners, Screws, and Bolts: Hot dip galvanized; tamper-proof; security type.
- J. Expansion Shields: Fiber, lead, or rubber as recommended by accessory manufacturer for component and substrate.

## 2.03 FINISHES

- A. Stainless Steel: Satin finish, unless otherwise noted.
- B. Chrome/Nickel Plating: ASTM B456, SC 2, polished finish, unless otherwise noted.
- C. Galvanizing for Items Other than Sheet: Comply with ASTM A123/A123M; galvanize ferrous metal and fastening devices.
- D. Shop Primed Ferrous Metals: Pretreat and clean, spray apply one coat primer and bake.
- E. Back paint components where contact is made with building finishes to prevent electrolysis.

## 2.04 COMMERCIAL TOILET ACCESSORIES

- A. Toilet Paper Dispenser Type T4: Double roll, surface mounted jumbo roll type, stainless steel.
  - 1. Products:
    - a. Bobrick Washroom Equipment Inc: B2892 Double Roll Jumbo Surface Mounted Toilet Paper Holder.



- b. Substitutions: Section 01 6000 - Product Requirements.
- B. Paper Towel Dispenser Type T2a: Lever operated, roll paper type.
  - 1. Cover: Stainless steel.
  - 2. Paper Discharge: Lever operated.
  - 3. Capacity: 8 inch or 9 inch diameter roll.
  - 4. Mounting: Surface mounted.
  - 5. Power: Manual operation.
  - 6. Products:
    - a. American Specialties Inc. 04523-9 Manual Roll Paper Towel Dispenser.
    - b. Substitutions: Section 01 6000 - Product Requirements.
- C. Waste Receptacle Type T1: Stainless steel, freestanding style.
  - 1. Liner: Removable, heavy-duty vinyl liner, attached at a minimum of four points with stainless steel grommets and hooks.
  - 2. Minimum capacity: 20 gallons.
  - 3. Products:
    - a. Bobrick Washroom Equipment Inc: Model B2280 Floor Standing Waste Receptacle with B-527 Trimline Series Countertop Waste Disposal Door..
    - b. Substitutions: Section 01 6000 - Product Requirements.
- D. Soap Dispenser Type T6: Liquid soap dispenser, wall-mounted, surface, for with stainless steel cover and vertical stainless steel tank and working parts; push type soap valve, check valve, and window gage refill indicator, tumbler lock.
  - 1. Minimum Capacity: 40 ounces.
  - 2. Products:
    - a. American Specialties Inc 0347 Surface Mounted Vertical Soap Dispenser.
    - b. Bobrick Washroom Equipment Inc: B2111 Surface Mounted Vertical Soap Dispenser.
    - c. Substitutions: Section 01 6000 - Product Requirements.
- E. Mirrors Type T8: Stainless steel framed, 1/4 inch thick tempered safety glass; ASTM C1048.
  - 1. Size: 36 by 24 inches.
  - 2. Frame: 0.048 inch angle shapes, with mitered and welded and ground corners, and tamperproof hanging system; No.4 finish.
  - 3. Backing: Full-mirror sized, minimum 0.03 inch galvanized steel sheet and nonabsorptive filler material.
  - 4. Products:
    - a. Bobrick Washroom Equipment Inc: B-165 2436 Channel Frame Mirror.
    - b. Substitutions: Section 01 6000 - Product Requirements.
- F. Grab Bars: Stainless steel, smooth surface.
  - 1. Standard Duty Grab Bars:
    - a. Push/Pull Point Load: 250 pound-force, minimum.
    - b. Dimensions: 1-1/4 inch outside diameter, minimum 0.05 inch wall thickness, exposed flange mounting, 1-1/2 inch clearance between wall and inside of grab bar.
    - c. Finish: Satin.
    - d. Length and Configuration: As indicated on drawings.
    - e. Products:
      - 1) Bobrick Washroom Equipment Inc: B-5806 Stainless Steel Grab Bar w/ Snap Flange.
        - (a) Type T5A: 36 inch horizontal grab bar.
        - (b) Type T5B: 42 inch horizontal grab bar.
        - (c) Type T5C: 18 inch vertical grab bar.
        - (d) Type T5D: 24 inch horizontal grab bar.
      - 2) Substitutions: Section 01 6000 - Product Requirements.

- G. Sanitary Napkin Disposal Unit Type T3: Stainless steel, surface-mounted, self-closing door, locking bottom panel with full-length stainless steel piano-type hinge, removable receptacle.
1. Products:
    - a. Bobrick Washroom Equipment Inc: B-270 Sanitary Napkin Disposal.
    - b. Substitutions: Section 01 6000 - Product Requirements.

## 2.05 COMMERCIAL SHOWER AND BATH ACCESSORIES

- A. Body Wash / Shampoo Dispenser Type T7: 2 chamber shower dispenser, wall mounted.
1. Size: 7.25 by 3.25 by 7 inches.
  2. Capacity: 11 ounces per chamber.
  3. Finish: Satin Silver.
  4. Mounting Method: Silicone adhesive.
  5. Products:
    - a. Better Living Products: No. 76235 - Aviva 2 Chamber Dispenser: [www.betterlivingproductsusa.com](http://www.betterlivingproductsusa.com).
    - b. Substitutions: Section 01 6000 - Product Requirements.
- B. Shower Curtain Rod Type T11: Stainless steel tube, 1 inch outside diameter, 0.04 inch wall thickness, satin-finished, with 1-3/8 inch outside diameter, minimum 0.04 inch thick satin-finished stainless steel flanges, for concealed mounting.
1. Products:
    - a. Bobrick Washroom Equipment Inc: B-207 Series, length as required.
    - b. Substitutions: Section 01 6000 - Product Requirements.
- C. Shower Curtain Type T11: Opaque vinyl, 0.008 inch thick, matte finish, with antibacterial treatment, flameproof and stain-resistant.
1. Material: Opaque vinyl, 0.008 inch thick, matte finish, with antibacterial treatment, flameproof and stain-resistant.
  2. Size: See Drawings.
  3. Grommets: Stainless steel; pierced through top hem on 6 inch centers.
  4. Color: White.
  5. Shower Curtain Hooks Type T10: Chrome-plated or stainless steel spring wire designed for snap closure.
  6. Products:
    - a. Bobrick Washroom Equipment Inc: 204-2 Shower Curtain.
    - b. Substitutions: Section 01 6000 - Product Requirements.
- D. Folding Shower Seat: Wall-mounted surface; welded tubular seat frame, structural support members, hinges and mechanical fasteners of Type 304 stainless steel, L-shaped, right hand, L-shaped, left hand, and rectangular seat.
1. Weight Capacity: 250 to 300 pounds.
  2. Heavy duty 18 gage Type 304 stainless steel framing.
  3. Heavy duty marine grade stainless steel hardware.
  4. Seat: Teakwood slats secured to supporting frame members with stainless steel screws. Ease edges of each slat.
  5. Size: ADA Standards compliant.
  6. Products:
    - a. Teakworks4U: [www.teakworks4u.com](http://www.teakworks4u.com).
      - 1) Type T12a: Fold-down wall mount transfer Seat, 30 x 22.5 inch; Model No. 300225WL or 300225WR. .
      - 2) Type T12b: Fold-Down wall mount seat, 30 by 12.5 inch: Model No. TBF30W. .
      - 3) Type T12c: Free-Standing heavy duty rigid bench seat; 30 by 14 by 18 inch high: Model No. TB-3014RBS.
    - b. Substitutions: Section 01 6000 - Product Requirements.

- E. Towel Bar Type T10: Stainless steel, 3/4 inch round tubular bar; rectangular brackets, concealed attachment, satin finish.
  - 1. Length: 24 inches.
  - 2. Products:
    - a. Bobrick B-6737x24 Square.
    - b. Substitutions: Section 01 6000 - Product Requirements.
- F. Robe Hook Type T9: Heavy-duty stainless steel, double-prong, tubular shaped bracket and backplate for concealed attachment, satin finish.
  - 1. Products:
    - a. Bobrick B-76727 Double Robe Hook.
    - b. Substitutions: Section 01 6000 - Product Requirements.

## **2.06 ELECTRIC HAND/HAIR DRYERS**

- A. Electric Hand Dryers Type T1: Traditional fan-in-case type, with downward fixed nozzle.
  - 1. Operation: Automatic, sensor-operated on and off.
  - 2. Mounting: Surface mounted.
  - 3. Cover: Stainless steel with brushed finish.
    - a. Tamper-resistant screw attachment of cover to mounting plate.
    - b. Screened or shielded air intake.
    - c. Screen or shield to prevent access to motor/heater.
  - 4. Air Velocity: 15,000 linear feet per minute, minimum, at full power.
  - 5. Heater: 500 W, minimum, at full power.
  - 6. Total Wattage: 1000, maximum.
  - 7. Runtime: Field adjustable or automatic, up to 35 seconds.
  - 8. Supply Voltage: 120 V, single phase, 60 Hz, nominal.
  - 9. Warranty: 5 years.
  - 10. Basis of Design Electric Hand Dryer:
    - a. Excel Dryer Inc; ThinAir Hand Dryer: [www.exceldryer.com/#sle](http://www.exceldryer.com/#sle).
    - b. Substitutions: Section 01 6000 - Product Requirements.

## **PART 3 EXECUTION**

### **3.01 EXAMINATION**

- A. Verify existing conditions before starting work.
- B. Verify exact location of accessories for installation.
- C. For electrically-operated accessories, verify that electrical power connections are ready and in the correct locations.
- D. Verify that field measurements are as indicated on drawings.
- E. Verify that plumbing connections are in correct locations and ready for attachment.
- F. See Section 06 1000 - Rough Carpentry for installation of blocking in walls.

### **3.02 PREPARATION**

- A. Deliver inserts and rough-in frames to site for timely installation.
- B. Provide templates and rough-in measurements as required.

### **3.03 INSTALLATION**

- A. Install accessories in accordance with manufacturers' instructions in locations indicated on drawings.
- B. Install plumb and level, securely and rigidly anchored to substrate.
- C. Mounting Heights: As required by accessibility regulations, unless otherwise indicated.

**3.04 PROTECTION**

- A. Protect installed accessories from damage due to subsequent construction operations.

**END OF SECTION**

**SECTION 10 4313**  
**DEFIBRILLATOR CABINETS**

**PART 1 - GENERAL**

**1.01 SUMMARY**

- A. Section Includes:
  - 1. Custom fabricated automated external defibrillator (AED) cabinets.
  - 2. Automated external defibrillators (AED's).

**1.02 ACTION SUBMITTALS**

- A. Product Data: For each type of product indicated. Include construction details, material descriptions, dimensions of individual components and profiles, and finishes for AED cabinets.
  - 1. Include roughing-in dimensions, details showing mounting methods, relationships of box and trim to surrounding construction, door hardware, cabinet type, trim style, and panel style.
  - 2. Automated External Defibrillator
- B. Shop Drawings: For AED cabinets. Include plans, elevations, sections, details, and attachments to other work.
- C. Samples for Initial Selection: For each type of fire protection cabinet indicated.
- D. Samples for Verification: For each type of exposed finish required, prepared on Samples of size indicated below:
  - 1. Size: 6 by 6 inches square.

**1.03 CLOSEOUT SUBMITTALS**

- A. Maintenance Data: For AED Cabinets and AED units.

**1.04 QUALITY ASSURANCE**

- A. Electrical Components, Devices and Accessories: : Listed and labeled as defined in NFPA 70, by a qualified testing agency, and marked for intended location and application.
- B. Pre-installation Conference: Conduct conference at Project site.
  - 1. Review methods and procedures related to AED cabinets including, but not limited to, the following:
    - a. Schedules and coordination requirements.

**1.05 COORDINATION**

- A. Coordinate size of AED cabinets to ensure that type and capacity of AED units indicated are accommodated.
- B. Coordinate sizes and locations of AED cabinets with wall depths, construction, and fire ratings.

**PART 2 - PRODUCTS**

**2.01 MANUFACTURERS**

- A. AED Cabinets:
  - 1. Basis of Design Manufacturer: Potter-Roemer: [www.potterroemer.com](http://www.potterroemer.com).
  - 2. Other Acceptable Manufacturers: Subject to requirements, provide equal products of the following manufacturers with written approval of Architect.
  - 3. JL Industries, Inc: [www.jlindustries.com](http://www.jlindustries.com).
  - 4. Larsen's Manufacturing Co: [www.larsensmfg.com](http://www.larsensmfg.com).
  - 5. Nystrom, Inc: [www.nystrom.com/sle](http://www.nystrom.com/sle).
  - 6. Substitutions: See Section 01 6000 - Product Requirements.
- B. Automated External Defibrillator (AED)
  - 1. Basis of Design Manufacturer: Philips; Heartstart OnSite AED: [www.usa.philips.com](http://www.usa.philips.com).
  - 2. Substitutions: Not permitted.

## 2.02 MATERIALS

- A. Cold-Rolled Steel Sheet: ASTM A 1008/A 1008M, Commercial Steel (CS), Type B.
- B. Stainless-Steel Sheet: ASTM A 666, Type 304.
- C. Tempered Float Glass: ASTM C 1048, Kind KT, Condition A, Type I, Quality q3, 1/8 inch, Class I (clear).

## 2.03 AED CABINET

- A. Cabinet Type: Suitable for mounting AED with emergency telephone and alarm; match existing AED cabinets;
  - 1. Basis of Design Product: Potter Roemer LLC; Model HSSS7063-D-LAWA-modified as described herein:
- B. Cabinet Construction: Nonrated.
- C. Cabinet Interior Size: 14 inches wide by 22 inches high by 6 inches deep, as required to incorporate AED and specified features. All cabinet components and equipment shall be accessible, removable and replaceable with the cabinet door in a 90 degree position.
- D. Cabinet Material: Stainless-steel sheet.
- E. Recessed Cabinet: Cabinet box recessed in walls of sufficient depth to suit style of trim.
- F. Cabinet Trim Material: Stainless-steel sheet.
- G. Door Material: Stainless-steel sheet.
- H. Door Style: Provide limited visibility window to match existing.
- I. Door Glazing: Tempered float glass.
- J. Door Hardware: Manufacturer's standard door-operating hardware of proper type for cabinet type, trim style, and door material and style indicated.
  - 1. Provide manufacturer's standard.
  - 2. Provide continuous hinge, of same material and finish as trim, permitting door to open 180 degrees.
- K. Accessories:
  - 1. Identification: Manufacturer's standard.
- L. Finishes:
  - 1. Manufacturer's standard baked-enamel paint for the interior of cabinet.
  - 2. Stainless Steel: No. 4.
- M. Cabinet Interior Features:
  - 1. Emergency Phone Box.
  - 2. Cable Access Box
  - 3. Raceway
- N. Alarm:
  - 1. Circuitry Board.
  - 2. Alarm Circuitry
  - 3. Alarm Key Switch and Key:
  - 4. Control for Visual Alarm, Audio Alarm and Relay Cloasures:
- O. Power Requirements for Alarm Board, Siren and LED:

## 2.04 FABRICATION

- A. AED Cabinets: Provide manufacturer's standard box (tub) with trim, frame, door, and hardware to suit cabinet type, trim style, and door style indicated.
  - 1. Weld joints and grind smooth.
  - 2. Provide factory-drilled mounting holes.
- B. Cabinet Doors: Fabricate doors according to manufacturer's standards, from materials indicated and coordinated with cabinet types and trim styles selected.

- C. Cabinet Trim: Fabricate cabinet trim in one piece with corners mitered, welded, and ground smooth.

## **2.05 GENERAL FINISH REQUIREMENTS**

- A. Comply with NAAMM's "Metal Finishes Manual for Architectural and Metal Products" for recommendations for applying and designating finishes.
- B. Protect mechanical finishes on exposed surfaces of fire protection cabinets from damage by applying a strippable, temporary protective covering before shipping.
  - 1. Finish fire protection cabinets after assembly.
  - 2. Appearance of Finished Work: Noticeable variations in same piece are not acceptable. Variations in appearance of adjoining components are acceptable if they are within the range of approved Samples and are assembled or installed to minimize contrast.

## **2.06 STAINLESS-STEEL FINISHES**

- A. Surface Preparation: Remove tool and die marks and stretch lines, or blend into finish.
- B. Finishes: Grind and polish surfaces to produce uniform finish, free of cross scratches.
  - 1. Directional Satin Finish: No. 4.

## **PART 3 - EXECUTION**

### **3.01 EXAMINATION**

- A. Examine walls and partitions for suitable framing depth and blocking where recessed cabinets will be installed.
- B. Proceed with installation only after unsatisfactory conditions have been corrected.

### **3.02 PREPARATION**

- A. Prepare recesses for recessed fire protection cabinets as required by type and size of cabinet and trim style.

### **3.03 INSTALLATION**

- A. General: Install AED cabinets in locations and at mounting heights, at heights acceptable to the Authority Having Jurisdiction.
- B. AED Cabinets: Fasten cabinets to structure, square and plumb.

### **3.04 ADJUSTING AND CLEANING**

- A. Remove temporary protective coverings and strippable films, if any, as cabinets are installed unless otherwise indicated in manufacturer's written installation instructions.
- B. Adjust cabinet doors to operate easily without binding.
- C. On completion of cabinet installation, clean interior and exterior surfaces as recommended by manufacturer.
- D. Touch up marred finishes, or replace cabinets that cannot be restored to factory-finished appearance. Use only materials and procedures recommended or furnished by AED cabinet and mounting bracket manufacturers.
  - 1. Replace AED cabinets that have been damaged or have deteriorated beyond successful repair by finish touchup or similar minor repair procedures.

**END OF SECTION**

**SECTION 10 4316**  
**FIRST AID CABINETS**

**PART 1 GENERAL**

**1.01 SECTION INCLUDES**

- A. First aid cabinets and supplies, size and number as required to serve 400 persons, minimum.

**1.02 REFERENCE STANDARDS**

- A. ANSI/ISEA Z308.1 - American National Standard - Minimum Requirements for Workplace First Aid Kits and Supplies; 2015.
- B. FEMA P-361 - Safe Rooms for Tornadoes and Hurricanes: Guidance for Community and Residential Safe Rooms; 2015.
- C. ICC 500 - ICC/NSSA Standard for the Design and Construction of Storm Shelters; National Storm Shelter Association; 2014.
- D. OSHA Standard 29 CFR 1910.151.

**1.03 SUBMITTALS**

- A. See Section 01 3000 - Administrative Requirements, for submittal procedures.
- B. Product Data: Provide cabinet features and contents, color and finish, and anchorage details.
- C. Shop Drawings: Indicate cabinet size, installation requirements and construction.
- D. Certificate: Certify that products of this section meet or exceed specified requirements.
- E. Maintenance Data: Provide content listing, shelf life and reordering data.

**1.04 QUALITY ASSURANCE**

- A. In accord with requirements contained in ICC 500 and FEMA P-361, whichever is more strict, provide at the minimum, first aid kit sized as adequate for shelter occupancy.
- B. First Aid Kit: Comply with ANSI/ISEA Z308.1 Class B Type I or II.

**PART 2 PRODUCTS**

**2.01 BASE BID MANUFACTURER**

- A. First Aid Only an Acme United Corporation brand, Model 200 Person 5 Shelf First Aid Metal Cabinet Part No. 249-O/P: [www.firstaidonly.com](http://www.firstaidonly.com).
- B. Other Acceptable Manufacturers: Subject to requirements, provide equal products of one of the following suppliers with written approval of Architect.
  - 1. First Aid Product.com: [www.first-aid-product.com](http://www.first-aid-product.com).
  - 2. Select Safety Sales: [www.selectsafetysales.com](http://www.selectsafetysales.com).
  - 3. Wholesale Direct First Aid: [www.wholesale-direct-first-aid.com](http://www.wholesale-direct-first-aid.com).
  - 4. Substitutions: See Section 01 6000 - Product Requirements.

**2.02 PRODUCT**

- A. 5 Shelf Industrial First Aid Station with a pocket liner: 5-shelf, 1720pc industrial first aid station to serve 200 + people.
  - 1. Meet all OSHA and ANSI recommendations for first aid stations.
  - 2. Provide printed refill requirements with reordering diagram on cabinet.
  - 3. Provide 22 pocket vinyl liner to provide additional storage.
  - 4. Cabinet Dimensions: 19-1/2 x 26 x 5-1/2 inches.
- B. Cabinet Contents:
  - 1. 1 I-435: Antacid tablets, (125) 2-pks
  - 2. 1 I-415: Non-aspirin tablets, (125) 2-pks
  - 3. 1 I-427: Extra-strength pain reliever, (125) 2-pks
  - 4. 1 H-410: Aspirin tablets, (50) 2-pks
  - 5. 1 G-155: 3/4"x3" Adhesive plastic bandages, 100/bx



6. 1 G-122: 1"x3" Fabric bandages, 100/bx
7. 1 G-124: Knuckle fabric bandages, 40/bx
8. 1 G-126: Fingertip fabric bandages, 40/bx
9. 1 G-128: Fingertip fabric bandages, large, 25/bx
10. 2 B-204: 2"x4.1 yd. Conforming gauze roll bandages, 2/bx
11. 1 B-207: 4"x4" Gauze dressing pads, 4/bx
12. 1 3"x5 yd. Cohesive elastic bandage wrap
13. 1 M-270: Super Stop™ bandage
14. 1 B-518: Triangular sling/bandage, 1/bx
15. 1 G-532: Exam quality gloves, 5 pr/bx
16. 1 H-305: Alcohol cleansing pads, 100/bx
17. 1 B-503: 4"x5" Instant cold compress, 1/bx
18. 1 M-564-E: 6"x9" Instant cold compress, 1/bx
19. 1 SL-109: 2"x4" Elbow & knee plastic bandages, 25/bx
20. 1 M-5064: 3" Cotton tipped applicators, 100/vial
21. 1 I-228: 24 - 2"x2", 24 - 3"x3" Gauze dressing pads, 48/bx
22. 1 M-701-NIA: Eye wash, 4 oz.
23. 1 M-704-NIA: Eye wash solution, 8 oz.
24. 1 M-707: Redness reliever eye drops, 1/2 oz.
25. 1 M-528: Antiseptic spray, 3 oz.
26. 1 M-531: Burn spray, 3 oz.
27. 1 M-527: Spray on bandage, 3 oz.
28. 1 M-583: 5-3/4" Deluxe scissors - stainless steel
29. 1 M-584: 4" Tweezers, plastic
30. 1 M-660: 2"x5 yd. 3-Cut first aid tape
31. 1 H-307: Antiseptic cleansing wipes (sting free), 50/bx
32. 1 G-310: Povidone-iodine infection control wipes, 50/bx
33. 1 B-718: 4 Sterile, oval, gauze eye pads, 1/2"x5 yd. first aid tape, 1/bx
34. 1 G-231: 2"x3" Non-stick pads with adhesive edges, 50/bx
35. 1 B-504: CPR Pack: 1 Rescue Breather™ CPR one-way valve faceshield, 2 large latex gloves and 3 antiseptic wipes (sting free)
36. 1 A-5009: Ammonia inhalants, 10/bx
37. 1 A-151: Medium butterfly wound closures, 10/bx
38. 2 AN-205: 32 sq. in. Absorbent gauze compress, 1/bx
39. 1 G-486: Hydrocortisone cream, 1.0%, 1.5 gm pack, 25/bx
40. 1 G-469: Burn relief packs, 3.5 gm pack, 25/bx
41. 1 M-5068: 22-pocket, vinyl liner

### **PART 3 EXECUTION**

#### **3.01 INSTALLATION**

- A. Install in accordance with manufacturer's instructions.
- B. Install cabinets plumb and level , 48 inches from finished floor to inside bottom of cabinet.
- C. Secure rigidly in place.
- D. Place first aid supplies and accessories in cabinets. Verify that contents are complete.

#### **3.02 PROTECTION**

- A. Protect installed first aid cabinets from subsequent construction operations.

**END OF SECTION**

**SECTION 10 4400**  
**FIRE PROTECTION SPECIALTIES**

**PART 1 GENERAL**

**1.01 SECTION INCLUDES**

- A. Fire extinguishers.
- B. Fire extinguisher cabinets.
- C. Accessories.

**1.02 RELATED REQUIREMENTS**

- A. Section 06100 - Rough Carpentry: Wood blocking and shims.
- B. Section 09 9123 - Interior Painting: Field paint finish.

**1.03 REFERENCE STANDARDS**

- A. ASTM E814 - Standard Test Method for Fire Tests of Penetration Firestop Systems; 2013a.
- B. FM (AG) - FM Approval Guide; current edition.
- C. NFPA 10 - Standard for Portable Fire Extinguishers; 2013.
- D. UL (DIR) - Online Certifications Directory; current listings at database.ul.com.

**1.04 SUBMITTALS**

- A. See Section 01 3000 - Administrative Requirements, for submittal procedures.
- B. Shop Drawings: Indicate locations of cabinets, cabinet physical dimensions, rough-in measurements for recessed cabinets, locations of individual fire extinguishers, mounting measurements for wall bracket, installation procedures, and accessories required for complete installation.
- C. Manufacturer's Installation Instructions: Indicate special criteria and wall opening coordination requirements.
- D. Manufacturer's Certificate: Certify that products meet or exceed specified requirements.
- E. Maintenance Data: Include test, refill or recharge schedules and re-certification requirements.

**1.05 FIELD CONDITIONS**

- A. Do not install extinguishers when ambient temperature may cause freezing of extinguisher ingredients.

**PART 2 PRODUCTS**

**2.01 MANUFACTURERS**

- A. Fire Extinguishers:
  - 1. Ansul, a Tyco Business: [www.ansul.com](http://www.ansul.com).
  - 2. Kidde, a unit of United Technologies Corp: [www.kidde.com](http://www.kidde.com).
  - 3. Nystrom, Inc: [www.nystrom.com/sle](http://www.nystrom.com/sle).
  - 4. Pyro-Chem, a Tyco Business: [www.pyrochem.com](http://www.pyrochem.com).
  - 5. Strike First Corporation of America: [www.strikefirstusa.com/#sle](http://www.strikefirstusa.com/#sle).
  - 6. Substitutions: See Section 01 6000 - Product Requirements.
- B. Fire Extinguisher Cabinets and Accessories:
  - 1. JL Industries, Inc: [www.jlindustries.com](http://www.jlindustries.com).
  - 2. Larsen's Manufacturing Co: [www.larsensmfg.com](http://www.larsensmfg.com).
  - 3. Nystrom, Inc: [www.nystrom.com/sle](http://www.nystrom.com/sle).
  - 4. Potter-Roemer: [www.potterroemer.com](http://www.potterroemer.com).

**2.02 FIRE EXTINGUISHERS**

- A. Fire Extinguishers - General: Comply with product requirements of NFPA 10 and applicable codes, whichever is more stringent.

1. Provide extinguishers labeled by UL (DIR) or FM (AG) for purpose specified and as indicated.
- B. Water Type Fire Extinguishers: Stainless steel tank, pressurized, with premixed antifreeze solution, including hose and nozzle.
  1. Scope: For use in Pool Pump Room.
  2. Class: 2-A type.
  3. Size: 2.5 gallon.
  4. Finish: Polished chrome.
  5. Temperature Range: Minus 40 degrees F to 120 degrees F.
- C. Multipurpose Dry Chemical Type Fire Extinguishers: Carbon steel tank, with pressure gage.
  1. Do not use in Pool Pump Room.
  2. Cartridge Operated: Spun shell.
  3. Class: A:B:C type.
  4. Size: 5 pound.
  5. Finish: Baked polyester powder coat, Red color.
  6. Temperature range: Minus 65 degrees F to 120 degrees F.
  7. Provide extinguishers labeled by Underwriters Laboratories Inc. for the purpose specified and indicated.
- D. Dry Chemical Type Fire Extinguishers: Stainless steel tank, with pressure gage.
  1. Class: K type.
  2. Size: 1.6 gallons.
  3. Finish: Polished stainless steel.
  4. Temperature range: Minus 20 degrees F to 120 degrees F.

### **2.03 FIRE EXTINGUISHER CABINETS**

- A. Fire Rating: Listed and labeled in accordance with ASTM E814 requirements for fire resistance rating of walls where being installed.
- B. Cabinet Construction: Non-fire rated.
  1. Formed primed steel sheet; 0.036 inch thick base metal.
- C. Fire Rated Cabinet Construction: One-hour fire rated.
  1. Steel; double wall or outer and inner boxes with 5/8 inch thick fire barrier material.
- D. Cabinet Configuration: Recessed type.
  1. Size to accommodate accessories.
  2. Comply with ADA projection limitations.
  3. Provide cabinet enclosure with right angle inside corners and seams, and with formed perimeter trim and door stiles.
- E. Door: 0.036 inch metal thickness, reinforced for flatness and rigidity with nylon catch. Hinge doors for 180 degree opening with two butt hinge.
- F. Door Glazing: Acrylic plastic, clear, 1/8 inch thick, flat shape and set in resilient channel glazing gasket.
- G. Cabinet Mounting Hardware: Appropriate to cabinet, with pre-drilled holes for placement of anchors.
- H. Weld, fill, and grind components smooth.
- I. Finish of Cabinet Interior: White colored enamel.
- J. Basis of Design:
  1. Class A-B:C Extinguishers: JL Industries; Product Clear VU 1516F25 with Fire-FX option where required by fire rating.
  2. Class K Extinguishers: JL Industries; Product Clear VU 2516F25 with Fire-FX option where required by fire rating.

#### **2.04 ACCESSORIES**

- A. Extinguisher Brackets: Formed steel, chrome-plated.
- B. Graphic Identification: Provide where required by code.

#### **PART 3 EXECUTION**

##### **3.01 EXAMINATION**

- A. Verify existing conditions before starting work.
- B. Prior to roughin, Coordinate with the various trades to avoid conflicts with other items
- C. Verify rough openings for cabinet are correctly sized and located.

##### **3.02 INSTALLATION**

- A. Install in accordance with manufacturer's instructions.
- B. Install cabinets plumb and level in wall openings, No more than 48 inches from finished floor to fire extinguisher handle.
- C. Secure rigidly in place.
- D. Place extinguishers and accessories in cabinets.
- E. Verify charge condition. Charge extinguishers as necessary.

**END OF SECTION**

**SECTION 10 5126  
PLASTIC LOCKERS**

**PART 1 GENERAL**

**1.01 SECTION INCLUDES**

- A. Solid plastic lockers.

**1.02 RELATED REQUIREMENTS**

- A. Section 03 3000 - Cast-in-Place Concrete: Concrete base construction.
- B. Section 04 2000 - Unit Masonry: Concrete base construction.

**1.03 REFERENCE STANDARDS**

- A. NFPA 286 - Standard Methods of Fire Tests for Evaluating Contribution of Wall and Ceiling Interior Finish to Room Fire Growth; 2015.

**1.04 SUBMITTALS**

- A. See Section 01 3000 - Administrative Requirements, for submittal procedures.
- B. Product Data: Manufacturer's published data on locker construction, sizes and accessories.
- C. Shop Drawings: Indicate locker plan layout, numbering plan and combination lock code.
- D. Full Size Sample: One full-size locker of each construction specified for evaluation of construction.
- E. Samples: Submit two samples 8 by 8 inches in size, of each color scheduled.
- F. Manufacturer's Installation Instructions: Indicate component installation assembly.

**1.05 DELIVERY, STORAGE, AND HANDLING**

- A. Protect locker finish and adjacent surfaces from damage.

**PART 2 PRODUCTS**

**2.01 MANUFACTURERS**

- A. Solid Plastic Lockers:
  - 1. Basis of Design: Scranton Products; Tufftec Lockers: [www.scrantonproducts.com](http://www.scrantonproducts.com).
  - 2. Other Acceptable Manufacturers:
    - a. Columbia Lockers, a division of PSiSC; PolyLife Lockers: [www.psisc.com/#sle](http://www.psisc.com/#sle).
    - b. List Industries, Inc; AquaMax Solid Plastic Lockers: [www.listindustries.com/#sle](http://www.listindustries.com/#sle).
  - 3. Substitutions: See Section 01 6000 - Product Requirements.
- B. Solid Plastic Cubbies:
  - 1. Basis of Design: Scranton Products; Tufftec Cubbies: [www.scrantonproducts.com](http://www.scrantonproducts.com).
  - 2. Other Acceptable Manufacturers:
    - a. Columbia Lockers, a division of PSiSC; PolyLife Cubbies: [www.psisc.com](http://www.psisc.com).
    - b. Summit Lockers Inc; HDPE Combination Cubbies: [www.summitlockers.com](http://www.summitlockers.com).
  - 3. Substitutions: See Section 01 6000 - Product Requirements.

**2.02 LOCKER APPLICATIONS**

- A. Wardrobe Lockers: Solid plastic lockers, wall mounted for base indicated on drawings.
  - 1. Width: 15 inches.
  - 2. Depth: 18 inches.
  - 3. Height: 72 inches.
  - 4. Locker Configuration: Three tier.
  - 5. Fittings: Size and configuration as indicated on drawings.
    - a. Hooks: One single prong.
  - 6. Ventilation: By horizontal slots at the top and bottom of door.
  - 7. Locking: Padlock hasps, for padlocks provided by Owner.

- B. Open Front Cubbies: Solid plastic wall mounted for base indicated on drawings.
  - 1. Width: 15 inches.
  - 2. Depth: 18 inches.
  - 3. Height: 72 inches.
  - 4. Cubbie Configuration: Four tier.

### **2.03 SOLID PLASTIC LOCKERS**

- A. Lockers: Factory assembled, made of solid plastic panels, tested in accordance with NFPA 286, homogenous color throughout.
  - 1. Material: Solid high density polyethylene (HDPE).
  - 2. Doors: Full overlay without frame.
  - 3. Locker Body Construction: Manufacturer's standard for selected product.
  - 4. Where locker ends or sides are exposed, provide same finish as fronts or provide extra panels to match fronts.
  - 5. Provide filler strips where indicated, securely attached to lockers.
  - 6. Door Color: To be selected by Architect.
  - 7. Body Color: Manufacturer's standard white or light color.
- B. Component Thicknesses:
  - 1. Doors: 1/2 inch minimum thickness.
  - 2. Locker Body: Tops, bottoms, backs, and shelves 3/8 inch minimum.
  - 3. End Panels and Filler Panels: 1/2 inch minimum thickness.
  - 4. Sloped Tops: 1/2 inch minimum thickness.
- C. Hinges: Full height of locker, manufacturer's standard heavy duty type.
- D. Coat Hooks: High impact plastic.
- E. Number Plates: Provide rectangular shaped aluminum plates. Form numbers 1 inch high of block font style with ADA designation, in contrasting color.
- F. Built-In Lock Boxes: Same material as locker, manufacturer's standard size, with padlock hasps, for padlocks provided by Owner.

## **PART 3 EXECUTION**

### **3.01 EXAMINATION**

- A. Verify that prepared bases are in correct position and configuration.
- B. Verify bases and embedded anchors are properly sized.

### **3.02 INSTALLATION**

- A. Install in accordance with manufacturer's instructions.
- B. Place and secure on prepared base.
- C. Install lockers plumb and square.
- D. Secure lockers with anchor devices to suit substrate materials. Minimum Pullout Force: 100 pounds.
- E. Install end panels, filler panels, and sloped tops.
- F. Install fittings if not factory installed.
- G. Replace components that do not operate smoothly.

**END OF SECTION**

**SECTION 10 5623**  
**WIRE STORAGE SHELVING**

**PART 1 GENERAL**

**1.01 SECTION INCLUDES**

- A. Wall mounted wire closet shelving.
- B. Accessories.

**1.02 RELATED REQUIREMENTS**

- A. Section 06 1000 - Rough Carpentry: Blocking in walls for attachment of shelving.
- B. Section 09 2116 - Gypsum Board Assemblies: Blocking in metal stud walls for attachment of standards.

**1.03 SUBMITTALS**

- A. See Section 01 3000 - Administrative Requirements, for submittal procedures.
- B. Product Data: Manufacturer's data sheets on each product to be used, with installation instructions.
- C. Shop Drawings: Provide drawings prepared specifically for this project; show dimensions of shelving and attachment to substrates.
- D. Selection Samples: For each color selection required, submit color chips representing manufacturer's full range of available colors and finish.

**1.04 QUALITY ASSURANCE**

- A. Manufacturer Qualifications: Company specializing in manufacturing products specified in this section, with not less than five years of documented experience.

**1.05 DELIVERY, STORAGE, AND HANDLING**

- A. Store products in manufacturer's unopened packaging until ready for installation.
- B. Store products under cover and elevated above grade.
- C. Store flat to prevent warpage and bending.

**PART 2 PRODUCTS**

**2.01 MANUFACTURERS**

- A. Wire Storage Shelving:
  - 1. Basis of Design: ClosetMaid Corporation Heavy Duty Shelving with Maximum Load Shelftrack Components: [www.closetmaid.com](http://www.closetmaid.com).
  - 2. Other acceptable manufacturers: Subject to requirements provide equal products with the approval of Architect.
    - a. RubberMaid Closet and Organization Products : [www.rubbermaidcloset.com/#sle](http://www.rubbermaidcloset.com/#sle).
    - b. Substitutions: See Section 01 6000 - Product Requirements.

**2.02 SHELVING APPLICATIONS**

- A. Shelf Depth: Minimum 16 inches, unless otherwise indicated.
- B. Provide heavy duty wall mounted shelf with integral hanger rod.

**2.03 MATERIALS**

- A. Wire Shelving: Factory-assembled coated wire mesh shelf assemblies for wall-mounting, with all components and connections required to produce a rigid structure that is free of buckling and warping.
  - 1. Construction: Cold-drawn steel wire with average tensile strength of 100,000 psi resistance welded into uniform mesh units, square, rigid, flat, and free of dents or other distortions, with wires trimmed smooth.
  - 2. Coating: PVC, applied after fabrication, covering all surfaces.

3. PVC Coating: 9 to 11 mils thick.
  4. Standard Mesh Shelves: Cross deck wires spaced at 1 inch.
  5. Shelf and Rod Units: Integral hanging rod at front edge of shelf.
  6. Corner Units: Same wire spacing as standard mesh shelves; provide wherever shelves meet at right angles.
  7. Support Brackets: 24 inches o.c.
- B. Mounting Hardware: Provide manufacturer's heavy duty mounting hardware; include support braces, wall brackets, back clips, end clips, poles, and other accessories as required for complete and secure installation; factory finished to match shelving.
- C. Fasteners: As recommended by manufacturer for mounting substrates.

### **PART 3 EXECUTION**

#### **3.01 EXAMINATION**

- A. Inspect areas to receive shelving, to verify that spaces are properly prepared to receive shelf units, and are of dimensions indicated on shop drawings.
- B. Verify appropriate fastening hardware.
- C. Do not begin installation until substrates have been properly prepared.
- D. If substrate preparation is the responsibility of another installer, notify Architect of unsatisfactory preparation before proceeding.

#### **3.02 PREPARATION**

- A. Clean surfaces thoroughly prior to installation.
- B. Prepare surfaces using the methods recommended by the manufacturer for achieving the best result for the substrate under the project conditions.

#### **3.03 INSTALLATION**

- A. Install in accordance with manufacturer's instructions, with shelf surfaces level.
- B. Cap exposed ends of cut wires.
- C. Install back clips, end clips at side walls, and support braces at open ends. Install intermediate support braces as recommended by manufacturer.
- D. Mounting Heights:
  1. Spacing as indicated on Drawings.

#### **3.04 CLEANING**

- A. Clean soiled surfaces after installation.

#### **3.05 PROTECTION**

- A. Protect installed work from damage.
- B. Touch-up, repair, or replace damaged products before Substantial Completion in a manner that eliminates evidence of replacement.

**END OF SECTION**



**SECTION 10 7113.13**  
**EXTERIOR SHUTTERS**

**PART 1 GENERAL**

**1.01 SECTION INCLUDES**

- A. Aluminum shutters.
- B. Shutter hardware.

**1.02 REFERENCE STANDARDS**

- A. AAMA 2605 - Voluntary Specification, Performance Requirements and Test Procedures for Superior Performing Organic Coatings on Aluminum Extrusions and Panels (with Coil Coating Appendix); 2017a.
- B. ASTM E330/E330M - Standard Test Method for Structural Performance of Exterior Windows, Doors, Skylights and Curtain Walls by Uniform Static Air Pressure Difference; 2014.
- C. ASTM E1996 - Standard Specification for Performance of Exterior Windows, Curtain Walls, Doors, and Impact Protective Systems Impacted by Windborne Debris in Hurricanes; 2017.

**1.03 SUBMITTALS**

- A. See Section 01 3000 - Administrative Requirements, for submittal procedures.
- B. Product Data: Manufacturer's data sheets on each product to be used.
- C. Shop Drawings: Show materials, layout, dimensions, profiles, fasteners and anchors, hardware, finishes, and interface with adjacent construction.
- D. Samples: For each finish product specified, two complete sets of color chips representing manufacturer's standard colors.
- E. Certificate: Certify that products of this section meet or exceed specified requirements.
- F. Test Reports: Show compliance with specified requirements for windborne debris-resistant shutters.
- G. Product Evaluation Reports: Show compliance with specified requirements.
- H. Manufacturer's Qualification Statement.
- I. Installer's Qualification Statement.
- J. Warranty Documentation: Submit manufacturer warranty and ensure that forms have been completed in Owner's name and registered with manufacturer.
- K. Specimen Warranty.

**1.04 QUALITY ASSURANCE**

- A. Manufacturer Qualifications: Company specializing in manufacturing products specified in this section, with at least five years of documented experience.
- B. Installer Qualifications: Company specializing in performing work of the type specified and with at least five years of documented experience and approved by manufacturer.

**1.05 DELIVERY, STORAGE, AND HANDLING**

- A. Deliver materials to site in manufacturer's original, unopened packaging, with labels clearly identifying product name and manufacturer.
- B. Store products in manufacturer's unopened packaging until ready for installation.
- C. Store materials in a clean, cool and dry area in accordance with manufacturer's instructions. Do not leave unopened shutters in direct sunlight.
- D. Protect materials during handling and installation to prevent damage.

## 1.06 FIELD CONDITIONS

- A. Maintain environmental conditions (temperature, humidity, and ventilation) within limits recommended by manufacturer. Do not install products under environmental conditions outside manufacturer's absolute limits.

## 1.07 WARRANTY

- A. See Section 01 7800 - Closeout Submittals, for additional warranty requirements.
- B. Correct defective Work within a five year period after Date of Substantial Completion.
- C. Provide five year manufacturer warranty for shutters.

## PART 2 PRODUCTS

### 2.01 MANUFACTURERS

- A. Aluminum Shutters:
  - 1. Basis of Design: Larsen Shutter Company; [www.larsenshutters.com](http://www.larsenshutters.com).
  - 2. Substitutions: See Section 01 6000 - Product Requirements.

### 2.02 EXTERIOR SHUTTERS

- A. General:
  - 1. Provide operable and fixed shutters as indicated on drawings.
- B. Material Composition: Aluminum, and as specified below.
- C. Type: Top hung (Bahama).
  - 1. Style: Louvered.
- D. Thickness: 1-3/4 inches, nominal.
- E. Width: 72 inch.
- F. Height: 72 inch.
- G. Impact Protective System: Shutter manufacturer's standard assembly for specified shutter type.
  - 1. Storm Bars:
    - a. Bahama Storm Shutters: Hurricane-rated top hinge with locking system on sides.
  - 2. Accessories: Provide stainless steel hinges, holders, fasteners, and other accessories to resist design windloads and for proper shutter operations.

### 2.03 PERFORMANCE REQUIREMENTS

- A. Shutters to withstand specified load requirements without damage or permanent set, when tested in accordance with ASTM E330/E330M.
- B. Design Wind Loads: Comply with requirements of authorities having jurisdiction.
- C. Windborne Debris Resistance: Shutter with impact protective system complying with ASTM E1996 for Wind Zone 3 - Enhanced Protection, including both large and small missile tests, and cyclic pressure loading when tested according to ASTM E1886.

### 2.04 MATERIALS

- A. Manufacturer's standard shutter construction and materials for selected model or product line.
- B. Aluminum: Shutters fabricated from individual components of aluminum and other materials as noted below.
  - 1. Stiles: Extruded aluminum.
  - 2. Rails: Extruded aluminum.
  - 3. Louver Slats: Extruded aluminum; rounded edges.
  - 4. Thermal Stability: Reinforced aluminum alloy structural louvers for wider spans up to 48 inches and side rails finished with a two-part solar reflective polyurethane enamel thermally stable up to 800 degrees F.
  - 5. Shop-Applied Finish:

- a. Superior Performing Organic Coatings System: Manufacturer's standard multi-coat superior performing organic coatings system complying with AAMA 2605, including at least 70 percent polyvinylidene fluoride (PVDF) resin, and at least 80 percent of aluminum extrusion and panels surfaces having minimum total dry film thickness (DFT) of 1.2 mils, 0.0012 inch.
6. Color: As indicated on Drawings.

## **2.05 HARDWARE**

- A. Hardware for Top-Hung "Bahama" Shutters: Select from shutter manufacturer's standard options.
  1. Two-Piece Continuous Top Hinges:
    - a. Material: Aluminum.
    - b. Finish: Match shutter finish and color.
  2. Tilt Arms:
    - a. Aluminum fixed square arms/brackets. Paint finish to match shutter.

## **PART 3 EXECUTION**

### **3.01 EXAMINATION**

- A. Do not begin installation until substrates have been properly prepared.
- B. If substrate preparation is the responsibility of another installer, notify Architect of unsatisfactory preparation before proceeding.
- C. Commencement of work will imply acceptance of substrate.

### **3.02 PREPARATION**

- A. Clean surfaces thoroughly prior to installation.
- B. Prepare surfaces using the methods recommended by the manufacturer for achieving the best result for the substrate under the project conditions.

### **3.03 INSTALLATION**

- A. Install shutters in accordance with manufacturer's instructions for mounting indicated.
- B. Adjust operable units for smooth unobstructed operation.

### **3.04 PROTECTION**

- A. Protect installed products from damage by weather and other work until Date of Substantial Completion.
- B. Touch-up and repair damaged products before Date of Substantial Completion.

**END OF SECTION**

**SECTION 10 7316**  
**CANOPIES**

**PART 1 GENERAL**

**1.01 SECTION INCLUDES**

- A. Pre-engineered, pre-finished extruded aluminum canopies and walkway covers.

**1.02 RELATED SECTIONS**

- A. Section 04 2000 - Unit Masonry Assemblies.

**1.03 REFERENCES**

- A. AAMA 611 - Voluntary Specification for Anodized Architectural Aluminum; 1998.
- B. AAMA 2603 - Voluntary Specification, Performance Requirements and Test Procedures for Pigmented Organic Coatings on Aluminum Extrusions and Panels; 2002.
- C. AAMA 2605 - Voluntary Specification, Performance Requirements and Test Procedures for Superior Performing Organic Coatings on Aluminum Extrusions and Panels; 2005.

**1.04 ADMINISTRATIVE REQUIREMENTS**

- A. Coordination: Coordinate the installation of canopies with size, location and installation of structural supports. Coordinate with metal building manufacturer.
- B. Preinstallation Meeting: Conduct a preinstallation meeting one week prior to the start of the work of this section; require attendance by all affected installers.

**1.05 SUBMITTALS**

- A. See Section 01 3000 - Administrative Requirements, for submittal procedures.
- B. Product Data: Manufacturer's catalog data, detail sheets, and specifications.
- C. Shop Drawings: Layout and erection drawings showing roof framing, deck panels, cross sections, and trim details, clearly indicating proper assembly.
- D. Structural Design Calculations: Complete structural design calculations, including attachment and support reactions, stamped by design engineer.
- E. Samples: Color selection samples consisting of actual coating material or anodizing process on aluminum extrusions.
- F. Qualifications: Letter certifying specified qualifications.
- G. Manufacturer's installation instructions.

**1.06 QUALITY ASSURANCE**

- A. Provide all protective covers from a single manufacturer.
- B. Design Engineer Qualifications: Structural engineer registered to practice in the State in which the Project is located.
- C. Manufacturer Qualifications: Minimum five years experience in producing protective covers with welded bents and of the type specified.
- D. Installer Qualifications: Minimum three years experience in erecting protective covers of the type specified.

**1.07 DELIVERY, STORAGE AND HANDLING**

- A. Comply with manufacturer's requirements.

**PART 2 PRODUCTS**

**2.01 MANUFACTURERS**

- A. Basis of Design: Tennessee Valley Metals, Inc. [www.tvmetals.com](http://www.tvmetals.com).
- B. Perfection Architectural Systems, Inc; [www.perfectionarch.com](http://www.perfectionarch.com).

- C. Peachtree Protective Covers: [www.peachtreecovers.com](http://www.peachtreecovers.com).
- D. Superior Metal Products Company, Inc.; [www.superiormetalproducts.com](http://www.superiormetalproducts.com).
- E. E. L. Burns Company: [www.elburns.com](http://www.elburns.com).
- F. Substitutions: See Section 01 6000 - Product Requirements.
- G. Provide all canopies from a single manufacturer.

## **2.02 PROTECTIVE COVERS**

- A. Protective Walkway Covers and Canopies: Pre-engineered, pre-finished extruded aluminum canopies and walkway covers as indicated on Drawings, including interlocking deck sections secured with screws, and fascia/gutter.
  - 1. Structural Performance: Capable of withstanding design loads specified by applicable building code including additional collateral loads indicated in the contract documents.
  - 2. Drainage: Self-draining from deck through downspout to discharge point at ground level or as otherwise shown.
  - 3. See Drawings for location, size and other requirements.
- B. Deck: Rigid-Roll-Lock extruded aluminum, self-flashing, interlocking sections of size and profile shown on drawings.
  - 1. Provide welded end plate water dams where sections terminate at other than drainage channels.
  - 2. Color: As selected by architect from manufacturer's standard color range.
- C. Fascia/Gutter: Manufacturer's standard extruded aluminum fascia sections as shown on drawings and as required to complete the installation resulting in a neat finished appearance.
  - 1. Color: As selected by architect from manufacturer's standard color range.
- D. Scuppers: Provide manufacturer's standard aluminum scuppers as shown on drawings and as required to complete the installation resulting in a neat finished appearance.

## **2.03 MATERIALS**

- A. Aluminum Extrusions: 6063 alloy, T-6 temper.
  - 1. Dark Bronze Anodized Finish: AA-M-10C-22A-44, Architectural Class I, complying with AAMA 611.
- B. Flashing: Aluminum sheet, thickness as recommended by manufacturer for specific condition.
- C. Grout: 1 part portland cement, 3 parts masonry sand; 2,000 psi compressive strength.
- D. Foam Block-Outs: Rigid foam blocks sized as required for column embedment depth and shape.
- E. Fasteners:
  - 1. Deck Screws: No. 14 by 1 inch, self tapping, Type 18-8 stainless steel with neoprene washers.
  - 2. Trim Screws: No. 10 by 1/2 inch, self tapping, Type 18-8 stainless steel.
  - 3. Other Fasteners: Type 18-8 stainless steel, type recommended by manufacturer for specific condition.

## **PART 3 EXECUTION**

### **3.01 EXAMINATION**

- A. Examine building surfaces to which canopy will connect.
- B. Coordinate with responsible installers to perform corrective work on unsatisfactory support structure or surfaces.
- C. Commencement of work by installer is acceptance of existing conditions.

### **3.02 ERECTION**

- A. Erect protective covers in accordance with manufacturer's installation instructions.

- B. Set supports and canopies, straight, and true to line, adequately braced to maintain position.
- C. Keep aluminum surfaces from direct contact with ferrous metal or other incompatible materials by applying one coat of zinc chromate primer; follow with two coats of aluminum paint.
  - 1. In lieu of aluminum paint, one coat of high-build bituminous paint applied to 1/16 inch thickness may be used.

**3.03 CLEANING**

- A. Clean surfaces soiled by work as recommended by manufacturer.
- B. Remove surplus materials and debris from the site.

**3.04 PROTECTION**

- A. Protect finished aluminum surfaces from damage due to subsequent construction operations.

**END OF SECTION**

**SECTION 12 2400**  
**WINDOW SHADES - MECHOSHADE SYSTEMS**

**PART 1 GENERAL**

**1.01 SECTION INCLUDES**

- A. Motorized roller shades and accessories.
- B. Motor controls, interfaces, and accessories.

**1.02 RELATED REQUIREMENTS**

- A. Section 06 1000 - Rough Carpentry: Concealed wood blocking for attachment of shade brackets and accessories.

**1.03 REFERENCE STANDARDS**

- A. ASTM G21 - Standard Practice for Determining Resistance of Synthetic Polymeric Materials to Fungi; 2015.
- B. NFPA 70 - National Electrical Code; Most Recent Edition Adopted by Authority Having Jurisdiction, Including All Applicable Amendments and Supplements.
- C. NFPA 701 - Standard Methods of Fire Tests for Flame Propagation of Textiles and Films; 2019.
- D. UL 325 - Standard for Door, Drapery, Gate, Louver, and Window Operators and Systems; Current Edition, Including All Revisions.

**1.04 ADMINISTRATIVE REQUIREMENTS**

- A. Coordination:
  - 1. Where motorized shades are to be controlled by control systems provided under other sections, coordinate the work with other trades to provide compatible products.
  - 2. Coordinate the work with other trades to provide rough-in of electrical wiring as required for installation of hardwired motorized shades.
- B. Preinstallation Meeting: Convene one week prior to commencing work related to products of this section; require attendance of all affected installers.
- C. Sequencing:
  - 1. Do not fabricate shades until field dimensions for each opening have been taken with finished conditions in place. "Hold to" dimensions are not acceptable.
  - 2. Do not install shades until final surface finishes and painting are complete.

**1.05 SUBMITTALS**

- A. See Section 01 3000 - Administrative Requirements, for submittal procedures.
- B. Product Data: Provide manufacturer's standard catalog pages and data sheets for each product to be used including materials, finishes, fabrication details, dimensions, profiles, mounting requirements, and accessories.
  - 1. Motorized Shades: Include power requirements and standard wiring diagrams solely for the specified products.
- C. Shop Drawings: Include shade schedule indicating size, location and keys to details.
  - 1. Motorized Shades: Include one-line diagrams, wire counts, coverage patterns, and physical dimensions of each item. Include location plan showing all switch and control zones, switches, sensors and other control accessories.
- D. Source Quality Control Submittals: Provide test reports indicating compliance with specified fabric properties.
- E. Selection Samples: Include fabric samples in full range of available colors and patterns.
- F. Verification Samples: Minimum size 6 inches square, representing actual materials, color and pattern.

- G. Manufacturer's Instructions: Include instructions for storage, handling, protection, examination, preparation, and installation of product.
- H. Project Record Documents: Record actual locations of control system components and show interconnecting wiring.
- I. Operation and Maintenance Data: List of all components with part numbers, and operation and maintenance instructions; include copy of shop drawings.
- J. Warranty: Submit sample of manufacturer's warranty and documentation of final executed warranty completed in Owner's name and registered with manufacturer.
- K. Maintenance contracts.

#### **1.06 QUALITY ASSURANCE**

- A. Motorized Shades: Comply with NFPA 70.
- B. Manufacturer Qualifications: Company specializing in manufacturing products specified in this section, with not less than ten years of documented experience.
- C. Installer Qualifications: Company specializing in performing work of this type with minimum ten years of documented experience with shading systems of similar size, type, and complexity; manufacturer's authorized representative.
- D. Product Listing Organization Qualifications: An organization recognized by OSHA as a Nationally Recognized Testing Laboratory (NRTL) and acceptable to authorities having jurisdiction.

#### **1.07 MOCK-UP**

- A. Mock-Up: Provide full size mock-up of window shade system complete with selected shade fabric including example of seams and batten pockets or as required to simulate jobsite conditions when applicable.
  - 1. Obtain Architect's approval of light and privacy characteristics of fabric prior to fabrication.
  - 2. Full-sized mock-up may become part of the final installation.

#### **1.08 DELIVERY, STORAGE, AND HANDLING**

- A. Deliver shades in manufacturer's unopened packaging, labeled to identify each shade for each opening.
- B. Handle and store shades in accordance with manufacturer's recommendations.

#### **1.09 FIELD CONDITIONS**

- A. Do not install products under environmental conditions outside manufacturer's absolute limits.

#### **1.10 WARRANTY**

- A. See Section 01 7800 - Closeout Submittals, for additional warranty requirements.
- B. Provide manufacturer's standard, non-depreciating warranty, for interior shading only, covering the following:
  - 1. Shade Hardware: 10 years unless otherwise indicated.
  - 2. Shade Fabric: 10 years unless otherwise indicated.
  - 3. Electric Motors, Controls, and Accessories: Five years.

### **PART 2 PRODUCTS**

#### **2.01 MANUFACTURERS**

- A. Basis of Design: MechoShade Systems LLC; [www.mechoshade.com/#sle](http://www.mechoshade.com/#sle).
- B. Other Acceptable Manufacturers:
  - 1. Draper, Inc: [www.draperinc.com/#sle](http://www.draperinc.com/#sle).
  - 2. Lutron Electronics Co., Inc: [www.lutron.com/#sle](http://www.lutron.com/#sle).
  - 3. TimberBlindMetroShade: [www.timberblinds.com/commercial-division/#sle](http://www.timberblinds.com/commercial-division/#sle).
  - 4. SWFcontract, a division of Springs Window Fashions, LLC: [www.swfcontract.com/#sle](http://www.swfcontract.com/#sle).



5. Products by listed manufacturers are subject to compliance with specified requirements.
- C. Substitutions: See Section 01 6000 - Product Requirements.
  1. Products other than basis of design are subject to compliance with specified requirements and prior approval of Architect. By using products other than basis of design, Contractor accepts responsibility for costs associated with any necessary modifications to related work, including any design fees.

## 2.02 ROLLER SHADES

- A. General:
  1. Provide shade system components that are capable of being removed or adjusted without removing mounted shade brackets or cassette support channel.
  2. Provide shade system that operates smoothly when shades are raised or lowered.
  3. Electrical Components: Listed, classified, and labeled as suitable for the purpose intended. Individual testing of components will not be acceptable in lieu of system testing. Where applicable, system components to be FCC compliant.
- B. Roller Shades - Basis of Design: MechoShade Systems LLC; ElectroShade with WhisperShade IQ2 EDU, line voltage (120 VAC); [www.mechoshade.com/#sle](http://www.mechoshade.com/#sle).
  1. Description: Single roller, motor operated fabric window shade system complete with mounting brackets, roller tubes, hembars, hardware, and accessories.
    - a. Drop Position: Regular roll.
    - b. Mounting: Ceiling mounted.
    - c. Size: As indicated on drawings.
    - d. Fabric: As indicated under Shade Fabric article.
  2. Brackets and Mounting Hardware: As recommended by manufacturer for mounting indicated and to accommodate shade fabric roll-up size and weight.
    - a. Material: Steel, 1/8 inch thick.
    - b. Multiple Shade Operation: Provide hardware as necessary to operate more than one shade using a single motor.
  3. Roller Tubes:
    - a. Material: Extruded aluminum.
    - b. Size: As recommended by manufacturer; selected for suitability for installation conditions, span, and weight of shades.
    - c. Fabric Attachment: Utilize extruded channel in tube to accept vinyl spline welded to fabric edge. Shade band to be removable and replaceable without removing roller tube from brackets or inserting spline from the side of the roller tube.
  4. Hembars: Designed to maintain bottom of shade straight and flat.
    - a. Style: Full wrap fabric covered bottom bar, flat profile with heat sealed closed ends.
  5. Accessories:
    - a. Fascia: Removable extruded aluminum fascia, size as required to conceal shade mounting, attachable to brackets without exposed fasteners; baked enamel finish.
      - 1) Fascia to be capable of installation across two or more shade bands in one piece.
      - 2) Color: White.
      - 3) Profile: Radiused.
      - 4) Configuration: Captured and continuous, as indicated on drawings.

## 2.03 SHADE FABRIC

- A. Fabric: Non-flammable, color-fast, impervious to heat and moisture, and able to retain its shape under normal operation.
  1. Material Composition:
    - a. PVC coated polyester yarns.
  2. Performance Requirements:
    - a. Flammability: Pass NFPA 701 large or small scale test.
    - b. Fungal Resistance: No growth when tested according to ASTM G21.

- c. Solar Transmittance (Ts): \_\_\_\_\_, nominal.
- d. Visible Light Transmittance (Tv): \_\_\_\_\_, nominal.
- e. Solar Absorption (As): \_\_\_\_\_, nominal.
- f. Solar Reflectance (Rs): \_\_\_\_\_, nominal.
3. Openness Factor: \_\_\_\_\_, nominal.
4. Weight: \_\_\_\_\_ ounces per square yard.
5. Maximum Roll Width: 63 inches.
6. Color: As selected by Architect from manufacturer's full range of colors.
7. Fabrication:
  - a. Fabric Orientation: Railroaded, fabric is turned 90 degrees off the roll.
8. Products:
  - a. MechoShade Systems LLC Inc; Soho - 1100 Series (1% open):  
[www.mechoshade.com/#sle](http://www.mechoshade.com/#sle).
  - b. Substitutions: See Section 01 6000 - Product Requirements.

#### **2.04 INTELLIGENT ENCODED ELECTRONIC DRIVE SYSTEM**

- A. Electronic Drive Unit (EDU) System - General Requirements:
  1. System to be certified and labelled as a UL 325 listed solution. Recognized component certification is not acceptable in lieu of system testing. Listing label and motor rating to be readily visible for inspection without requiring dismounting of shade assembly for motor or EDU to be removed from shade roller tube.
  2. EDU size and configuration to be as recommended by manufacturer for the type, size, and arrangement of shades to be operated.
  3. Conceal EDU inside shade roller tube.
  4. Use EDU's rated at the same nominal speed for shades in the same room.
  5. Total hanging weight of shade band not to exceed 80 percent of rated lifting capacity of shade EDU and tube assembly.
  6. Provide EDU with capability of upgrading firmware from anywhere on network without touching the motor.
- B. Line Voltage EDU (120 VAC):
  1. Basis of Design: MechoShade Systems LLC; WhisperShadeIQ2 System;  
[www.mechoshade.com/#sle](http://www.mechoshade.com/#sle).
  2. Description: Tubular, asynchronous (non-synchronous), with integral AC motor and reversible capacitor operating at 120 VAC, single phase, 60 Hz; temperature Class B, thermally-protected, totally enclosed, maintenance-free; powered by line voltage power supply connection equipped with locking disconnect plug assembly furnished with EDU.
  3. Audible Noise: 46 dBA or less measured 3 feet from the motor unit, depending on motor torque.
  4. Nominal Speed: Minimum of 34 RPM; does not vary due to load/lift capacity.
  5. EDU to provide isolated, low voltage power supply for powering external accessories connected to either the dry contact port or the network port. Products that require accessories to be powered by a plug-in or externally-supplied power supply are not acceptable.
- C. Modes of Operation:
  1. Uniform Mode: Allows for shades to move only to defined intermediate stop positions in order to maintain aesthetic uniformity.
  2. Normal Mode: Allows for shades to move to defined intermediate stop positions plus any position between defined upper and lower limits.
  3. Maintenance Mode: Prevents shade from moving to newly commanded positions via dry contact or network control commands until EDU has been serviced and/or Maintenance Mode has been cleared/disabled.
- D. Control Methods: Support both local isolated dry contact input and network control.
  1. Local Isolated Dry Contact Inputs:

- a. Supports local switch control and third party system integration without separate interface.
  - b. Supports moving EDU/shade to upper and lower limits and to local switch preset positions.
  - c. Allows for configuration of upper and lower limits, custom presets, and key modes of operation without requiring a PC or similar microprocessor-based tools.
  - d. Supports configuration under protected sequences to prevent changes by casual user.
  - e. Switch Personalities: Allows for configuration of the dry contact control port over network such that virtually any type of dry contact keypad/third-party interface and actuation methodology (maintained and/or momentary actuation) can be used to operate shade. Dry contact control connection options to include:
    - 1) 1-button.
    - 2) 2-button.
    - 3) 3-button with ability to support configuring limits, presets, and key operating modes (default).
    - 4) 3-button without configuration capability in order to prevent accidental changes in settings.
2. Network Control:
- a. Supports bi-directional network communication in order to enable commanding the operation of large groups of shades over a common backbone.
  - b. Each EDU to support eight network addresses capable of being employed for various levels of group control.
  - c. Dry contact port for each EDU to be assigned its own local switch address which can be matched by other EDUs (within their eight network addresses) in order to support group control when dry contact commands are received. The EDU receiving dry contact commands may or may not be configured to operate based on commands coming through its own dry contact input port.
  - d. Each EDU to be provided with an independent unique identifier address (UID) to enable the EDU to be independently controlled and configured over network via handheld configurator and/or PC controller.
  - e. Network communication card to be integral with tubular EDU assembly.
  - f. Supports configuration of upper and lower limits using either a handheld removable program module/configurator or a local switch.
  - g. Supports configuration of addresses using a handheld removable program module/configurator.
- E. Alignment Positions:
1. Each EDU to support positioning commands from 0 to 100 percent in 1 percent increments and 32 customizable presets, including three intermediate dry contact presets resulting in repeatable and precisely aligned shade positions and limits.
  2. Shades on the same switch circuit or with the same network group address with the same opening height to align at each limit or preset (intermediate stopping position) when traveling from any position, up or down.
  3. Shades of differing heights to be capable of custom, aligned intermediate stop positions when traveling from any position, up or down.
  4. Alignment of standard shade bands mechanically aligned on the same EDU not to exceed plus/minus 0.125 inch when commanded to the same alignment position.
  5. Alignment of standard shades on adjacent EDU's not to exceed plus/minus 0.25 inch when commanded to the same alignment position.
- F. Local Switch Presets:
1. Provide a minimum of three customizable preset positions accessible over the local dry contact control inputs and over the network connection.
  2. Preset positions to be customizable to any position between and including the defined upper and lower limits (initially defaults to 25, 50, and 75 percent of shade travel).

3. Support configuration of custom preset positions using either a handheld removable program module/configurator or a local switch.
- G. Network Presets:
1. Provide a minimum of 32 customizable preset positions (including the three local switch presets) accessible via network commands.
  2. Preset positions to be customizable to any position between and including the defined upper and lower limits (initially defaults to defined lower limit).
  3. Support configuration of custom preset positions using a handheld removable program module/configurator.

## **2.05 MOTOR CONTROLS**

- A. Unless specifically indicated to be excluded, provide all required equipment, conduit, boxes, wiring, connectors, hardware, supports, accessories, software, system programming, etc. as necessary for a complete operating system that provides the control intent indicated.
- B. Provide all components and connections necessary to interface with other systems as indicated.
- C. Digital Network Controls:
  1. Basis of Design: MechoShade Systems LLC; MechoNet; [www.mechoshade.com/#sle](http://www.mechoshade.com/#sle).
  2. Low-voltage network utilizes standard Category 5/6 UTP cable; maximum of 4,000 feet, 250 nodes.
  3. Capable of reprogrammed control without requiring wiring modifications.
  4. Provide 10-year non-volatile power failure memory for system configuration settings.

## **2.06 ROLLER SHADE FABRICATION**

- A. Field measure finished openings prior to ordering or fabrication.
- B. Dimensional Tolerances: Fabricate shades to fit openings within specified tolerances.
  1. Vertical Dimensions: Fill openings from head to sill with 1/2 inch space between bottom bar and window stool.
  2. Horizontal Dimensions - Inside Mounting: Fill openings from jamb to jamb.
- C. At openings requiring continuous multiple shade units with separate rollers, locate roller joints at window mullion centers; butt rollers end-to-end.

## **PART 3 EXECUTION**

### **3.01 EXAMINATION**

- A. Examine finished openings for deficiencies that may preclude satisfactory installation.
- B. If substrate preparation is the responsibility of another installer, notify Architect of unsatisfactory preparation before proceeding.
- C. Start of installation shall be considered acceptance of substrates.

### **3.02 PREPARATION**

- A. Prepare surfaces using methods recommended by manufacturer for achieving best result for substrate under the project conditions.
- B. Coordinate with window installation and placement of concealed blocking to support shades.

### **3.03 INSTALLATION**

- A. Install in accordance with manufacturer's instructions and approved shop drawings, using mounting devices as indicated.
- B. Replace shades that exceed specified dimensional tolerances at no extra cost to Owner.
- C. Adjust level, projection, and shade centering from mounting bracket. Verify there is no telescoping of shade fabric. Ensure smooth shade operation.

### **3.04 SYSTEM STARTUP**

- A. Motorized Shade System: Provide services of a manufacturer's authorized representative to perform system startup.

### **3.05 CLEANING**

- A. Clean soiled shades and exposed components as recommended by manufacturer.
- B. Replace shades that cannot be cleaned to "like new" condition.

### **3.06 CLOSEOUT ACTIVITIES**

- A. See Section 01 7800 - Closeout Submittals, for closeout submittals.
- B. See Section 01 7900 - Demonstration and Training, for additional requirements.
- C. Demonstration: Demonstrate operation and maintenance of window shade system to Owner's personnel.
- D. Training: Train Owner's personnel on operation and maintenance of system.
  - 1. Use operation and maintenance manual as training reference, supplemented with additional training materials as required.
  - 2. Provide minimum of two hours training by manufacturer's authorized personnel at location designated by the Owner.

### **3.07 PROTECTION**

- A. Protect installed products from subsequent construction operations.
- B. Touch-up, repair or replace damaged products before Substantial Completion.

### **3.08 MAINTENANCE**

- A. See Section 01 7000 - Execution and Closeout Requirements, for additional requirements relating to maintenance service.
- B. Provide to Owner, at no extra cost, a separate renewable maintenance contract for the service and maintenance of a motorized shade system for one year from date of Substantial Completion. Include a complete description of preventive maintenance, systematic examination, adjustment, parts and labor, cleaning, and testing, with a detailed schedule.

**END OF SECTION**

**SECTION 12 3600  
COUNTERTOPS**

**PART 1 GENERAL**

**1.01 SECTION INCLUDES**

- A. Countertops for architectural cabinet work.
- B. Wall-hung counters and vanity tops.

**1.02 RELATED REQUIREMENTS**

- A. Section 06 4100 - Architectural Wood Casework.
- B. Section 22 4000 - Plumbing Fixtures: Sinks.

**1.03 REFERENCE STANDARDS**

- A. ANSI A208.2 - American National Standard for Medium Density Fiberboard for Interior Use; 2009.
- B. ASTM E84 - Standard Test Method for Surface Burning Characteristics of Building Materials; 2018b.
- C. AWI/AWMAC/WI (AWS) - Architectural Woodwork Standards; 2014.
- D. AWMAC/WI (NAAWS) - North American Architectural Woodwork Standards, U.S. Version 3.0; 2016.
- E. ISFA 2-01 - Classification and Standards for Solid Surfacing Material; 2013.
- F. ISFA 3-01 - Classification and Standards for Quartz Surfacing Material; 2013.
- G. MIA (DSDM) - Dimensional Stone Design Manual, Version VIII; 2016.
- H. NEMA LD 3 - High-Pressure Decorative Laminates; 2005.

**1.04 SUBMITTALS**

- A. See Section 01 3000 - Administrative Requirements, for submittal procedures.
- B. Product Data: Manufacturer's data sheets on each product to be used, including:
  - 1. Preparation instructions and recommendations.
  - 2. Storage and handling requirements and recommendations.
  - 3. Specimen warranty.
- C. Shop Drawings: Complete details of materials and installation; combine with shop drawings of cabinets and casework specified in other sections.
- D. Selection Samples: For each finish product specified, color chips representing manufacturer's full range of available colors and patterns.
- E. Verification Samples: For each finish product specified, minimum size 6 inches square, representing actual product, color, and patterns.
- F. Test Reports: Chemical resistance testing, showing compliance with specified requirements.
- G. Certificate: Submit labels and certificates required by quality assurance and quality control programs.
- H. Installation Instructions: Manufacturer's installation instructions and recommendations.
- I. Maintenance Data: Manufacturer's instructions and recommendations for maintenance and repair of countertop surfaces.

**1.05 QUALITY ASSURANCE**

- A. Fabricator Qualifications: Company specializing in fabricating the products specified in this section with minimum five years of documented experience.
  - 1. Company with at least one project in the past 5 years with value of woodwork within 20 percent of cost of woodwork for this Project.

- B. Installer Qualifications: Company specializing in performing work of the type specified in this section, with not less than five years of documented experience and approved by manufacturer.

#### **1.06 DELIVERY, STORAGE, AND HANDLING**

- A. Store products in manufacturer's unopened packaging until ready for installation.
- B. Store and dispose of solvent-based materials, and materials used with solvent-based materials, in accordance with requirements of local authorities having jurisdiction.

#### **1.07 FIELD CONDITIONS**

- A. Maintain environmental conditions (temperature, humidity, and ventilation) within limits recommended by manufacturer for optimum results. Do not install products under environmental conditions outside manufacturer's absolute limits.

### **PART 2 PRODUCTS**

#### **2.01 COUNTERTOPS AND VANITIES**

- A. Quality Standard: Custom Grade, in accordance with AWI/AWMAC/WI (AWS) or AWMAC/WI (NAAWS), unless noted otherwise.
- B. Plastic Laminate Countertops: High-pressure decorative laminate (HPDL) sheet bonded to substrate.
  - 1. Laminate Sheet, Type PL-X: NEMA LD 3, Grade HGS, 0.048 inch nominal thickness.
    - a. Manufacturers:
      - 1) Formica Corporation: [www.formica.com](http://www.formica.com).
      - 2) Lamin-Art, Inc: [www.laminart.com](http://www.laminart.com).
      - 3) Panolam Industries International, Inc.\Nevamar: [www.nevamar.com](http://www.nevamar.com).
      - 4) Panolam Industries International, Inc.\Pionite: [www.pionitelaminates.com](http://www.pionitelaminates.com).
      - 5) Wilsonart: [www.wilsonart.com](http://www.wilsonart.com).
      - 6) Substitutions: See Section 01 6000 - Product Requirements.
    - b. Surface Burning Characteristics: Flame spread index of 25, maximum; smoke developed index of 450, maximum; when tested in accordance with ASTM E84.
    - c. NSF approved for food contact.
    - d. Wear Resistance: In addition to specified grade, comply with NEMA LD 3 High Wear Grade requirements for wear resistance.
    - e. Laminate Core Color: Same as decorative surface.
    - f. Finish: Matte or suede, gloss rating of 5 to 20.
    - g. Surface Color and Pattern: As selected by Architect from the manufacturer's full line.
  - 2. Exposed Edge Treatment: Square, substrate built up to minimum 1-1/4 inch thick; covered with matching laminate.
  - 3. Back and End Splashes: Same material, same construction.
  - 4. Fabricate in accordance with AWI/AWMAC/WI (AWS) or AWMAC/WI (NAAWS), Section 11 - Countertops, Custom Grade.
- C. Solid Surfacing Countertops; SS-1: Solid surfacing sheet or plastic resin casting over continuous substrate.
  - 1. Flat Sheet Thickness: 1/2 inch, minimum.
  - 2. Solid Surfacing Sheet and Plastic Resin Castings: Complying with ISFA 2-01 and NEMA LD 3; acrylic or polyester resin, mineral filler, and pigments; homogenous, non-porous and capable of being worked and repaired using standard woodworking tools; no surface coating; color and pattern consistent throughout thickness.
    - a. Manufacturers:
      - 1) Avonite Surfaces; Avonite Acrylic Solid Surface: [www.avonitesurfaces.com](http://www.avonitesurfaces.com).
      - 2) Dupont; Corian Solid Surface: [www.corian.com](http://www.corian.com).
      - 3) Formica Corporation; Formica Solid Surfacing: [www.formica.com](http://www.formica.com).
      - 4) Wilsonart; Wilsonart Solid Surface: [www.wilsonart.com](http://www.wilsonart.com).
      - 5) Substitutions: See Section 01 6000 - Product Requirements.

- b. Surface Burning Characteristics: Flame spread index of 25, maximum; smoke developed index of 450, maximum; when tested in accordance with ASTM E84.
- c. NSF approved for food contact.
- d. Finish on Exposed Surfaces: Matte, gloss rating of 5 to 20.
- e. Color and Pattern: As indicated on drawings.
- 3. Other Components Thickness: 1/2 inch, minimum.
- 4. Back and End Splashes: Same sheet material, square top; minimum 4 inches high.
- D. Natural Quartz and Resin Composite Countertops Type QS-1: Sheet or slab of natural quartz and plastic resin over continuous substrate.
  - 1. Flat Sheet Thickness: 1-1/4 inch, minimum.
  - 2. Natural Quartz and Resin Composite Sheets, Slabs and Castings: Complying with ISFA 3-01 and NEMA LD 3; orthophthalic polyester resin, mineral filler, and pigments; homogenous, non-porous and capable of being worked and repaired using standard woodworking tools; no surface coating; color and pattern consistent throughout thickness.
    - a. Manufacturers:
      - 1) Seieffe Corporation; OKITE®: [www.okite.us/#sle](http://www.okite.us/#sle).
      - 2) Terrazzo & Marble Supply Companies; DIFINITI Quartz: [www.tmsupply.com/#sle](http://www.tmsupply.com/#sle).
      - 3) Terrazzo & Marble Supply Companies; Diresco Belgium Quartz, a brand of Diresco - North America: [www.tmsupply.com/#sle](http://www.tmsupply.com/#sle).
      - 4) Wilsonart; Quartz: [www.wilsonart.com](http://www.wilsonart.com).
    - b. Factory fabricate components to the greatest extent practical in sizes and shapes indicated; comply with the MIA Dimension Stone Design Manual.
    - c. NSF approved for food contact.
    - d. Finish on Exposed Surfaces: Polished.
    - e. Color and Pattern: As indicated on drawings.
  - 3. Other Components Thickness: 3/4 inch, minimum.
  - 4. Back and End Splashes: Same sheet material, square top; minimum 4 inches high.
  - 5. Skirts: As indicated on drawings.
  - 6. Fabricate in accordance with AWI/AWMAC/WI (AWS) or AWMAC/WI (NAAWS), Section 11 - Countertops, Premium Grade.

## 2.02 MATERIALS

- A. Medium Density Fiberboard for Supporting Substrate: ANSI A208.2.
- B. Adhesives: Chemical resistant waterproof adhesive as recommended by manufacturer of materials being joined.
- C. Joint Sealant: Mildew-resistant silicone sealant, white.
- D. Grommets: Standard plastic or rubber grommets for cut-outs, in color to match adjacent surface. Coordinate with Section 06 4100.

## 2.03 FABRICATION

- A. Fabricate tops and splashes in the largest sections practicable, with top surface of joints flush.
  - 1. Join lengths of tops using best method recommended by manufacturer.
  - 2. Fabricate to overhang fronts and ends of cabinets 1 inch except where top butts against cabinet or wall.
  - 3. Prepare all cutouts accurately to size; replace tops having improperly dimensioned or unnecessary cutouts or fixture holes.
- B. Provide back/end splash wherever counter edge abuts vertical surface unless otherwise indicated.
  - 1. Secure to countertop with concealed fasteners and with contact surfaces set in waterproof glue.
  - 2. Height: 4 inches, unless otherwise indicated.



- C. Solid Surfacing: Fabricate tops and wall panels up to 144 inches long in one piece; join pieces with adhesive sealant in accordance with manufacturer's recommendations and instructions.

### **PART 3 EXECUTION**

#### **3.01 EXAMINATION**

- A. Do not begin installation until substrates have been properly prepared.
- B. If substrate preparation is the responsibility of another installer, notify Architect of unsatisfactory preparation before proceeding.
- C. Verify that wall surfaces have been finished and mechanical and electrical services and outlets are installed in proper locations.

#### **3.02 PREPARATION**

- A. Clean surfaces thoroughly prior to installation.
- B. Prepare surfaces using the methods recommended by the manufacturer for achieving the best result for the substrate under the project conditions.

#### **3.03 INSTALLATION**

- A. Securely attach countertops to cabinets using concealed fasteners. Make flat surfaces level; shim where required.
- B. Attach plastic laminate countertops using screws with minimum penetration into substrate board of 5/8 inch.
- C. Seal joint between back/end splashes and vertical surfaces.
  - 1. Where applied cove molding is not indicated use specified sealant.

#### **3.04 TOLERANCES**

- A. Variation From Horizontal: 1/8 inch in 10 feet, maximum.
- B. Offset From Wall, Countertops: 1/8 inch maximum; 1/16 inch minimum.
- C. Field Joints: 1/8 inch wide, maximum.

#### **3.05 CLEANING**

- A. Clean countertops surfaces thoroughly.

#### **3.06 PROTECTION**

- A. Protect installed products until completion of project.
- B. Touch-up, repair or replace damaged products before Date of Substantial Completion.

**END OF SECTION**

**SECTION 13 2400**  
**SPECIAL ACTIVITY ROOMS**

**PART 1 GENERAL**

**1.01 SECTION INCLUDES**

- A. Prefabricated, modular sauna / steam room enclosures.
- B. Sauna Heaters and controls
- C. Sauna Accessories.

**1.02 RELATED SECTIONS**

- A. Section 05 4000 - Cold Formed Metal Framing: Steel stud partition system.
- B. Section 06100 - Rough Carpentry: Treated wood blocking, treated plywood substrate..
- C. Section 07900 - Joint Sealers: Sealant at exterior periphery of steam enclosures.
- D. Section 15145 - Plumbing Piping: Domestic water supply to steam generator and faucet.
- E. Section 15146 - Plumbing Specialties: Floor drain in steam room.
- F. Section 16155 - Equipment Wiring.

**1.03 REFERENCES**

- A. ADA Standards - Americans with Disabilities Act (ADA) Standards for Accessible Design; 2010.
- B. ASTM E2190 - Standard Specification for Insulating Glass Unit Performance and Evaluation; 2010.
- C. ASTM E96/E96M - Standard Test Methods for Water Vapor Transmission of Materials; 2016.
- D. WCLIB (GR) - Standard Grading Rules for West Coast Lumber No. 17; 2004, and supplements.
- E. WWPA G-5 - Western Lumber Grading Rules; 2011.

**1.04 ADMINISTRATIVE REQUIREMENTS**

- A. Coordination: Coordinate the installation of stud partitions and ceiling framing, insulation and plywood substrate by General Contractor with prefabricated sauna components. Coordinate size, location and installation of service utilities.
  - 1. Steel stud partitions: 20 gage steel studs with minimum R13 mineral wool insulation.
  - 2. Steel stud joist ceiling: 20 gage steel joists, with minimum R19 mineral wool insulation.
  - 3. Plywood interior sheathing: 3/4 inch fire treated C/D plywood, exterior grade, interior walls and ceiling.
  - 4. Sealed and stained flat concrete floor. Coordinate requirements to meet ADA Standards.
  - 5. Coordinate rough opening of door suitable for sauna manufacturer-provided prehung door.
  - 6. Coordinate requirements for ventilation.
  - 7. Electrical and plumbing utilities.
- B. Preinstallation Meeting: Conduct a preinstallation meeting one week prior to the start of the work of this section; require attendance by all affected installers.
- C. Sequencing: Ensure that substrate is prepared to receive the work of this Section. Ensure that utility connections are achieved in an orderly and expeditious manner.

**1.05 SUBMITTALS**

- A. Submit under provisions of Section 01300 for submittal procedures.
- B. Product Data: Provide data on equipment, accessories, utility characteristics, connection requirements.
- C. Shop Drawings: Indicate room layout, equipment locations, dimensions, door and frame assembly, details of assembly, anchors, utility rough-in locations.
  - 1. Show field measurements of space that sauna will be installed.

- D. Selection Samples: For each finish product specified, two complete sets of color chips representing manufacturer's full range of available colors and patterns.
- E. Verification Samples: For each finish product specified, two samples, minimum size 6 inches (150 mm) square, representing actual product, color, and patterns.
- F. Manufacturer's Installation Instructions: Indicate installation procedures; characteristics, location and coordination with required utilities.
- G. Operation Data: Describe recommended operation of heater unit.
- H. Maintenance Data: Describe cleaning procedures for finishes and heater surfaces.
- I. Warranty Documentation: Submit manufacturer warranty and ensure that forms have been completed in Owner's name and registered with manufacturer.

#### **1.06 MOCK-UP**

- A. Provide a mock-up for evaluation of surface preparation techniques and application workmanship.
  - 1. Finish areas designated by Architect.
  - 2. Do not proceed with remaining work until workmanship, color, and sheen are approved by Architect.
  - 3. Refinish mock-up area as required to produce acceptable work.
  - 4. Mock-up may remain as part of the Work.

#### **1.07 QUALITY ASSURANCE**

- A. Manufacturer Qualifications: All primary products specified shall be supplied by a single manufacturer with a minimum of 10 years documented experience.
- B. Installer Qualifications: A single installer with a minimum of 5 years demonstrated experience installing products of the same type and scope as specified.

#### **1.08 DELIVERY, STORAGE, AND HANDLING**

- A. Store products in manufacturer's unopened packaging until ready for installation.
- B. Store and dispose of solvent-based materials, and materials used with solvent-based materials, in accordance with requirements of local authorities having jurisdiction.

#### **1.09 PROJECT CONDITIONS**

- A. Maintain environmental conditions (temperature, humidity, and ventilation) within limits recommended by manufacturer for optimum results. Do not install products under environmental conditions outside manufacturer's absolute limits.

#### **1.10 WARRANTY**

- A. Provide an executed copy of the manufacturer's standard limited warranty against manufacturing defect, outlining its terms, conditions, and exclusions from coverage.

### **PART 2 PRODUCTS**

#### **2.01 MANUFACTURERS**

- A. Basis of Design Manufacturer: AM-FINN Sauna & Steam: [www.am-finn.com](http://www.am-finn.com).
- B. Other Acceptable Sauna Manufacturers:
  - 1. Finlandia Sauna Products, Inc: [www.finlandiasauna.com/#sle](http://www.finlandiasauna.com/#sle).
  - 2. Helo Sauna: [www.helosaunas.com/#sle](http://www.helosaunas.com/#sle).
  - 3. Helo Commercial: [www.helocommercial.com/#sle](http://www.helocommercial.com/#sle).
  - 4. Substitutions: See Section 01 6000 - Product Requirements.

#### **2.02 SAUNA MATERIALS**

- A. Lumber: Wood species and grades as follows, unless otherwise indicated:
  - 1. Western Red Cedar: WCLIB (GR) or WWPA G-5; Clear Heart.

- B. Insulating/Tempered Glass: Preassembled units consisting of insulating/tempered-glass units made from two lites of 5/32 inch (4mm) thick with 7/16 inch (11mm) air space, glass double sealed. Provide jamb and casing of western red cedar. and complying with ASTM E 774 for Class CBA units.
- C. Glazing texture: Watercolor
- D. Fasteners: Exposed: Stainless steel.

### **2.03 SAUNAS**

- A. Pre-Cut Saunas: Provide manufacturer's standard interior finishes, pre-hung door, and trim; designed to be constructed as a permanent part of the structure.
  - 1. Vapor Barrier: Provide ASTM E96/E96M Class 1 vapor barrier, manufacturer's standard.
  - 2. Interior Wall and Ceiling Paneling: 1 inch by 6 inches (25 mm by 152 mm) nominal V-joint, tongue-and-groove wood boards of species and grade indicated; sanded smooth; kiln-dried to no more than 12 percent moisture content. Attach to wall vertically. Provide blocking within wall as needed for construction
  - 3. Wood Species: Clear Western Red Cedar.
- B. Door: Manufacturer's standard, solid core, prehung door with glass vision panel as follows:
  - 1. Door, frame and hardware must be designed and installed to meet minimum ADA Standards. See door schedule for door size and comments.
  - 2. Door Wood Species: Western Red Cedar.
  - 3. Jamb and Casing Wood Species: Western red cedar.
  - 4. Glass Vision Panel: Preassembled units consisting of insulating/tempered-glass units made from two lites of 5/32 inch (4 mm) thick with 7/16 inch (11 mm) air space, clear glass double sealed. Provide jamb and casing of western red cedar and complying with ASTM E2190.
  - 5. Manufacturer/Installer to undercut the sauna door by 1 inch if necessary to provide proper and sufficient air flow into sauna. Do not cut vents or other openings in sauna walls unless required for sauna heater.
- C. Door Hardware: Provide self-closing Brass hinges (top and bottom), one brass butt hinge(center), one ball catch, and two wood door pulls (interior and exterior of door) of Western Red Cedar which meet ADA Standards.
- D. Benches: Western Red Cedar, S4S, 1 inch by 4 inch (25 mm by 102 mm) nominal wood boards, spaced not more than 1/2 inch apart and supported by 2 inch by 4 inch (51 mm by 102 mm) nominal wood framing.
- E. Interior Base, Corner, and Trim: Same wood species as interior paneling
- F. Duckboard Flooring: Manufacturer's standard removable, 1 inch by 6 inches (25 mm by 152 mm) nominal wood duckboards, of same species as interior paneling, spaced not more than 1/2 inch (13 mm) apart and mounted on wood sleepers over concrete floor in front of the benches.
  - 1. Floor assembly must be installed to meet ADA Standards.
  - 2. Transition between sauna floor and building floor must be coordinate prior to pour of building slab.

### **2.04 SAUNA HEATERS**

- A. Electric Sauna Heaters - Manufacturer's standard electric convection unit with stainless-steel interior, stainless-steel exterior. Provide heat-tested, shatter-resistant igneous rocks that are not in direct contact with heating-unit coils and are completely separated from the heating-unit coils. U.L. listed. Obtain rough-in instructions from supplier for electrical work which must be performed during build out phase prior to sauna installation. Especially critical if block or CMU wall construction is used. Conduits and location for heater control assembly on front wall are essential. Capacity as determined by manufacturer based upon square footage of sauna.
  - 1. Power Supply: 208 or 240-Volt and either single or three phase.
  - 2. Mounting: Wall mounted with bracket.

3. Built-in Thermostat in Heater Controls: Manufacturer's T-Model system mounted integral with heater unit, with thermostat.
4. Dial timer that automatically shuts off heater after 60 minutes.
5. Dial time-delay that allows heater to be preset up to 24 hours, seven days in advance, with manual override.
6. Remote Mechanical Controls - See plans for location. Coordinate final position with Architect prior to rough in electrical.

## **2.05 SAUNA ACCESSORIES**

- A. Guardrail: Wood guardrail for heater. Dimensions as required by drawings.
- B. Backrest: Wood-slat backrest for each bench against a wall.
- C. Aluminum Hygrometer with Temperature and humidity readings. Coordinate power tie in prior to electrical rough in
- D. Light Fixture: Wall mounted and rated for damp locations.
  1. Material: Aluminum. brushed satin finish.
  2. Diffuser: Translucent white glass.
- E. Wood bucket: 1-gallon (3.8L) capacity with plastic liner and wood ladle.

## **2.06 FABRICATION**

- A. Fabricate saunas to dimensions, profiles, and details indicated. Sand boards smooth and ease edges to a radius of not less than 1/16 inch (1.6mm).
- B. Complete fabrication of Modular sauna panels, including assembly and hardware application, to maximum extent possible, before shipment to Project site. Disassemble components only as necessary for shipment and installation.
- C. Shop cut openings, to maximum extent possible, to receive hardware, electrical work, and similar items. Locate openings accurately and use templates or roughing-in diagrams to produce accurately sized and shaped openings. Sand edges of cutouts to remove splinters and burrs.
- D. Nail or screw bench components together from bottom side. Countersink fasteners.
- E. Secure glass in wood frames with removable stops.
- F. Flush mount junction boxes for heater, control panel, and light fixtures, with concealed connecting electrical conduit.

## **PART 3 EXECUTION**

### **3.01 EXAMINATION**

- A. Verify that rough-ins for all utilities are properly sized and in correct locations.
- B. Verify that substrates are installed and acceptable to receive the work of this Section.
- C. Do not begin installation until substrates have been properly prepared.
- D. Notify Architect of unsatisfactory substrate or utilities rough-in before proceeding.

### **3.02 PREPARATION**

- A. Clean surfaces thoroughly prior to installation.
- B. Prepare surfaces using the methods recommended by the manufacturer for achieving the best result for the substrate under the project conditions.
- C. Vapor Barrier: Install vapor barrier in accord with manufacturer's recommendations. Minimize joints. Tape all joints airtight.

### **3.03 SAUNA INSTALLATION**

- A. Install in accordance with manufacturer's instructions.
- B. Install sauna components level, plumb, true, and straight with no distortions. Shim, as required, with concealed shims. Install level and plumb to a tolerance of 1/8 inch in 96 inches (3 mm in

2400 mm). Install with no more than 1/16 inch in 96 inches (1.6 mm in 2400 mm) vertical cup or bow and 1/8 inch in 96 inches (3 mm in 2400 mm) horizontal variation from a true plane.

- C. Where local code requires installation of sprinkler heads inside sauna, insure heads are rated at a high enough temperature to withstand the heat which will collect at the ceiling of the sauna. Recommended sprinkler rated for temperatures between 250-300 degrees.

#### **3.04 PROTECTION**

- A. Protect installed products until completion of project.
- B. Touch-up, repair or replace damaged products before Substantial Completion.

**END OF SECTION**

**SECTION 13 3419  
METAL BUILDING SYSTEMS**

**PART 1 GENERAL**

**1.01 SECTION INCLUDES**

- A. Provide complete metal building system including but not limited to:
  - 1. Design.
  - 2. Materials.
  - 3. Fabrication.
  - 4. Shipment.
  - 5. Erection.
  - 6. Other components as specified.
- B. Manufacturer-engineered, shop-fabricated structural steel building frame.
- C. Metal wall panels, metal roof panels, metal joist, metal beams, metal deck, metal gutters, metal downspouts, wall insulation system and roof insulation system.
- D. Interior wall liner panels where indicated; both at perimeter walls and interior partitions, and to include all necessary furring.

**1.02 RELATED REQUIREMENTS**

- A. Section 05 4000 - Cold Formed Metal Framing
- B. Section 05 5000 - Metal Fabrications.
- C. Section 06 6100 - Rough Carpentry: Wood blocking and nailers.
- D. Section 07 9200 - Joint Sealants: Sealing joints between accessory components and wall system.
- E. Section 08 1113 - Hollow Metal Doors and Frames.
- F. Section 09 9600 - High Performance Coatings: Metal building structural framing and bracing

**1.03 DEFINITIONS**

- A. Code: The word "code" refers to the Building Code.
- B. Installer, Erector or Applicator:
  - 1. Installer, erector or applicator is the person actually installing, erecting or applying the product in the field at the Project site.
  - 2. Installer, erector and applicator are synonymous.
- C. PVDF: Polyvinylidene fluoride.
  - 1. Nomenclature as listed in Bibliography of the MBMA Low Rise Building Systems Manual.

**1.04 REFERENCE STANDARDS**

- A. AISC 303 - Code of Standard Practice for Steel Buildings and Bridges; 2016.
- B. AISC 360 - Specification for Structural Steel Buildings; 2016.
- C. ASCE 7 – Minimum Design Loads and Associated Criteria for Buildings and Other Structures; 2016.
- D. ASHRAE Std 90.1 I-P - Energy Standard for Buildings Except Low-Rise Residential Buildings; 2013, Including All Amendments and Errata.
- E. ASTM A36/A36M - Standard Specification for Carbon Structural Steel; 2014.ASTM
- F. A153/A153M - Standard Specification for Zinc Coating (Hot-Dip) on Iron and Steel Hardware; 2016a.
- G. ASTM A307 - Standard Specification for Carbon Steel Bolts, Studs, and Threaded Rod 60 000 PSI Tensile Strength; 2014 (Editorial 2017).
- H. ASTM A500/A500M - Standard Specification for Cold-Formed Welded and Seamless Carbon Steel Structural Tubing in Rounds and Shapes; 2013.
- I. ASTM A501/A501M - Standard Specification for Hot-Formed Welded and Seamless Carbon Steel Structural Tubing; 2014.
- J. ASTM A529/A529M - Standard Specification for High-Strength Carbon-Manganese Steel of Structural Quality; 2014.
- K. ASTM A792/A792M - Standard Specification for Steel Sheet, 55% Aluminum-Zinc Alloy-Coated by the Hot-Dip Process; 2010 (Reapproved 2015).
- L. ASTM C665 - Standard Specification for Mineral-Fiber Blanket Thermal Insulation for Light Frame Construction and Manufactured Housing; 2012.
- M. ASTM C827/C827M - Standard Test Method for Change in Height at Early Ages of Cylindrical

- Specimens of Cementitious Mixtures; 2016.
- N. ASTM C920 - Standard Specification for Elastomeric Joint Sealants; 2014a.
  - O. ASTM C991 - Standard Specification for Flexible Fibrous Glass Insulation for Metal Buildings; 2016.
  - P. ASTM C1107/C1107M - Standard Specification for Packaged Dry, Hydraulic-Cement Grout (Nonshrink); 2014a.
  - Q. ASTM F3125/F3125M - Standard Specification for High Strength Structural Bolts, Steel and Alloy Steel, Heat Treated, 120 ksi (830 MPa) and 150 ksi (1040 MPa) Minimum Tensile Strength, Inch and Metric Dimensions; 2015a. ding, Brazing, and Nondestructive Examination; 2012.
  - R. AWS D1.1/D1.1M - Structural Welding Code - Steel; 2015 (with March 2016 Errata).
  - S. IAS AC472 - Accreditation Criteria for Inspection Programs for Manufacturers of Metal Building Systems; 2012.
  - T. ICC (IBC) - International Building Code; 2018.
  - U. ICC (IECC) - International Energy Conservation Code; 2018.
  - V. MBMA (MBSM) - Metal Building Systems Manual; 2012.
  - W. SSPC-Paint 20 - Zinc-Rich Primers (Type I, "Inorganic," and Type II, "Organic"); 2002 (Ed. 2004).
  - X. UL 580 - Standard for Tests for Uplift Resistance of Roof Assemblies; Current Edition, Including All Revisions.

### 1.05 ADMINISTRATIVE REQUIREMENTS

- A. Coordination:
  - 1. Coordinate the installation of wood blocking, bridging and nailers where necessary for attachment of equipment and other elements by others.
  - 2. Coordinate the installation of structural elements and components necessary for support and attachment of canopies windows and doors and other elements requiring attachment to building structure.
  - 3. Coordinate the installation of mechanical louvers, doors windows and other penetrations so intermediate framing and bracing is included in the design of the Metal building.
  - 4. Metal building manufacturer to provide GC with approved method for sealing through-wall penetrations.
  - 5. Coordinate primers for compatibility with proposed field-applied topcoats.
- B. Pre-installation Meeting: Convene one week before starting work of this section.
  - 1. Review preparation and installation procedures and coordinating and scheduling required with related work.
  - 2. Attendance: Architect, Building Commission Inspector, Owner's Insurer (if applicable), General Contractor, metal building manufacturer and metal building erector. If rooftop equipment is to be placed on roof, mechanical contractor shall also attend.
  - 3. Architect will prepare written report indicating actions taken, decisions made, and items discussed. Report will become a part of the record.
  - 4. Distribution: General Contractor (for further distribution to subcontractors); Owner.
- C. Project Record Documents: Record actual locations of concealed components and utilities.

### 1.06 SUBMITTALS

- A. See Section 01 3000 - Administrative Requirements, for submittal procedures.
- B. Product Data: Provide data on profiles, component dimensions, fasteners and energy code compliant roof and wall insulation systems.
- C. Shop Drawings: Indicate assembly dimensions, locations of structural members, connections; wall and roof system dimensions, panel layout, general construction details, anchorages and method of anchorage, installation, and structural bracing; Provisions for equipment and other building element loads to be hung from structure: framing anchor bolt settings, sizes, and locations from datum, foundation loads; indicate welded connections with AWS A2.4 welding symbols; indicate net weld lengths; provide professional seal and signature.
- D. Samples: Submit two samples of precoated metal panels for each color selected, 16 by 16 inch in size illustrating color and texture of finish.
- E. Manufacturer's Instructions: Indicate preparation requirements, anchor bolt placement, and foundation requirements.
- F. Erection Drawings: Indicate members by label, assembly sequence, and temporary erection bracing. Provide manufacturers standard details with erection drawings when submitted for Architectural review.



- G. Manufacturer Qualification Statement: Provide documentation showing metal building manufacturer is accredited under IAS AC472.
  - 1. Include statement that manufacturer designs and fabricates metal building system as integrated components and assemblies, including but not limited to primary structural members, secondary members, interior walls, raised floor systems, joints, roof, and wall cladding components specifically designed to support and transfer loads and properly assembled components form a complete or partial building shell.
- H. Informational Submittals:
  - 1. Manufacturer's and Erector's Qualifications.
  - 2. Manufacturer's approval of erector.
  - 3. Structural calculations stamped and signed by a professional Structural Engineer licensed in the State where Project is located.
    - i. Include list of design loads and loads transmitted to foundation through columns or walls and location where loads occur.
    - ii. Submit calculations for information only.
  - 4. Certificate of compliance by fabricator that steel was fabricated in accordance with the approved construction documents.
- I. Project Record Documents: Record actual locations of concealed components and utilities.

#### **1.07 QUALITY ASSURANCE**

- A. Design structural components, develop shop drawings, and perform shop and site work under direct supervision of a Professional Structural Engineer experienced in design of this Work.
  - 1. Design Engineer Qualifications: Licensed in the State in which the Project is located.
  - 2. Conform to applicable code for submission of design calculations as required for acquiring permits.
  - 3. Coordinate equipment loads with equipment manufacturers to support all applicable loads.
  - 4. Cooperate with regulatory agency or authority and provide data as requested.
- B. Perform work in accordance with ASHRAE 90.1 as applicable and MBMA (MBSM) and ICC (IBC).
- C. Perform welding in accordance with AWS D1.1/D1.1M.
- D. Manufacturer Qualifications: Company specializing in the manufacture of products similar to those required for this project.
  - 1. Not less than 5 years of documented experience
  - 2. Member in good standing of the MBMA.
  - 3. Accredited by IAS in accordance with IAS AC472.
- E. Erector Qualifications: Company specializing in performing the work of this section with minimum 10 years documented experience and approved by manufacturer.
  - 1. Installer's Field Supervisor: Experienced mechanic certified by metal building system manufacturer supervising work on site whenever work is underway.

#### **1.08 WARRANTY**

- A. See Section 01 7800 - Closeout Submittals, for additional warranty requirements.
- B. Correct defective Work within a five year period after Date of Substantial Completion.
- C. Provide 20 year manufacturer warranty for factory applied finishes and weather-tightness.
  - 1. Include coverage for exterior pre-finished surfaces to cover pre-finished color coat against chipping, cracking or crazing, blistering, peeling, chalking, or fading. Include coverage for weather tightness of building enclosure elements after installation.
- D. Special Installer's and General Contractor's Warranty: Submit roofing installer's and General Contractor's warranty, on warranty form ABC Form C-9 signed by installer and General Contractor, covering Work of this Section, including all components of membrane roofing system such as roof membrane, base flashings, roof insulation, adhesives and fasteners, cover boards, substrate boards, vapor retarders, roof pavers and walkway products for the following warranty period:
  - 1. Warranty Period: Five (5) years from date of Substantial Completion.
  - 2. Warranty Note: This 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.

## 201 MANUFACTURERS

- A. Basis of Design Metal Building: MESCO Building Solutions: [www.mescobuildingsolutions.com](http://www.mescobuildingsolutions.com).
- B. Other Acceptable Metal Buildings:
  - 1. ACI Building Systems, LLC: [www.acibuildingsystems.com](http://www.acibuildingsystems.com).
  - 2. American Buildings Company: [www.americanbuildings.com](http://www.americanbuildings.com).
  - 3. Bigbee Steel Buildings Inc.: [www.bigbee.com](http://www.bigbee.com).
  - 4. Butler Manufacturing Company: [www.butlermfg.com](http://www.butlermfg.com).
  - 5. Ceco Building Systems: [www.cecobuildings.com](http://www.cecobuildings.com).
  - 6. Inland Buildings: [www.inlandbuildings.com](http://www.inlandbuildings.com).
  - 7. Nucor Building Systems: [www.nucorbuildingsystems.com](http://www.nucorbuildingsystems.com).
  - 8. VP Buildings: [www.vp.com](http://www.vp.com).
  - 9. Vulcan Steel Structures: [www.vulcansteel.com](http://www.vulcansteel.com).
  - 10. CANAM Steel Building Corporation <https://www.canambuildings.com>
  - 11. Substitutions: See Section 01 6000 - Product Requirements.

## 202 METAL BUILDING

- A. Single and multi span rigid frame as indicated on Drawings. See Drawings.
- B. Exterior bay spacing: See Drawings.
- C. Interior bay spacing: See Drawings.
- D. Interior partition framing
- E. Primary Framing: Rigid frame of rafter beams and columns, canopy beams, intermediate columns, Acoustical door partition framing, end wall columns, and wind bracing.
- F. Secondary Framing: Purlins, Girts, hat Channels (Max 7/8") at reverse roll paneling, Eave struts, Flange bracing, Sill supports, Clips, through-wall opening framing (framing for jamb, sill and head of windows, doors and louvers.) and other items detailed in this specification or construction drawings.
- G. Wall System: Preformed metal panels of vertical & horizontal profile, with sub-girt framing/anchorage assembly, insulation, liner sheets, and structural framing for canopies, and accessory components.
- H. Roof System: Preformed metal panels oriented parallel to slope, with sub-girt framing/anchorage assembly, insulation, and canopies where shown on Drawings, and accessory components.
- I. Roof Slope: 2-1/4 inches in 12 inches.

## 203 MATERIALS - FRAMING

- A. Structural Steel Members: ASTM A36/A36M.
- B. Structural Tubing: ASTM A500/A500M, Grade B cold-formed.
- C. Plate or Bar Stock: ASTM A529/A529M, Grade 50.
- D. Anchor Bolts: ASTM A307, galvanized to ASTM A153/A153M.  
Bolts, Nuts, and Washers: ASTM F3125/F3125M, Type 1; galvanized to ASTM A153/A153M.
- E. Welding Materials: Type required for materials being welded.
- F. Primer: SSPC-Paint 20, zinc rich.
- G. Grout: ASTM C1107/C1107M; Non-shrink; premixed compound consisting of non-metallic aggregate, cement, water reducing and plasticizing agents.
  - 1. Minimum Compressive Strength at 48 Hours: 2,000 pounds per square inch.
  - 2. Minimum Compressive Strength at 28 Days: 7,000 pounds per square inch.
  - 3. Height Change, Plastic State; when tested according to ASTM C827/C827M:
    - a. Maximum: Plus 4 percent.
    - b. Minimum: Plus 1 percent.

## 204 MATERIALS - WALLS AND ROOF

- A. Steel Sheet: ASTM A792/A792M aluminum-zinc alloy coated to AZ50/AZM150.
- B. Basis of Design Roof Insulation System: Linear banded, filled cavity system with continuous vapor barrier below the purlins at roof construction and meeting the following levels of performance.
  - 1. R-5 thermal block on purlins; Not less than R-13 unfaced fiberglass on minimum R-25 unfaced fiberglass filled cavity insulation.

- on both sides with polyethylene. Complies with the following:
- a. ASTM C1136, Types I through Type VI
    - i. Type I-IV exception for dimensional stability (value is < 2.0%.)
  - b. Perm rating: 0.02 when tested in accordance with ASTM E 96 Procedure A.
  - c. Flame Spread Index < 25 and Smoke Developed Index < 50 when tested in accordance with ASTM E 84.
  - d. Color: White
3. Vapor barrier adhesive. Complies with the following:
    - a. Application temperature 10°F to 110° F
  4. Double sided vapor barrier tape. Complies with the following:
    - a. Width 0.75
    - b. Rubber based and free film
  5. Patch tape. Complies with the following:
    - a. Adhesive added to one side
    - b. Installation temperature from 10°F to 110°F
    - c. 3" width
  6. Metal Banding/Straps. Complies with the following:
    - a. Coated steel
    - b. 1.0" wide
    - c. Structural Steel Grade 50 per ASTM C 653
    - d. Exposed color to match vapor barrier
    - e. Backing – White
  7. Thermal spacer blocks. Complies with the following:
    - a. Extruded polystyrene.
    - b. Minimum width 3.0"
    - c. Thickness 1.0"
    - d. Light gage steel fasteners
      - i. Zinc plated cold forged steel
      - ii. Head color to match vapor barrier
      - iii. Contain rubber sealing washer
    - e. Heavy gage steel fasteners
      - i. Zinc plated cold forged steel
      - ii. Head color to match vapor barrier
      - iii. Contain rubber sealing washer
  8. All materials used in OptiLiner Insulation System shall be approved by insulation system manufacturer.
  9. Basis of Design Product: OptiLiner Insulation System manufactured by Owens Corning Insulation Systems: [www.owenscorning.com](http://www.owenscorning.com).
- C. Wall Insulation System:
1. Glass fiber blanket metal building insulation, R-19 vinyl vapor retarder faced fiberglass, vapor barrier facing to interior.
    - a. Thermal break
      - i. Closed cell polyethylene foam tape for wall applications. Complies with the following:
        - a) 0.375" thick
        - b) 3.0" wide
        - c) Minimum R-value: 1.5
      - ii. Thermal separation:
      - iii. Vapor Retarder Color: White.
- D. Insulation Vapor Retarder Facing at Wall Insulation: Polypropylene/Fiberglass-Polyester blend fabric.
1. Weight: 36 pounds per 1000 square feet.
  2. Permeance (ASTM E96 Procedure A): 0.02 perm.
  3. Bursting Strength (ASTM D774): 250 psi.
  4. Puncture Resistance (ASTM C1136): 650 Beach Units.
  5. Tensile Strength (ASTM C1136): 195 lb/in width (MD).  
150 lb/in width (XD).
  6. Thickness: 0.007 inch.

7. Accelerated Aging (30 days @ 95% RH, 120 degrees F): No corrosion, no delamination.
8. Low Temperature Resistance (ASTM D1790, -40 degrees F): Remains flexible, no delamination.
9. High Temperature Resistance (4 hours @ 240 degrees F): Remains flexible, no delamination.
10. Water Immersion (24 hours @ 73 degrees F): No delamination.
11. Mold Resistance (ASTM C665/C1338): No growth.
12. Dimensional Stability (ASTM D1204): 0.25%.
13. Fire Testing:
  - a. Flame Spread (ASTM E84/UL 723): Film Side - 0 Fabric Side - 5.
  - b. Smoke Developed (ASTM #84/UL 723): Film Side - 30 Fabric Side - 40.
14. Basis of Design: Gymguard manufactured by Lamtec Corporation.
- E. Joint Seal Gaskets: Manufacturer's standard type.
- F. Fasteners: Manufacturer's standard type, galvanized to comply with requirements of ASTM A153/A153M, finish to match adjacent surfaces when exterior exposed.
- G. Bituminous Paint: Asphaltic type.
- H. Sealant: ASTM C920, elastomeric sealant with movement capability of at least plus/minus 50 percent; 100 percent silicone; for exposed applications, match adjacent colors as closely as possible.
- I. Metal Mesh: Galvanized steel wire, woven.
- J. Trim, Closure Pieces, Caps, Flashings, Gutters, Downspouts, Rain Water Diverter, Fascias, and Infills: Same material, thickness and finish as exterior sheets; brake formed to required profiles.

**205 ACCESSORY COMPONENTS**

- A. Doors and Frames: Specified in Section 08 1113.

**206 DESIGN CRITERIA**

- A. Minimum Thermal Standards: In accord with ICC (IECC) requirements.
  1. Roof: Maximum U-value 0.035.
  2. Wall: Maximum U-value 0.071
- B. Maximum Air Leakage: Provide properly sealed air barrier membrane in accord with C402.5 of ICC (IECC).
- C. Design members to withstand dead load, applicable snow load, and design loads due to pressure and suction of wind calculated in accordance with IBC 2018, ASCE 7 and other applicable codes.
  1. Risk Category III
  2. Wind Zone 3.
- D. Design members to withstand Uplift Per IBC 2018.
- E. Exterior wall system shall withstand imposed loads with maximum allowable deflection of L/240 of span.
- F. Exterior Roof system shall withstand imposed loads with maximum allowable deflection of L/180 of span.
- G. Provide Hat Channel behind Reverse Roll Paneling
  1. Provide Hat Channel to meet Building Supplier Required Deflection and gauge thickness.
  2. Provide Hat Channel with 7/8" Maximum depth.
- H. GC to install Poured reinforced concrete slab on metal building deck. Metal Building designer to coordinate with GC for all necessary bracing, framing and terminate framing.
- I. Metal Building Designer to provide all necessary terminations and connection at the point where the GC installed Metal Pan Stair is to secure back to the metal building structure. Metal pan stair to be designed by GC to be self supported, but must attach to metal building slab and equipment platform framing to create a seamless stair egress assembly for the occupants. GC and Metal Building Designer to coordinate all necessary elements to create a working stair condition.
- J. Provide support framing for support of canopies and canopy tie-backs
- K. Provide drainage to exterior for water entering or condensation occurring within wall or roof system.
- L. Permit movement of components without buckling, failure of joint seals, undue stress on fasteners or other detrimental effects, when subject to temperature range of not less than 100 degrees F.

- M. Size and fabricate wall and roof systems free of distortion or defects detrimental to appearance or performance.

**207 FABRICATION - FRAMING**

- A. Fabricate members in accordance with AISC 360 for plate, bar, tube, or rolled structural shapes.
- B. Anchor Bolts: Formed with bent shank, assembled with template for casting into concrete.
- C. Provide wall opening framing for doors, windows, and other accessory components.
- D. Design and provide all necessary framing for equipment platform, including but not limited to the columns, girts, joist, metal deck, angle, channels, accessories, trim, etc. Metal building Designer to coordinate metal building design to support all necessary loads for the equipment platform and concrete pad.
- E. Design requirements per the design documents, with GC and design documents for poured concrete pad to be installed on equipment platform.

**208 FABRICATION - WALL AND ROOF PANELS**

- A. Pre-Finished Exposed Vertical Siding Panels: Aluminum-zinc alloy coated steel, minimum 0.028 inch metal thickness, Vertical PBR Panel profile indicated, 1-1/4 inch deep, lapped edges.
  - 1. Provide stand-off semi-concealed fasteners to minimize insulation compression.
  - 2. Basis of Design: PBR Wall Panel, manufactured by Mesco Building Solutions
- B. Pre-Finished Exposed Vertical Reverse Roll Siding Panels: Aluminum-zinc alloy coated steel, minimum 0.028 inch metal thickness, Vertical Reverse Roll PBR Panel profile indicated, 1-1/4 inch deep, lapped edges.
  - 1. Provide stand-off semi-concealed fasteners to minimize insulation compression.
  - 2. Basis of Design: Reverse Roll PBR Panel, manufactured by Mesco Building Solutions
- C. Pre-Finished Exposed Horizontal Siding Panels: Aluminum-zinc alloy coated steel, minimum 0.028 inch metal thickness, Horizontal PBU Panel profile indicated, 3/4 inch deep, lapped edges.
  - 1. Provide stand-off semi-concealed fasteners to minimize insulation compression.
    - a. Provide Hat Channel behind Reverse Roll Paneling to meet Building Supplier Required Deflection and gauge thickness with a 7/8" Maximum depth.
  - 2. Basis of Design: PBU Wall Panel, manufactured by Mesco Building Solutions
- D. Pre-Finished Metal Roofing Panels: Aluminum-zinc alloy, minimum 0.0299 inch metal thickness, Superlok, SSR profile, 2 inch deep, lapped and machine crimped edges fitted with continuous gaskets.
  - 1. Width: 16 inches.
  - 2. Provide 2 inch sliding clip - High to provide minimum 1-1/2 inch clear space between bottom of roof panel and perlin and thermal block as applicable to minimize insulation compression.
  - 3. Basis of Design: Superlok, SSR Roof Panel, manufactured by Mesco Building Solutions
- E. Pre-Finished Ceiling Liner: NOT USED
- F. Pre-Finished Wall Liner:
  - 1. Basis of Design: ILM-240-2 with Beads Liner Panel, manufactured by Mesco Building Solutions
  - 2. Minimum 0.019 inch metal thickness.
- G. Girts/Purlins: Rolled formed structural shape to receive siding, roofing and liner sheet.
  - 1. Girts/Purlins designed to meet design criteria deflection
  - 2. Stiffened Girts to be used at North and South Walls where Double Girt conditions occur where façade bumps occurs. See design drawings.
- H. Internal and External Corners: Same material thickness and finish as adjacent material, profile brake formed to required angles. Back brace mitered internal corners with same material thickness and finish as adjacent material.
- I. Expansion Joints: Same material and finish as adjacent material where exposed, 0.028 inch thick, manufacturer's standard brake formed type, of profile to suit system.
- J. Flashings, Closure Pieces, Fascia: Same material and finish as adjacent material, profile to suit system.
- K. Fasteners: To maintain load requirements and weather tight installation, same finish as cladding, non-corrosive type.

**209 FABRICATION - GUTTERS AND DOWNSPOUTS**

- A. Fabricate of same material and finish as roofing metal.
- B. Form gutters and downspouts and scuppers of rectangular profile and size to collect and remove water. Fabricate with connection pieces.

- C. Form sections in maximum possible lengths. Hem exposed edges. Allow for expansion at joints.
- D. Fabricate support straps of same material and finish as roofing metal, color as selected.

## **210 FINISHES**

- A. Framing Members: Clean, prepare, and shop prime. Do not prime surfaces to be field welded.
- B. Exterior Surfaces of Wall Components and Accessories: Precoated enamel on steel of manufacturer's standard PVDF finish, coating color as selected from manufacturer's standard range.
  - 1. Fluoropolymer Two Coat System: Minimum 0.02 mil primer with minimum 0.07 mil 70 percent PVDF fluoropolymer color coat. Basis of Design Signature 300 by Mesco Building Solutions.
- C. Interior Surfaces of Wall Components and Accessories: Precoated enamel on steel of manufacturer's standard polyester finish, coating color as selected from manufacturer's standard range.

## **PART 3 EXECUTION**

### **301 EXAMINATION**

- A. Verify that foundation, floor slab, mechanical and electrical utilities, and placed anchors are in correct position

### **302 ERECTION - FRAMING**

- A. Erect framing in accordance with AISC 360.
- B. Provide for erection and wind loads. Provide temporary bracing to maintain structure plumb and in alignment until completion of erection and installation of permanent bracing. Locate braced bays as indicated.
- C. Set column base plates with non-shrink grout to achieve full plate bearing.
- D. Do not field cut or alter structural members without approval.
- E. After erection, prime welds, abrasions, and surfaces not shop primed.

### **303 ERECTION - WALL AND ROOF PANELS**

- A. Install in accordance with manufacturer's instructions.
- B. Exercise care when cutting prefinished material to ensure cuttings do not remain on finish surface.
- C. Fasten cladding system to structural supports, aligned level and plumb.
- D. Panel End Laps: Minimum of 6 IN, sealed with sealant (weather sealing compound), and fastened together by clamping plates.
  - 1. Sealants: Contain hard nylon beads, which prevent mastic from flowing out due to clamping actions.
    - a. Join panel laps by 2-piece clamped connection consisting of a bottom reinforcing plate and a top panel strap.
    - b. Locate panel end laps directly over, but not fastened to, supporting secondary roof structural member and stagger, to avoid 4-panel lap-splice condition.
- E. Metal Wall System Installation:
  - 1. Install wall system in accordance with metal building system manufacturer's instructions at locations indicated on the Drawings.
  - 2. Install wall system weathertight.
  - 3. Verify structural system is plumb before wall panels are attached.
  - 4. Apply foam single-sided thermal separation tape to outside face of girts.
  - 5. Seal wall panels with molded-foam closure block that fits panel configuration at top and bottom of wall panels.
- N. Exterior Trim: Match exterior color and embossing of wall panel system – See drawings elevations.
- O. Interior Trim: Match interior liner panel colors.
- P. Flashings, Trim, Closures, and Similar Items: Install as indicated on erection drawings furnished by metal building system manufacturer.
- Q. Provide expansion joints where indicated.

- R. Install insulation and vapor retarder utilizing manufacturer's standard detail for attachment. Place wire mesh under vapor retarder for support between framing members.
- S. Install sealant and gaskets, providing weather tight installation. Non-metal building through-wall penetrations should follow manufacturer recommendation for complete water tight seal. PEMB Installer to coordinate with GC and other disciplines prior to other discipline work within or penetrations are made into the exterior walls.

### **3.04 INSTALLATION - INSULATION**

- A. Instructions and approved Shop Drawings.
  - 1. Refer to the Owens Corning publications listed below for product information, including uses, descriptions, physical properties, performance, specification compliance and application recommendations. Copies of these documents can be found at [www.owenscorning.com](http://www.owenscorning.com).
    - a. OptiLiner® Banded Liner System Product Data Sheet - Owens Corning Publication 10011681
    - b. OptiLiner® Wall Installation Instructions - Owens Corning Publication 10011266
    - c. OptiLiner® Roof Installation Instructions - Owens Corning Publication 10011267
    - d. OptiLiner® Bi-Directional Banding Option - Owens Corning Publication 10011602
- B. Purlin and girt attachment surfaces should be clean and dry prior to attaching two-faced tape or sealing adhesive.
- C. Installed fiberglass insulation should fit snugly against purlin and girt walls in the cavity space. Avoid gaps, voids and any excess compression.

### **3.05 ERECTION - GUTTERS AND DOWNSPOUTS**

- A. Rigidly support and secure components. Join lengths with formed seams sealed watertight. Flash and seal gutters to downspouts.
- B. Slope gutters minimum 1/8 inch/ft.
- C. Connect downspouts to storm sewer system.

### **3.06 INSTALLATION - ACCESSORY COMPONENTS IN WALL SYSTEM**

- A. Install door frames, doors, overhead doors, and windows and glass in accordance with manufacturer's instructions.
- B. Install liner panels where indicated on Drawings. Provide wall liner panels both at perimeter (exterior) walls and at interior partitions, including light gage metal furring where required.

### **3.07 TOLERANCES**

- A. Framing Members: 1/4 inch from level; 1/8 inch from plumb.
- B. Siding and Roofing: 1/8 inch from true position.

### **3.08 FIELD QUALITY CONTROL**

All inspections and tests are to be performed at the Project site by a third party independent testing agency.

Inspect field welding in accordance with AWS D1.1/D1.1M, Section 6 including the following non-destructive testing:

Visually inspect all welds.

Test 50 PCT of full penetration welds and 10 PCT of fillet welds with liquid dye penetrant.

Test 20 PCT of full penetration welds with ultrasonic or radiographic testing.

Inspect high-strength bolting in accordance with the RCSC Specification for Structural Joints, Section 9.

Inspect while work is in progress.

Inspect structural steel which has been erected.

Prepare and submit test reports to Engineer.

**END OF SECTION**

## SECTION 211313 - SUMMARY

### PART 1 GENERAL

#### 1.1 SUMMARY

- A. The work includes the design, installation, testing and certification of a wet pipe fire sprinkler system as shown on the plans. Work to begin at the city connection. Provide wet pipe protection on the first floor occupied spaces and basement. Second floor residential suite is not in scope. Work includes flow testing for design. Work includes system design, installation, and certification. Work includes coordination with other trades to facilitate connections and installation.
- B. Related Sections:
  - 1. Section 16150 - Wiring Connections: Execution requirements for electric connections to equipment specified by this section.

#### 1.2 REFERENCES

- A. National Fire Protection Association:
  - 1. NFPA 13 - Installation of Sprinkler Systems.
- B. International Fire Code – 20013 Edition.

#### 1.3 SYSTEM DESCRIPTION

- A. A new fire sprinkler system throughout the first floor and basement to include concealed spaces, porches and breezeways, and elevator as required by the documents references in Section 1.2 A of this specification. Configure to allow alterations to accommodate future tenant alterations on the first floor.
- B. Provide system designed to NFPA 13 hazard occupancy requirements as indicated on the drawings.
- C. Provide all licenses, permits and fees required by governing authorities.

#### 1.4 SUBMITTALS

- A. Section 01330 - Submittal Procedures:
- B. Shop Drawings: Provide Shop Drawings with detailed pipe layout, hangers and supports, sprinklers, components and accessories to accommodate tenant build out. Indicate work sequencing to accommodate alterations without disrupting sprinkler protection in areas outside the work areas.
- C. Provide hydraulic calculations in accordance with NFPA 13. Limit velocity to 20 fps.
- D. Product Data: Submit data on sprinklers, valves, and specialties, including manufacturers catalog information. Submit performance ratings, rough-in details, weights, support requirements, and piping connections.



- E. Manufacturer's Certificate: Certify products meet or exceed specified requirements.

#### 1.5 CLOSEOUT SUBMITTALS

- A. Section 01700 - Execution Requirements: Closeout procedures.
- B. Project Record Documents: Record actual locations of sprinklers and deviations of piping from drawings. Indicate drain and test locations.
- C. Operation and Maintenance Data: Submit components of system, servicing requirements, record drawings, inspection data, replacement part numbers and availability, and location and numbers of service depot.

#### 1.6 QUALITY ASSURANCE

- A. Perform Work in accordance with NFPA 13, NFPA 25, State, and Local requirements
- B. Maintain one copy of each document on site.

#### 1.7 QUALIFICATIONS

- A. Manufacturer: Company specializing in manufacturing products specified in this section with minimum three years experience.
- B. Installer: Company specializing in performing Work of this section with minimum three years experience, Licensed by the State Contracting Board of the State of Mississippi for fire sprinkler work.

#### 1.8 PRE-INSTALLATION MEETINGS

- A. Section 01300 - Administrative Requirements: Pre-installation meeting.
- B. Convene minimum one week prior to commencing work of this section.

#### 1.9 DELIVERY, STORAGE, AND HANDLING

- A. Section 01600 - Product Requirements: Product storage and handling requirements.
- B. Store products in shipping containers until installation.
- C. Furnish piping with temporary inlet and outlet caps until installation.

#### 1.10 WARRANTY

- A. Section 01700 - Execution Requirements: Product warranties and product bonds.

## 1.11 EXTRA MATERIALS

- A. Section 01700 - Execution Requirements: Spare parts and maintenance products.

## PART 2 PRODUCTS

### 2.1 SPRINKLERS

- A. Sprinklers with internal O-rings shall not be used. Sprinklers shall be used in accordance with their listed coverage limitations. Provide quick response sprinklers in all areas. Extended coverage sprinklers shall not be used. Provide corrosion-resistant sprinklers and sprinkler guards as required by NFPA 13. Approved equal permitted.
- B. Suspended Acoustical Ceilings.
  - 1. Type: Semi Recessed SSP/QR, 1/2", 5.6K
  - 2. Finish: White
  - 3. Escutcheon Plate Finish: Enamel, color white.
  - 4. Fusible Link: Glass bulb type 155° F or temperature rated for specific area hazard.
- C. Exposed Ceilings/Decks:
  - 1. Type: SSU/QR 1/2", 5.6K.
  - 2. Finish: Brass.
  - 3. Fusible Link: Glass bulb type 155° F or temperature rated for specific area hazard.
  - 4. Provide guards for heads in basement.
- D. Gypsum Board Ceiling and Non-Acoustical Tile Suspended Panels:
  - 1. Type: Semi Recessed SSP/QR, 1/2" 5.6K
  - 2. Finish: White
  - 3. Escutcheon: Chrome.
  - 4. Fusible Link: Glass bulb type 155° F temperature rated for specific area hazard.
- E. Exterior Locations:
  - 1. Type: SSP/QR, 1/2", 5.6K dry horizontal sidewalls.
  - 2. Finish: Corrosion Resistant
  - 3. Escutcheon: Adjustable Recessed
  - 4. Fusible Link: Glass bulb type 155° F temperature rated for specific area hazard.
- F. Guards: Finish to match sprinkler finish.

### 2.2 PIPING

- A. Wet Pipe -Minimum of Schedule 10/40 Steel in accordance with NFPA13 6.3 ASTM A-135 Black Steel. Flexible piping is not permitted. Blazemaster Schedule 40 CPVC or approved equal permitted in accordance with its listing, NFPA 13, and manufacturer's recommendations.

### 2.3 SYSTEM VALVES AND DEVICES

- A. General:
  - 1. Backflow. Device shall be an Ames Fire & Waterworks Colt 200 or 300 series or approved equal with OS&Y isolation valves. Provide Tamper switches for isolation valves.

2. Control Valve. NIBCO GD-4765-8N or approved qual.
- B. Wet Pipe Sprinkler:
  1. Floor Manifold. The system shall be supplied by a floor control manifold Viking EasyPac or approved equal. Manifold shall be supplied with a check valve and control valve.
  2. Check Valve. Swing check valves shall be UL Listed or Factory Mutual Approved for use on fire protection systems. They shall be constructed of a ductile iron body with a brass seat and a rubber faced clapper assembly hinged to a removable access cover.
  3. Water Gauges. Viking VWATERSF or approved equal.

### PART 3 EXECUTION

#### 3.1 INSTALLATION

- A. Install in accordance with NFPA 13, State and Local standards and codes.
- B. Place pipe runs to minimize obstruction to other work. Install piping in concealed spaces above finished ceilings.
- C. Where areas above ceilings are not separated from adjacent areas by non-combustible construction, install sprinklers above and below ceilings in accordance with NFPA 13.
- D. Center sprinklers in two directions in ceiling tile and install piping offsets.
- E. Provide insulation and/or heat trace for wet pipe mains exposed to freezing conditions. Heat trace where used shall be listed for fire service use and be supervised by the fire alarm system.
- F. Where drains service 5 or more gallons in volume, route drain to the exterior and terminate within 1 foot above grade. Provide splash blocks. Do not discharge on sidewalks or walkways.
- G. Provide test assemblies with sight glasses where discharge cannot be observed at the test valve. Test valve locations shall be within 7 feet AFF and in normally accessible areas.
- H. At completion of installation, perform all testing as required by NFPA 13. Testing to be witnessed by State and Local AHJ and Owner's representative.

#### 3.2 CLEANING

- A. Section 01700 - Execution Requirements: Final cleaning.

#### 3.3 PROTECTION OF INSTALLED CONSTRUCTION

- A. Section 01700 - Execution Requirements: Protecting installed construction.
- B. Apply masking tape or paper cover to protect concealed sprinklers, cover plates, and sprinkler escutcheons not receiving field paint finish. Remove after painting. Replace any painted sprinklers with new.

3.4 SCHEDULES

- A. System Hazard Areas: As indicated on the drawings.

END OF SECTION 211313

## SECTION 220100 - PLUMBING INSULATION

### PART 1 GENERAL

#### 1.1 SUMMARY

- A. Section Includes:
  - 1. Insulation for plumbing piping and valves.

#### 1.2 SUBMITTALS

- A. Product Data: Not Required.
- B. Manufacturer's Installation Instructions: Not Required.

#### 1.3 QUALITY ASSURANCE

- A. Test pipe insulation for maximum flame spread index of 25 and maximum smoke developed index of not exceeding 50 in accordance with ASTM E84.

### PART 2 PRODUCTS

#### 2.1 PIPE INSULATION

- A. Type P-1: Man Made Mineral Fiber: ASTM C547; rigid molded, noncombustible.
  - 1. Vapor Retarder Jacket: White Kraft paper with glass fiber yarn and bonded to aluminized film.
- B. Jackets:
  - 1. PVC Plastic: One piece molded type fitting covers and sheet material, off-white color.
    - a. Thickness: 20 mil.
    - b. Connections: Brush on welding adhesive.
  - 2. Canvas Jacket: UL listed fabric, 6 oz per sq yd, plain weave cotton, fire retardant.
  - 3. Aluminum Jacket: 0.025 inch thick sheet, die shaped fitting covers.
  - 4. Stainless Steel Jacket: Type 302 stainless steel, 0.010 thick sheet.

### PART 3 EXECUTION

#### 3.1 INSTALLATION

- A. Continue insulation and vapor barrier through penetrations.
- B. Piping Insulation:

1. Locate insulation and cover seams in least visible locations.
2. Insulate complete system of pipes conveying fluids below ambient temperature.
3. Install insert between support shield and piping on piping 2 inches diameter or larger. Fabricate of cork or other high density insulating material suitable for temperature, not less than 6 inches long.

3.2 PIPE INSULATION SCHEDULE

Service	Insulation Type	Jacket	Pipe Size	Thickness
Domestic Hot and Cold Water	P-1	3	¼" - 1½"	1"

END OF SECTION 220100

## SECTION 220500 - COMMON WORK RESULTS FOR PLUMBING

### PART 1 GENERAL

#### 1.1 SUMMARY

- A. Section Includes:
  - 1. Identification for Plumbing Piping and Equipment.
  - 2. Sleeves.
  - 3. Mechanical sleeve seals.
  - 4. Formed steel channel.

#### 1.2 SUBMITTALS

- A. Shop Drawings: Submit for piping and equipment identification list of wording, symbols, letter size, and color coding for pipe identification and valve chart and schedule, including valve tag number, location, function, and valve manufacturer's name and model number.
- B. Product Data for Pipe and Equipment Identification: Submit for mechanical identification manufacturers catalog literature for each product required.
- C. Samples for Pipe and Equipment Identification: Submit tags, 1-1/2 inches in size. Submit labels, 1.9 x 0.75 inches in size.

#### 1.3 QUALITY ASSURANCE

- A. Perform Work in accordance with Municipality standard.
- B. Maintain one copy of each document on site.

### PART 2 PRODUCTS

#### 2.1 IDENTIFICATION FOR PLUMBING PIPING AND EQUIPMENT

- A. Furnish materials in accordance with Municipality standards.
- B. Plastic Nameplates: Laminated three-layer plastic with engraved black letters on light background color.
- C. Plastic Tags: Laminated three-layer plastic with engraved black letters on light background color, minimum 1-1/2 inches diameter.
- D. Plastic Pipe Markers: Factory fabricated, flexible, semi-rigid plastic, preformed to fit around pipe or pipe covering. Larger sizes may have maximum sheet size with spring fastener. Color and Lettering: Conform to ASME A13.1.
- E. Plastic Tape Pipe Markers: Flexible, vinyl film tape with pressure sensitive adhesive backing and printed markings. Color and Lettering: Conform to ASME A13.1.

- F. Plastic Underground Pipe Markers: Bright colored continuously printed plastic ribbon tape, minimum 6 inches wide by 4 mil thick, manufactured for direct burial service.

## 2.2 SLEEVES

- A. Sleeves for Pipes through Non-fire Rated Floors: 18 gage thick galvanized steel.
- B. Sleeves for Pipes through Non-fire Rated Beams, Walls, Footings, and Potentially Wet Floors: Steel pipe or 18 gage thick galvanized steel.
- C. Sealant: Acrylic

## 2.3 MECHANICAL SLEEVE SEALS

- A. Manufacturers:
  - 1. Thunderline Link-Seal, Inc.
  - 2. Substitutions: Permitted.
- B. Product Description: Modular mechanical type, consisting of interlocking synthetic rubber links shaped to continuously fill annular space between object and sleeve, connected with bolts and pressure plates causing rubber sealing elements to expand when tightened, providing watertight seal and electrical insulation.

## 2.4 FORMED STEEL CHANNEL

- A. Manufacturers:
  - 1. Allied Tube & Conduit Corp.
  - 2. B-Line Systems
  - 3. Unistrut Corp.
  - 4. Substitutions: Permitted.
- B. Product Description: Galvanized 12 gage thick steel. With holes 1-1/2 inches on center.

## PART 3 EXECUTION

### 3.1 EXAMINATION

- A. Verify openings are ready to receive sleeves.

### 3.2 INSTALLATION - PIPING AND EQUIPMENT IDENTIFICATION

- A. Install plastic nameplates with adhesive.
- B. Install plastic tags with corrosion resistant metal chain.



3.3 INSTALLATION - SLEEVES

- A. Exterior watertight entries: Seal with mechanical sleeve seals.
- B. Set sleeves in position in forms. Provide reinforcing around sleeves.
- C. Size sleeves large enough to allow for movement due to expansion and contraction. Provide for continuous insulation wrapping.
- D. Extend sleeves through floors **1 inch** above finished floor level. Caulk sleeves.
- E. Where piping or ductwork penetrates floor, ceiling, or wall, close off space between pipe or duct and adjacent work with firestopping insulation and caulk airtight. Provide close fitting metal collar or escutcheon covers at both sides of penetration.
- F. Install chrome plated steel escutcheons at finished surfaces.

END OF SECTION 220500

SECTION 221000 - PLUMBING PIPING AND PUMPS

PART 1 GENERAL

1.1 SUMMARY

- A. Section Includes:
  - 1. Pipe hangers and supports.
  - 2. Pipe and pipe fittings.
  - 3. Valves.
  - 4. Piping specialties.
  - 5. Plumbing drainage specialties.
  - 6. Plumbing supply specialties.
  - 7. Plumbing pumps.

1.2 SUBMITTALS

- A. Product Data:
  - 1. Pipe Hangers and Supports: Submit manufacturers catalog data including load carrying capacity.
  - 2. Valves: Submit manufacturers catalog information with valve data and ratings for each service.
  - 3. Plumbing drainage specialties: Submit manufacturers catalog information with sizes, capacities, rough-in requirements, service sizes, and finishes.
  - 4. Plumbing supply specialties: Submit manufacturers catalog information with sizes, capacities, rough-in requirements, service sizes, and finishes.
  - 5. Pumps: Include capacities, pump curves, equipment performance, and electrical characteristics.
- B. Pipe Hangers and Supports: Design data, indicate pipe sizes, load carrying capacity of trapeze, multiple pipe, and riser support hangers.
- C. Manufacturer's Installation Instructions: Submit installation instructions for material and equipment.
- D. Manufacturer's Certificate: Certify products meet or exceed specified requirements.

1.3 CLOSEOUT SUBMITTALS

- A. Operation and Maintenance Data: Submit spare parts lists and maintenance procedures.

1.4 QUALITY ASSURANCE

- A. Maintain one copy of each document on site.

1.5 WARRANTY

- A. Furnish five year manufacturer warranty for pumps.

## PART 2 PRODUCTS

### 2.1 PIPE HANGERS AND SUPPORTS

- A. Manufacturers:
  - 1. Carpenter & Paterson Inc.
  - 2. DecoShield Systems Inc.
  - 3. Globe Pipe Hanger Products Inc.
  - 4. Substitutions: Permitted.
- B. Conform to ASME B31.9.
- C. Hangers for Pipe Sizes 1/2 to 1-1/2 inch Malleable iron, adjustable swivel, split ring.
- D. Hangers for Pipe Sizes 2 inches and Over: Carbon steel, adjustable, clevis.
- E. Hangers for Hot Pipe Sizes 2 to 4 inches: Carbon steel, adjustable, clevis.
- F. Hangers for Hot Pipe Sizes 6 inches and Over: Adjustable steel yoke, cast iron roll, double hanger.
- G. Multiple or Trapeze Hangers: Steel channels with welded spacers and hanger rods.
- H. Multiple or Trapeze Hangers for Hot Pipe Sizes 6 inches and Over: Steel channels with welded spacers and hanger rods, cast iron roll.
- I. Wall Support for Pipe Sizes to 3 inches: Cast iron hook.
- J. Wall Support for Pipe Sizes 4 inches and Over: Welded steel bracket and wrought steel clamp.
- K. Vertical Support: Steel riser clamp.
- L. Floor Support for Cold Pipe: Cast iron adjustable pipe saddle, lock nut, nipple, floor flange, and concrete pier or steel support.
- M. Copper Pipe Support: Copper-plated, carbon-steel adjustable, ring.

### 2.2 PIPES AND TUBES

- A. Sanitary Sewer Piping, Buried Within 5 Feet of Building and Sanitary Sewer Piping, above Grade:
  - 1. Cast Iron Pipe: ASTM A74, service weight, with neoprene gaskets or lead and oakum joints.
  - 2. Cast Iron Pipe: CISPI 301, hubless, service weight, with neoprene gaskets and stainless steel clamps.
  - 3. Copper Tube: ASTM B306, type DWV with cast bronze or wrought copper fittings and Grade 50B solder joints.
  - 4. ABS Pipe: ASTM D2661 or ASTM D2751 with ABS fittings and solvent weld joints.
  - 5. PVC Pipe: ASTM D2665 or ASTM D3034 SDR 26, polyvinyl chloride (PVC) material.
    - a. Fittings: PVC, ASTM D2665 or ASTM D3034.
    - b. Joints: ASTM D2855, solvent weld with ASTM D2564 solvent cement.
  - 6. PVC Pipe: ASTM D2665, ASTM D3034, or ASTM F679 with PVC fittings and elastomeric gasket joints.
  - 7. Water Piping, Buried Within 5 Feet of Building:
  - 8. Copper Tubing: ASTM B42, Tempered O61 annealed without fittings.
  - 9. Ductile Iron Pipe: AWWA C151 with ductile iron fittings rubber gasket joints and 3/4 inch diameter rods.

- B. Water Piping, above Grade:
  - 1. Copper Tubing: ASTM B88, Type M, drawn, with cast brass or wrought copper fittings and Grade 95TA solder joints.
  - 2. CPVC Pipe: ASTM D2846/D2846M with CPVC fittings and solvent weld joints.
  
- C. Flue and Combustion Air Piping:
  - 1. PVC Pipe: ASTM D1785, Schedule 40, polyvinyl chloride (PVC) material.
    - a. Fittings: ASTM D2466, Schedule 40, PVC.
    - b. Joints: ASTM D2855, solvent weld with ASTM D2564 solvent cement. Prime joints with a contrasting color.
  - 2. PVC Pipe: ASTM D1785, Schedule 80, polyvinyl chloride (PVC) material.
    - a. Fittings: ASTM D2467, Schedule 80, PVC.
    - b. Joints: ASTM D2855, solvent weld with ASTM D2564 solvent cement. Prime joints with a contrasting color.
  - 3. CPVC Pipe: ASTM F441/F441M, Schedule 40, chlorinated polyvinyl chloride (CPVC) material.
    - a. Fittings: ASTM F438, CPVC, Schedule 40, socket type.
    - b. Joints: ASTM D2846/D2846M, solvent weld with ASTM F493 solvent cement. Prime joints with a contrasting color.
  - 4. CPVC Pipe: ASTM F441/F441M, Schedule 80, chlorinated polyvinyl chloride (CPVC) material.
    - a. Fittings: ASTM F439, CPVC, Schedule 80, socket type
    - b. Joints: ASTM D2846/D2846M, solvent weld with ASTM F493 solvent cement. Prime joints with a contrasting color.
  - 5. ABS Pipe: ASTM D2661, Acrylonitrile-Butadiene-Styrene (ABS) material.
    - a. Fittings: ABS, ASTM D2661 or ABS, ASTM D3311.
    - b. Joints: ASTM D2235, solvent weld applied after cleaning.

## 2.3 VALVES

- A. For drinking water service, provide valves complying with NSF 61.
  
- B. Gate Valves:
  - 1. Up to 2 inches: Bronze body, bronze trim, non-rising stem, hand wheel, inside screw, double wedge disc, soldered or threaded.
  - 2. Over 2 inches: Iron body, bronze trim, rising stem, hand wheel, OS&Y, solid wedge, flanged or grooved ends.
  
- C. Ball Valves:
  - 1. Up to 2 inches: Bronze or stainless steel one piece body, chrome plated brass ball, teflon seats and stuffing box ring, lever handle, solder or threaded ends.
  - 2. Over 2 inches: Cast steel flanged body, chrome plated steel ball, Teflon seat and stuffing box seals and lever handle.
  
- D. Plug Valves:
  - 1. Up to 2 inches: Bronze body, bronze tapered plug, non-lubricated, Teflon packing, threaded ends.
  - 2. Over 2 inches: Cast iron body and plug, pressure lubricated, Teflon packing, flanged ends.
  
- E. Butterfly Valves:
  - 1. Up To 2 inches: Bronze body, stainless steel disc, resilient replaceable seat, threaded ends, extended neck, 10-position lever handle.
  - 2. Over 2 inches: Iron body, chrome plated iron disc, resilient replaceable seat, wafer or lug ends, extended neck, 10 position lever handle.
  
- F. Swing Check Valves:
  - 1. Up to 2 inches: Bronze body and swing disc, solder or threaded ends.
  - 2. Over 2 inches: Iron body, bronze trim, swing disc, renewable disc and seat, flanged ends.

- G. Spring Loaded Check Valves:
  - 1. Iron body, bronze trim with threaded, wafer or flanged ends and stainless steel spring with renewable composition disc.
- H. Relief Valves:
  - 1. Bronze body, Teflon seat, stainless steel stem and springs, automatic, direct pressure actuated capacities ASME certified and labeled.

## 2.4 PIPING SPECIALTIES

- A. Flanges, Unions, and Couplings:
  - 1. Pipe Size 2 inches and Under: Malleable iron unions for threaded ferrous piping; bronze unions for copper pipe, soldered joints.
  - 2. Pipe Size Over 2 inches: Forged steel flanges for ferrous piping; bronze flanges for copper piping; preformed neoprene gaskets.
  - 3. Grooved and Shouldered Pipe End Couplings: Malleable iron housing, C-shape elastomer composition sealing gasket, steel bolts, nuts, and washers.
  - 4. Dielectric Connections: Union with galvanized or plated steel threaded end, copper solder end, water impervious isolation barrier.
- B. Strainers:
  - 1. Manufacturers:
    - a. Size 2 inches and Under: Threaded brass or iron body for 175 psig working pressure, Y pattern with 1/32 inch stainless steel perforated screen.
    - b. Size 2-1/2 inch to 4 inch: Flanged iron body for 175 psig working pressure, Y pattern with 3/64 inch stainless steel perforated screen.
    - c. Size 5 inch and Larger: Flanged iron body for 175 psig working pressure, basket pattern with 1/8 inch stainless steel perforated screen.
- C. Flexible Connectors:
  - 1. Manufacturers:
    - a. Corrugated stainless steel hose with single layer of stainless steel exterior braiding, minimum 9 inches long with copper tube ends; for maximum working pressure 350 psig.
- D. Thermometers:
  - 1. Manufacturers:
    - a. Stem Type Thermometer: ASTM E1, adjustable angle, red appearing mercury, lens front tube, cast aluminum case with enamel finish.
      - 1) Size: 9 inch scale.
      - 2) Window: Clear glass.
      - 3) Stem: Brass, 3/4 inch NPT, 3-1/2 inch long.
      - 4) Accuracy: 2 percent.
      - 5) Calibration: Both degrees F and degrees C.

## 2.5 PLUMBING DRAINAGE SPECIALTIES

- A. Floor Drains:
  - 1. Manufacturers:
    - a. See Drawings for the "basis of design" manufacturer and model number.
    - b. Products of other manufacturers will be considered if the product meets spatial and performance requirements set forth in the contract documents.

- B. Floor Sinks:
  - 1. Manufacturers:
    - a. See Drawings for the "basis of design" manufacturer and model number.
    - b. Products of other manufacturers will be considered if the product meets spatial and performance requirements set forth in the contract documents.
- C. Grease Interceptors:
  - 1. Manufacturers:
    - a. See Drawings for the "basis of design" manufacturer and model number.
    - b. Products of other manufacturers will be considered if the product meets spatial and performance requirements set forth in the contract documents.
- D. Cleanouts:
  - 1. Manufacturers:
    - a. See Drawings for the "basis of design" manufacturer and model number.
    - b. Products of other manufacturers will be considered if the product meets spatial and performance requirements set forth in the contract documents.
    - c. Finished Floor: Lacquered cast iron body with anchor flange, reversible clamping collar, and adjustable nickel-bronze round scored cover in service areas and round depressed cover to accept floor finish in finished floor areas.
    - d. Line type with lacquered cast iron body and round epoxy coated gasketed cover, and round stainless steel access cover secured with machine screw.

## 2.6 PLUMBING SUPPLY SPECIALTIES

- A. Manufacturers:
  - 1. See Drawings for the "basis of design" manufacturer and model number.
  - 2. Products of other manufacturers will be considered if the product meets spatial and performance requirements set forth in the contract documents.
  - 3. Reduced Pressure Backflow Preventers: ASSE 1013; bronze body with bronze internal parts and stainless steel springs; two independently operating, spring loaded check valves; pressure relief valve located between check valves; third check valve opens under back pressure in case of diaphragm failure; non-threaded vent outlet; assembled with two gate valves, strainer, and four test cocks.
  - 4. Double Check Valve Assemblies: ASSE 1015 or AWWA C510; bronze body with corrosion resistant internal parts and stainless steel springs; two independently operating check valves with intermediate atmospheric vent.
- B. Water Hammer Arrestors:
  - 1. Manufacturers:
    - a. Copper construction, piston type To PDI WH 201, pre-charged suitable for operation in temperature range - 100 to 300 degrees F and maximum 250 psi working pressure.
- C. Thermostatic Mixing Valves:
  - 1. Manufacturers:
    - a. Capacity: gpm at 45 psi differential, with check valve, volume control shut-off valve on outlet, stem type thermometer on outlet, strainer stop check on inlet, mounted in lockable cabinet of 16 gage prime coated steel.
    - b. Conform to ASSE 1070 to temper water to maximum 110 degrees F.
- D. Hose Bibbs/Hydrants:
  - 1. Manufacturers:
    - a. Interior Hose Bibbs: Bronze or brass, replaceable hexagonal disc, hose thread spout, chrome plated with vacuum breaker.

- b. Wall Hydrant: Non-freeze, self-draining type with chrome plated lockable recessed box hose thread spout, removable key, and vacuum breaker.

## 2.7 IN-LINE CIRCULATOR PUMPS

- A. Manufacturers:
  - 1. See Drawings for the "basis of design" manufacturer and model number.
  - 2. Products of other manufacturers will be considered if the product meets spatial and performance requirements set forth in the contract documents.
- B. Construction: Bronze casing, bronze impeller, alloy steel shaft with integral thrust collar and two oil-lubricated bronze-sleeve bearings and mechanical seal.

## PART 3 EXECUTION

### 3.1 EXAMINATION

- A. Verify excavations are to required grade, dry, and not over-excavate.

### 3.2 PREPARATION

- A. Ream pipe and tube ends. Remove burrs. [Bevel plain end ferrous pipe.]
- B. Remove scale and dirt, on inside and outside piping before assembly.
- C. Prepare piping connections to equipment with flanges or unions.

### 3.3 INSTALLATION - INSERTS

- A. Install inserts for placement in concrete forms.
- B. Install inserts for suspending hangers from reinforced concrete slabs and sides of reinforced concrete beams.
- C. Provide hooked rod to concrete reinforcement section for inserts carrying pipe over 4 inches.
- D. Where concrete slabs form finished ceiling, locate inserts flush with slab surface.
- E. Where inserts are omitted, drill through concrete slab from below and provide through-bolt with recessed square steel plate and nut [above] [flush with top of] [recessed into and grouted flush with] slab.

### 3.4 INSTALLATION - PIPING SYSTEMS

- A. Install dielectric connections wherever jointing dissimilar metals.
- B. Install unions downstream of valves and at equipment or apparatus connections.

- C. Route piping parallel to building structure and maintain gradient.
- D. Install piping to maintain headroom. Group piping to conserve space. Group piping whenever practical at common elevations.
- E. Install piping to allow for expansion and contraction without stressing pipe, joints, or connected equipment.
- F. Provide clearance in hangers and from structure and other equipment for installation of insulation and access to valves and fittings.
- G. Sleeve pipe passing through partitions, walls and floors.
- H. Install piping system allowing clearance for installation of insulation and access to valves and fittings.
- I. Install identification on piping systems including underground piping. Refer to Section 22 05 00.
- J. Protect piping systems from entry of foreign materials by temporary covers, completing sections of the work, and isolating parts of completed system.

### 3.5 INSTALLATION - VALVES

- A. Install valves with stems upright or horizontal, not inverted.
- B. Install gate, ball or butterfly valves for shut-off and to isolate equipment, part of systems, or vertical risers.
- C. Install ball or butterfly valves for throttling, bypass, or manual flow control services.
- D. Provide lug end butterfly valves adjacent to equipment when functioning to isolate equipment.
- E. Install spring loaded check valves on discharge of pumps.
- F. Install plug valves for throttling service. Install non-lubricated plug valves only when shut-off or isolating valves are also installed.
- G. Install 3/4 inch ball drain valves at main shut-off valves, low points of piping, bases of vertical risers, and at equipment.

### 3.6 INSTALLATION - PIPING SPECIALTIES

- A. Install pressure gages with pulsation dampers. Provide ball valve to isolate each gage. Extend nipples and siphons to allow clearance from insulation.
- B. Install thermometers in piping systems in sockets in short couplings. Enlarge pipes smaller than 2-1/2 inches for installation of thermometer sockets. Allow clearance from insulation.
- C. Install gages and thermometers in locations where they are easily read from normal operating level. Install vertical to 45 degrees off vertical.
- D. Adjust gages and thermometers to final angle, clean windows and lenses, and calibrate to zero.
- E. Provide drain and hose connection with valve on strainer blow down connection.



- F. Test backflow preventers in accordance with ASSE 5013.

### 3.7 INSTALLATION - PLUMBING SUPPLY PIPING

- A. Install water piping in accordance with ASME B31.9.
- B. Excavate and backfill in accordance with Section 31 20 00.
- C. Establish elevations of buried piping outside the building to obtain not less than 3 ft of cover.
- D. Provide support for utility meters in accordance with requirements of utility companies.
- E. Slope water piping and arrange to drain at low points.
- F. Install piping from relief valves, back-flow preventers and drains to nearest floor drain.
- G. Install water hammer arrestors complete with accessible isolation valve on hot and cold water supply piping to lavatories and sinks.
- H. Disinfecting of Domestic Water Systems:
  1. Prior to starting, verify system is complete, flushed and clean.
  2. Verify pH of water to be treated is between 7.4 and 7.6 by adding alkali (caustic soda or soda ash) or acid (hydrochloric).
  3. Inject disinfectant, free chlorine in liquid, powder and tablet or gas form, throughout system to obtain residual from 50 to 80 mg/L.
  4. Bleed water from outlets to obtain distribution and test for disinfectant residual at minimum 15 percent of outlets.
  5. Maintain disinfectant in system for 24 hours.
  6. When final disinfectant residual tests less than 25 mg/L, repeat treatment.
  7. Flush disinfectant from system until residual concentration is equal to incoming water or 1.0 mg/L.
  8. Take samples no sooner than 24 hours after flushing, from 5 percent of outlets and from water entry, and analyze in accordance with AWWA C651.

### 3.8 INSTALLATION - PLUMBING DRAINAGE PIPING

- A. Install bell and spigot pipe with bell end upstream.
- B. Extend cleanouts to finished floor or wall surface. Lubricate threaded cleanout plugs with mixture of graphite and linseed oil. Install with clearance at cleanout for rodding of drainage system.
- C. Encase exterior cleanouts in concrete flush with grade.
- D. Install floor cleanouts at elevation to accommodate finished floor.
- E. Establish elevations of buried piping outside building to provide not less than 3 ft of cover.
- F. Install piping penetrating roofed areas to maintain integrity of roof assembly.
- G. Excavate and backfill in accordance with Section 31 20 00.
- H. Install bell and spigot pipe with bell end upstream.

- I. Establish invert elevations, slopes for drainage to 1/8 inch per foot minimum. Maintain gradients.
- J. Test drainage piping in accordance with local code requirements.

### 3.9 INSTALLATION - PIPE HANGERS AND SUPPORTS

- A. Support horizontal piping as scheduled.
- B. Install hangers with minimum 1/2 inch space between finished covering and adjacent work.
- C. Place hangers within 12 inches of each horizontal elbow.
- D. Use hangers with 1-1/2 inch minimum vertical adjustment.
- E. Support horizontal cast iron pipe adjacent to each hub, with 5 feet maximum spacing between hangers.
- F. Support vertical piping at every other floor. Support vertical cast iron pipe at each floor at hub.
- G. Where piping is installed in parallel and at same elevation, provide multiple pipe or trapeze hangers.
- H. Support riser piping independently of connected horizontal piping.
- I. Provide copper plated hangers and supports for copper piping.
- J. Design hangers for pipe movement without disengagement of supported pipe.
- K. Prime coat exposed steel hangers and supports. Hangers and supports located in crawl spaces, pipe shafts, and suspended ceiling spaces are not considered exposed.

### 3.10 DISINFECTION OF DOMESTIC WATER PIPING SYSTEM

- A. Prior to starting work, verify system is complete, flushed and clean. Verify pH of water to be treated is between 7.4 and 7.6 by adding alkali (caustic soda or soda ash) or acid (hydrochloric).
- B. Inject disinfectant, free chlorine in liquid, powder, tablet or gas form, throughout system to obtain 50 to 80 mg/L residual. Bleed water from outlets to accomplish distribution.
- C. Maintain disinfectant in system for 24 hours. When final disinfectant residual tests less than 25 mg/L, repeat treatment.
- D. Flush disinfectant from system. Take samples no sooner than 24 hours after flushing, and analyze in accordance with AWWA C601.

### 3.11 SERVICE CONNECTIONS

- A. Install new gas service complete with gas meter and regulators. Gas service distribution piping to have initial minimum pressure of 11 inch wg ( 2.74 kPa). Install regulators on each line serving gravity type appliances, sized in accordance with equipment.

3.12 SCHEDULES

A. Pipe Hanger Spacing:

PIPE MATERIAL	MAXIMUM HANGER SPACING Feet	HANGER ROD DIAMETER Inches
ABS (All sizes)	4	3/8
Aluminum (All sizes)	10	1/2
Cast Iron (All Sizes)	5	5/8
Cast Iron (All Sizes) with 10 foot length of pipe	10	5/8
CPVC, 1 inch and smaller	3	1/2
CPVC, 1-1/4 inches and larger	4	1/2
Copper Tube, 1-1/4 inches and smaller	6	1/2
Copper Tube, 1-1/2 inches and larger	10	1/2
Fiberglass	4	1/2
Glass	8	1/2
Polybutylene	2.67	3/8
Polypropylene	4	3/8
PVC (All Sizes)	4	3/8
Steel, 3 inches and smaller	12	1/2
Steel, 4 inches and larger	12	5/8

B. Pumps:

1. Refer to Equipment Schedules on Drawings.

END OF SECTION 221000

## SECTION 224000 - PLUMBING FIXTURES

### PART 1 GENERAL

#### 1.1 SUMMARY

- A. Section Includes:
  - 1. Water closets.
  - 2. Urinals.
  - 3. Lavatories.
  - 4. Sinks.
  - 5. Electric water coolers.
  - 6. Service sinks.

#### 1.2 SUBMITTALS

- A. Product Data: Submit manufacturer's literature for plumbing fixtures.

#### 1.3 CLOSEOUT SUBMITTALS

- A. Operation and Maintenance Data: Submit literature and parts list.

#### 1.4 QUALITY ASSURANCE

- A. Provide plumbing fixture fittings in accordance with ASME A112.18.1 that prevent backflow from fixture into water distribution system.
- B. Maintain one copy of each document on site.

#### 1.5 WARRANTY

- A. Furnish five year manufacturer warranties for electric water cooler compressor.

### PART 2 PRODUCTS

#### 2.1 FLUSH VALVE WATER CLOSETS

- A. Manufacturers:
  - 1. See Drawings for the "basis of design" manufacturer and model number.
  - 2. Products of other manufacturers will be considered if the product meets spatial and performance requirements set forth in the contract documents.

2.2 WALL HUNG URINALS

- A. Manufacturers:
  - 1. See Drawings for the "basis of design" manufacturer and model number.
  - 2. Products of other manufacturers will be considered if the product meets spatial and performance requirements set forth in the contract documents.

2.3 LAVATORIES

- A. Manufacturers:
  - 1. See Drawings for the "basis of design" manufacturer and model number.
  - 2. Products of other manufacturers will be considered if the product meets spatial and performance requirements set forth in the contract documents.

2.4 SINKS

- A. Manufacturers:
  - 1. See Drawings for the "basis of design" manufacturer and model number.
  - 2. Products of other manufacturers will be considered if the product meets spatial and performance requirements set forth in the contract documents.

2.5 ELECTRIC WATER COOLERS

- A. Manufacturers:
  - 1. See Drawings for the "basis of design" manufacturer and model number.
  - 2. Products of other manufacturers will be considered if the product meets spatial and performance requirements set forth in the contract documents.

2.6 SERVICE SINKS

- A. Manufacturers:
  - 1. See Drawings for the "basis of design" manufacturer and model number.
  - 2. Products of other manufacturers will be considered if the product meets spatial and performance requirements set forth in the contract documents.

PART 3 EXECUTION

3.1 EXAMINATION

- A. Verify adjacent construction is ready to receive rough-in work of this section.
- B. Review millwork shop drawings. Confirm location and size of fixtures and openings before rough in and installation.

3.2 INSTALLATION

- A. Install each fixture with chrome plated rigid or flexible supplies with screwdriver stops, reducers, and escutcheons.
- B. Adjust stops or valves for intended water flow rate to fixtures without splashing, noise, or overflow.

END OF SECTION 224000

## SECTION 230500 - COMMON WORK RESULTS FOR HVAC

### PART 1 GENERAL

#### 1.1 SUMMARY

- A. Section Includes:
  - 1. Identification for HVAC Piping and Equipment.
  - 2. Sleeves.
  - 3. Mechanical sleeve seals.
  - 4. Formed steel channel.

#### 1.2 SUBMITTALS

- A. Shop Drawings: Submit for piping and equipment identification list of wording, symbols, letter size, and color coding for pipe identification and valve chart and schedule, including valve tag number, location, function, and valve manufacturer's name and model number.
- B. Product Data for Pipe and Equipment Identification: Submit for mechanical identification manufacturers catalog literature for each product required.

#### 1.3 QUALITY ASSURANCE

- A. Perform Work in accordance with Municipality standard.
- B. Maintain one copy of each document on site.

### PART 2 PRODUCTS

#### 2.1 IDENTIFICATION FOR HVAC PIPING AND EQUIPMENT

- A. Plastic Nameplates: Laminated three-layer plastic with engraved black letters on light background color.
- B. Plastic Tags: Laminated three-layer plastic with engraved black letters on light background color, minimum 1-1/2 inches diameter.
- C. Plastic Pipe Markers: Factory fabricated, flexible, semi-rigid plastic, preformed to fit around pipe or pipe covering. Larger sizes may have maximum sheet size with spring fastener. Color and Lettering: Conform to ASME A13.1.
- D. Plastic Tape Pipe Markers: Flexible, vinyl film tape with pressure sensitive adhesive backing and printed markings. Color and Lettering: Conform to ASME A13.1.
- E. Plastic Underground Pipe Markers: Bright colored continuously printed plastic ribbon tape, minimum 6 inches wide by 4 mil thick, manufactured for direct burial service.

## 2.2 SLEEVES

- A. Sleeves for Pipes Through Non-fire Rated Floors: 18 gage thick galvanized steel.
- B. Sleeves for Pipes Through Non-fire Rated Beams, Walls, Footings, and Potentially Wet Floors: Steel pipe or 18 gage thick galvanized steel.
- C. Sleeves for Round Ductwork: Galvanized steel.
- D. Sleeves for Rectangular Ductwork: Galvanized steel or wood.
- E. Sealant: Acrylic

## 2.3 MECHANICAL SLEEVE SEALS

- A. Product Description: Modular mechanical type, consisting of interlocking synthetic rubber links shaped to continuously fill annular space between object and sleeve, connected with bolts and pressure plates causing rubber sealing elements to expand when tightened, providing watertight seal and electrical insulation.

## PART 3 EXECUTION

### 3.1 EXAMINATION

- A. Verify openings are ready to receive sleeves.

### 3.2 INSTALLATION - PIPING AND EQUIPMENT IDENTIFICATION

- A. Install plastic nameplates with adhesive.
- B. Install plastic tags with corrosion resistant metal chain.

### 3.3 INSTALLATION - SLEEVES

- A. Exterior watertight entries: Seal with mechanical sleeve seals.
- B. Set sleeves in position in forms. Provide reinforcing around sleeves.
- C. Size sleeves large enough to allow for movement due to expansion and contraction. Provide for continuous insulation wrapping.
- D. Extend sleeves through floors 1 inch above finished floor level. Caulk sleeves.
- E. Where piping or ductwork penetrates floor, ceiling, or wall, close off space between pipe or duct and adjacent work with firestopping insulation and caulk airtight. Provide close fitting metal collar or escutcheon covers at both sides of penetration.
- F. Install chrome plated steel escutcheons at finished surfaces.



ORANGE BEACH NEW ADULT FITNESS CENTER  
CITY OF ORANGE BEACH  
ORANGE BEACH, ALABAMA

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END OF SECTION 230500

SECTION 230593 - TESTING, ADJUSTING, AND BALANCING FOR HVAC

PART 1 GENERAL

1.1 SUMMARY

- A. Section Includes:
  - 1. Testing adjusting, and balancing of air systems.

1.2 SUBMITTALS

- A. Draft Reports: Submit for review prior to final acceptance of Project.
- B. Test Reports: Submit prior to final acceptance of Project and for inclusion in operating and maintenance manuals. Assemble in soft cover, letter size, 3-ring binder, with table of contents page and tabs, and cover identification. Include reduced scale drawings with air outlets and equipment identified to correspond with data sheets, and indicating thermostat locations.

1.3 QUALITY ASSURANCE

- A. Perform Work in accordance with Municipality.
- B. Report Forms Forms prepared following ASHRAE 111, in S.I. units.

PART 2 PRODUCTS (Not Used)

PART 3 EXECUTION

3.1 EXAMINATION

- A. Before starting work, verify systems are complete and operable.
- B. Report defects, deficiencies, or abnormal conditions in mechanical systems preventing system balance.
- C. Beginning of work means acceptance of existing conditions.

3.2 INSTALLATION TOLERANCES

- A. Air Outlets and Inlets: Adjust to within plus or minus 10 percent of design.

### 3.3 AIR SYSTEM PROCEDURE

- A. Adjust air handling and distribution systems to deliver design supply, return, and exhaust air quantities within previously stated tolerances.
- B. Make air quantity measurements in ducts by traverse of entire cross sectional area of duct.
- C. Measure air quantities at air inlets and outlets.
- D. Use volume control devices to regulate air quantities only to extent those adjustments do not create objectionable air motion or sound levels. Change volume using dampers mounted in ducts.
- E. Vary total system air quantities by adjustment of fan speeds. Provide drive changes to accomplish system air flow. Vary branch air quantities by damper regulation.
- F. Measure static air pressure conditions on air supply units, including filter and coil pressure drops, and total pressure across fan. Allow for pressure drop equivalent to 50 percent loading of filters.
- G. Adjust automatic outside air, return air, and exhaust air dampers for design conditions.
- H. Measure temperature conditions across outside air, return air, and exhaust air dampers to check leakage.
- I. At modulating damper locations, take measurements and balance at extreme conditions.

### 3.4 FIELD QUALITY CONTROL

- A. Verify recorded data represents actually measured or observed conditions.
- B. Permanently mark settings of valves, dampers, and other adjustment devices. Set and lock memory stops.

END OF SECTION 230593

## SECTION 230700 - HVAC INSULATION

### PART 1 GENERAL

#### 1.1 SUMMARY

- A. Section Includes:
  - 1. Insulation for HVAC duct systems.

#### 1.2 SUBMITTALS

- A. Product Data: Not required.
- B. Manufacturer's Installation Instructions: Not required.

#### 1.3 QUALITY ASSURANCE

- A. Test pipe insulation for maximum flame spread index of 25 and maximum smoke developed index of not exceeding 50 in accordance with ASTM E84.

### PART 2 PRODUCTS

#### 2.1 DUCTWORK INSULATION

- A. Flexible Glass Fiber: ASTM C553; flexible, noncombustible blanket.
  - 1. k (ksi) Value: 0.29 at 75 degrees F (0.042 at 24 degrees C).
  - 2. Vapor Retarder Jacket: Kraft paper reinforced with glass fiber yarn and bonded to aluminized film, secured with pressure sensitive tape.

### PART 3 EXECUTION

#### 3.1 INSTALLATION

- A. Install duct liner in accordance with SMACNA HVAC Duct Construction Standards - Metal and Flexible.
- B. Continue insulation and vapor barrier through penetrations.
- C. External Ductwork Insulation:
  - 1. For insulated ductwork conveying air below ambient temperature install vapor barrier jacket. Finish with tape. Seal vapor barrier penetrations with vapor barrier adhesive.
  - 2. For insulated ductwork conveying air above ambient temperature install with or without standard vapor barrier jacket. Where service access is required, bevel and seal ends of insulation.
  - 3. Continue insulation through walls, sleeves, hangers, and other duct penetrations.

4. Install without sag on underside of ductwork. Use adhesive or mechanical fasteners where necessary to prevent sagging.
5. For ductwork exposed in mechanical equipment rooms or in finished spaces, finish with [canvas jacket sized for finish painting] [aluminum jacket].
6. For exterior applications, install insulation with vapor barrier jacket. Cover with outdoor jacket.

3.2 DUCTWORK INSULATION SCHEDULE

Service	Insulation Type	Jacket	Thickness
Supply Ducts (Cooling Systems)	A	ALUMINUN	2"

END OF SECTION 230700

SECTION 232000 - HVAC PIPING AND PUMPS

PART 1 GENERAL

1.1 SUMMARY

- A. Section Includes:
  - 1. Pipe hangers and supports.
  - 2. Pipe and pipe fittings.
  - 3. Valves.

1.2 SUBMITTALS

- A. Shop Drawings: Indicate schematic layout of refrigeration system, including equipment, critical dimensions, and sizes.
- B. Product Data:
  - 1. Pipe Hangers and Supports: Submit manufacturers catalog data including load carrying capacity.
  - 2. Valves: Submit Manufacturers catalog information with valve data and ratings for each service.
  - 3. Piping Specialties: Submit product description, model, dimensions, component sizes, rough-in requirements, service sizes, and finishes. Submit schedule indicating manufacturer, model number, size, location, rated capacity, load served, and features for each specialty.
  - 4. Pipe Expansion Products: Indicate maximum temperature and pressure rating, and maximum expansion compensation.
- C. Manufacturer's Installation Instructions: Submit installation instructions for valves and accessories.
- D. Manufacturer's Certificate: Certify products meet or exceed specified requirements.

1.3 CLOSEOUT SUBMITTALS

- A. Operation and Maintenance Data: Submit spare parts lists and maintenance procedures.

1.4 QUALITY ASSURANCE

- A. Perform Work in accordance with State Municipality standard.
- B. Maintain one copy of each document on site.

PART 2 PRODUCTS

2.1 PIPE HANGERS AND SUPPORTS

- A. Conform to ASME B31.1.

- B. Hangers for Pipe Sizes 1/2 to 1-1/2 inch: Carbon steel, adjustable swivel, split ring.
- C. Hangers for Cold Pipe Sizes 2 inches and Over: Carbon steel, adjustable, clevis.
- D. Hangers for Hot Pipe Sizes 2 to 4 inches: Carbon steel, adjustable, clevis.
- E. Multiple or Trapeze Hangers for Pipe Sizes to 4 inches: Steel channels with welded spacers and hanger rods.
- F. Wall Support for Pipe Sizes to 3 inches: Cast iron hooks.
- G. Vertical Support: Steel riser clamp.
- H. Copper Pipe Support: Copper-plated, carbon steel ring.

## 2.2 PIPES AND TUBES

- A. Heating Water Piping:
  - 1. Steel Pipe: ASTM A53/A53M, Grade B, Schedule 40, black, malleable iron or forged steel fittings, threaded or welded joints.
  - 2. Copper Tubing: ASTM B88, Type M drawn, cast brass, wrought copper, or mechanically extracted fittings, lead free solder joints.
- B. Equipment Drains and Overflows:
  - 1. Steel Pipe: ASTM A53/A53M, Grade B, Schedule 40 black steel, malleable iron or forged steel fittings, threaded or welded joints.
  - 2. Copper Tubing: ASTM B88, Type L, drawn, cast brass, wrought copper fittings, lead free solder joints.
  - 3. PVC Pipe: ASTM D1785, Schedule 40, or ASTM D2241, SDR 21 or 26, PVC fittings, solvent weld joints.
- C. Flue and Combustion Air Piping:
  - 1. PVC Pipe: ASTM D1785, Schedule 40, polyvinyl chloride (PVC) material.
    - a. Fittings: ASTM D2466, Schedule 40, PVC.
    - b. Joints: ASTM D2855, solvent weld with ASTM D2564 solvent cement. Prime joints with a contrasting color.
  - 2. CPVC Pipe: ASTM F441/F441M, Schedule 40, chlorinated polyvinyl chloride (CPVC) material.
    - a. Fittings: ASTM F438, CPVC, Schedule 40, socket type.
    - b. Joints: ASTM D2846/D2846M, solvent weld with ASTM F493 solvent cement. Prime joints with a contrasting color.

## 2.3 VALVES

- A. Gate Valves:
  - 1. Up to 2 inches: Bronze body, bronze trim, non-rising stem, hand wheel, inside screw, double wedge disc, soldered or threaded.
  - 2. Over 2 inches: Iron body, bronze trim, rising stem, hand wheel, OS&Y, solid wedge, flanged or grooved ends.
- B. Ball Valves:
  - 1. Up to 2 inches: Bronze or stainless steel one piece body, chrome plated brass ball, teflon seats and stuffing box ring, lever handle, solder or threaded ends.
  - 2. Over 2 inches: Cast steel flanged body, chrome plated steel ball, Teflon seat and stuffing box seals and lever handle.

- C. Butterfly Valves:
  - 1. Up To 2 inches: Bronze body, stainless steel disc, resilient replaceable seat, threaded ends, extended neck.
  - 2. Over 2 inches Iron body, chrome plated iron disc, resilient replaceable seat, wafer or lug ends, extended neck, 10 position lever handle.
  
- D. Swing Check Valves:
  - 1. Up to 2 inches: Bronze body and swing disc, solder or threaded ends.
  - 2. Over 2 inches: Iron body, bronze trim, swing disc, renewable disc and seat, flanged ends.
  
- E. Relief Valves:
  - 1. Bronze body, Teflon seat, stainless steel stem and springs, automatic, direct pressure actuated capacities ASME certified and labeled.

### PART 3 EXECUTION

#### 3.1 EXAMINATION

- A. Verify excavations are to required grade, dry, and not over-excavate.

#### 3.2 PREPARATION

- A. Ream pipe and tube ends. Remove burrs.
- B. Remove scale and dirt, on inside and outside piping before assembly.
- C. Prepare piping connections to equipment with flanges or unions.

#### 3.3 INSTALLATION - INSERTS

- A. Install inserts for placement in concrete forms.
- B. Install inserts for suspending hangers from reinforced concrete slabs and sides of reinforced concrete beams.
- C. Provide hooked rod to concrete reinforcement section for inserts carrying pipe over 4 inches.
- D. Where concrete slabs form finished ceiling, locate inserts flush with slab surface.

#### 3.4 INSTALLATION - PIPING SYSTEMS

- A. Install dielectric connections wherever jointing dissimilar metals.
- B. Install unions downstream of valves and at equipment or apparatus connections.
- C. Route piping parallel to building structure and maintain gradient.
- D. Install piping to maintain headroom. Group piping to conserve space. Group piping whenever practical at common elevations.



- E. Install piping to allow for expansion and contraction without stressing pipe, joints, or connected equipment.
- F. Provide clearance in hangers and from structure and other equipment for installation of insulation and access to valves and fittings.
- G. Sleeve pipe passing through partitions, walls and floors.
- H. Install piping system allowing clearance for installation of insulation and access to valves and fittings.
- I. Install identification on piping systems including underground piping.
- J. Protect piping systems from entry of foreign materials by temporary covers, completing sections of the work, and isolating parts of completed system.

### 3.5 INSTALLATION - VALVES

- A. Install valves with stems upright or horizontal, not inverted.
- B. Install ball valves for shut-off and to isolate equipment, part of systems, or vertical risers.
- C. Provide lug end butterfly valves adjacent to equipment when functioning to isolate equipment.
- D. Install spring loaded check valves on discharge of pumps.
- E. Install valves for throttling service. Install non-lubricated plug valves only when shut-off or isolating valves are also installed.

### 3.6 INSTALLATION - PIPING SPECIALTIES

- A. Install Work in accordance with standards.

### 3.7 INSTALLATION - HEATING AND COOLING PIPING

- A. Slope piping and arrange systems to drain at low points. Use eccentric reducers to maintain top of pipe level.
- B. Select system relief valve capacity greater than make-up pressure reducing valve capacity. Select equipment relief valve capacity to exceed rating of connected equipment. Install piping from relief valve outlet to nearest floor drain.
- C. Install Work in accordance with Municipality standards.

### 3.8 INSTALLATION - PIPE HANGERS AND SUPPORTS

- A. Support horizontal piping as scheduled.
- B. Install hangers with minimum 1/2 inch space between finished covering and adjacent work.
- C. Place hangers within 12 inches of each horizontal elbow.

- D. Use hangers with 1-1/2 inch minimum vertical adjustment.
- E. Support horizontal cast iron pipe adjacent to each hub, with 5 feet maximum spacing between hangers.
- F. Support vertical piping at every floor. Support vertical cast iron pipe at each floor at hub.
- G. Where piping is installed in parallel and at same elevation, provide multiple pipe or trapeze hangers.
- H. Support riser piping independently of connected horizontal piping.
- I. Design hangers for pipe movement without disengagement of supported pipe.

END OF SECTION 232000

SECTION 233000 - HVAC AIR DISTRIBUTION

PART 1 GENERAL

1.1 SUMMARY

- A. Section Includes:
  - 1. Ductwork.
  - 2. Ductwork accessories.
  - 3. Terminal units.
  - 4. Air Outlets.

1.2 SUBMITTALS

- A. Shop Drawings: Submit duct fabrication drawings.
- B. Operation and Maintenance Data: Submit instructions for lubrication, motor and drive replacement, spare parts lists, and wiring diagrams.
- C. Field Quality Control Reports
- D. Manufacturer's Installation Instructions: Submit relevant instructions.

1.3 CLOSEOUT SUBMITTALS

- A. Operation and Maintenance Data: Submit instructions for filter replacement, spare parts lists, and wiring diagrams.

1.4 QUALITY ASSURANCE

- A. Perform Work in accordance with Municipality standard.
- B. Maintain one copy of each document on site.

PART 2 PRODUCTS

2.1 DUCTWORK

- A. Duct Materials:
  - 1. Galvanized Steel Ducts: ASTM A653/A653M galvanized steel sheet, lock-forming quality, having G60.
    - a. Finish of steel components: Hot dipped galvanized steel with minimum 2.10 oz/sf zinc coating both sides measured in accordance with ASTM A90/A90M and zinc chromated aluminum paint. [Finish with electrostatic spray, thermosetting, polymer.]

2. Steel Ducts: ASTM A1008/A1008M.
3. Aluminum Ducts: ASTM B209; aluminum sheet, alloy 3003-H14. Aluminum Connectors and Bar Stock: Alloy 6061-T6 or of equivalent strength.
4. Stainless Steel Ducts: ASTM ASTM A240/A240M OR ASTM 666, Type 316.
5. Fasteners: Rivets, bolts, or sheet metal screws.
6. Hanger Rod: ASTM A36/A36M; steel [, galvanized]; threaded both ends, threaded one end, or continuously threaded.

B. Ductwork Fabrication:

1. Fabricate and support rectangular ducts in accordance with SMACNA HVAC Duct Construction Standards - Metal and Flexible and [as indicated on Drawings]. Provide duct material, gages, reinforcing, and sealing for operating pressures indicated.

C. Kitchen Hood Exhaust Ductwork Fabrication:

1. Fabricate in accordance with SMACNA HVAC Duct Construction Standards - Metal and Flexible and NFPA 96.
2. Exposed Kitchen Hood Exhaust Ducts: Construct of stainless steel ASTM ASTM A240/A240M OR ASTM 666, type [304] [316] using continuous external welded joints.
3. Concealed Kitchen Hood Exhaust Ducts: Construct of 16 gage carbon steel or 18 gage stainless steel ASTM ASTM A240/A240M OR ASTM 666, type 316 using continuous external welded joints.
4. Grease Duct: Provide factory built commercial grease ducts labeled and listed in accordance with UL 1978.

D. Flexible Ducts:

1. Product Description: UL 181, Class 1, aluminum laminate and polyester film with latex adhesive supported by helical-wound spring steel wire.
  - a. Pressure Rating: 10 inches wg positive and 1.0 inches wg negative.
  - b. Maximum Velocity: 4000 fpm.
  - c. Temperature Range: -20 degrees F to 210 degrees F.

E. Insulated Flexible Ducts:

1. Product Description: UL 181, Class 1, aluminum laminate and polyester film with latex adhesive supported by helical wound spring steel wire; fiberglass insulation; [polyethylene] [aluminized] vapor barrier film.
  - a. Pressure Rating: 10 inches wg positive and 1.0 inches wg negative.
  - b. Maximum Velocity: 4000 fpm.
  - c. Temperature Range: -20 degrees F to 210 degrees F.
  - d. Thermal Resistance: 4.2 square feet-hour-degree F per BTU.

## 2.2 DUCT ACCESSORIES

A. Volume Control Dampers:

1. Fabricate in accordance with SMACNA HVAC Duct Construction Standards - Metal and Flexible, and as indicated on Drawings.
2. Fabricate splitter dampers of material matching duct gage to 24 inches size in each direction, and two gages heavier for larger sizes. Secure with continuous hinge or rod. Operate with minimum 1/4 inch diameter rod.
3. Fabricate single blade dampers for duct sizes to 12 x 30 inch.
4. Fabricate multi-blade damper of opposed blade pattern with maximum blade sizes 8 x 72 inch. Assemble center and edge crimped blades in prime coated or galvanized channel frame with suitable hardware.
5. Except in round ductwork 12 inches and smaller, furnish end bearings.

6. Furnish locking, indicating quadrant regulators on single and multi-blade dampers. Where width exceeds 30 inches, furnish regulator at both ends.

B. Turning Devices and Extractors:

1. Multi-blade device with blades aligned in short dimension; steel or aluminum construction; with individually adjustable blades, mounting straps.
2. Multi-blade device with radius blades attached to pivoting frame and bracket, steel or aluminum construction, with push-pull operator strap.

C. Flexible Duct Connections:

1. UL listed fire-retardant neoprene coated woven glass fiber fabric to NFPA 90A, approximately 3 inches wide, crimped into metal edging strip.

D. Duct Access Doors:

1. Fabricate in accordance with SMACNA HVAC Duct Construction Standards - Metal and Flexible.
2. Access doors smaller than 12 inches square secured with sash locks. Access doors with sheet metal screw fasteners are not acceptable.

E. Dynamic Fire Dampers:

1. Fabricate in accordance with NFPA 90A and UL 555.

F. Back-draft Dampers:

1. Gravity back-draft dampers size 18 x 18 inches or smaller, furnished with air moving equipment, furnish of air moving equipment manufacturers standard construction.
2. Fabricate multi-blade, parallel action gravity balanced back-draft dampers of galvanized steel, or extruded aluminum, with center pivoted blades, with sealed edges, linked together, steel ball bearings, and plated steel pivot pin.

G. Kitchen Hood Supply and Exhaust Fans:

1. Manufacturers:
  - a. See Drawings for the "basis of design" manufacturer and model number.
  - b. Products of other manufacturers will be considered if the product meets spatial and performance requirements set forth in the contract documents.

## 2.3 TERMINAL UNITS

A. Manufacturers:

1. See Drawings for the "basis of design" manufacturer and model number.
2. Products of other manufacturers will be considered if the product meets spatial and performance requirements set forth in the contract documents.

## 2.4 AIR OUTLETS AND INLETS

A. Manufacturers:

1. See Drawings for the "basis of design" manufacturer and model number.
2. Products of other manufacturers will be considered if the product meets spatial and performance requirements set forth in the contract documents.

## PART 3 EXECUTION

### 3.1 EXAMINATION

- A. Verify sizes of equipment connections before fabricating transitions.
- B. Verify rated walls are ready for fire damper installation.
- C. Verify ducts and equipment installation are ready for accessories.
- D. Check location of air outlets and inlets and make necessary adjustments in position to conform to architectural features, symmetry, and lighting arrangement.

### 3.2 INSTALLATION

- A. Metal Ducts: Install in accordance with SMACNA Duct Construction Standards - Metal and Flexible.
- B. Connect flexible ducts to metal ducts with adhesive plus sheet metal screws.
- C. Use crimp joints with or without bead for joining round duct sizes 8 inch and smaller with crimp in direction of airflow.
- D. Install flexible connections immediately adjacent to fans and motorized equipment. Install flexible connections specified between fan inlet and discharge ductwork. Prevent flexible connectors being in tension while running.
- E. Install back-draft dampers on discharge of exhaust fans and as indicated on Drawings.
- F. Prevent passage of unfiltered air around filters by installing felt, rubber, or neoprene gaskets.
- G. Install filter gage static pressure taps upstream and downstream of filters. Mount filter gages on outside of filter housing or filter plenum, in accessible position. Adjust and level.
- H. Cut openings in ductwork to accommodate thermometers and controllers. Cut pitot tube openings for testing of systems, complete with metal can with spring device or screw to eliminate against air leakage.
- I. Locate ducts with sufficient space around equipment to allow normal operating and maintenance activities. Apply duct insulation specified in Section 22 07 00.
- J. Connect diffusers or troffer boots to low pressure ducts with 5 feet maximum length of flexible duct. Hold in place with strap or clamp.
- K. At installer's option, fiberglass ductwork may be substituted for internally or externally insulated or non-insulated low-pressure sheet metal ductwork.

- L. During construction install temporary closures of metal or taped polyethylene on open ductwork to prevent construction dust from entering ductwork system.
- M. Install fire dampers at locations as indicated on Drawings. Install with perimeter mounting angles, sleeves, breakaway duct connections, corrosion resistant springs, bearings, bushings and hinges.
- N. Access Doors: Install access doors at the following locations:
  - 1. Spaced every 50 feet (15 m) of straight duct.
  - 2. Upstream of each elbow.
  - 3. Upstream of each reheat coil.
  - 4. Before and after each duct mounted coil.
  - 5. Before and after each duct mounted fan.
  - 6. Before and after each automatic control damper.
  - 7. Before and after each fire damper.
  - 8. Downstream of each VAV box.
  - 9. Install at locations for cleaning kitchen exhaust ductwork in accordance with NFPA 96.
- O. Access Door Sizes: Install minimum 8 x 8 inch size for hand access, 18 x 18 inch size for shoulder access. Review locations prior to fabrication.
  - 1. Mark access doors for fire and smoke dampers on outside surface, with minimum 1/2 inch high letters reading: FIRE/SMOKE DAMPER, SMOKE DAMPER, OR FIRE DAMPER.
- P. Support terminal units individually from structure. Do not support from adjacent ductwork. Install with minimum of 5 ft of 2 inch thick lined ductwork downstream of units.
- Q. Install balancing dampers on duct take-off to diffusers and grilles and registers, regardless of whether dampers are specified as part of diffuser, or grille and register assembly.
- R. Do not locate air registers, diffusers or grilles in floors of toilet or bathing rooms.
- S. Paint ductwork visible matte black in accordance with Section 09 90 00.
- T. Do not operate fans until ductwork is clean, bearings lubricated, and fan has been test run under observation.
- U. Install fans with resilient mountings and flexible electrical leads.
- V. Install sheaves required for final air balance.
- W. Install safety screen where fan inlet or outlet is exposed.

### 3.3 TESTING

- A. For ductwork designed for 3 inches w.c. above ambient, pressure test minimum 25 percent of ductwork after duct cleaning, but before duct insulation is applied or ductwork is concealed. Submit test report.
  - 1. Test in accordance with SMACNA HVAC Air Duct Leakage Test Manual.
  - 2. Maximum Allowable Leakage: In accordance with ICC IECC.

3.4 CONCEALED GREASE DUCT TESTING

- A. Prior to concealing, wrapping, or insulating grease ductwork, or placing grease duct in service, perform leakage test in accordance with IMC, in presence of authority having jurisdiction.
- B. Perform light test by pulling minimum 100 W light through duct and observing for light leaks at duct joints.
- C. Test complete extent of duct installed, including joint at which duct connects to exhaust hood.

END OF SECTION 233000



SECTION 236313 – AIR COOLED REFRIGERANT CONDENSERS

PART 1 - GENERAL

1.1 SUMMARY

- A. Section includes refrigerant condenser package, charge of refrigerant and oil, controls and control connections, refrigerant piping and connections, motor starters, electrical power connections.
- B. Related Sections:
  - 1. Section 033000 - Cast-In-Place Concrete: Execution requirements for concrete foundations specified by this section.
  - 2. Section 230513 - Common Motor Requirements for HVAC Equipment: Product requirements for motors for placement by this section.
  - 3. Section 230548 - Vibration and Seismic Controls for HVAC Piping and Equipment: Product requirements for vibration isolation for placement by this section.
  - 4. Section 232300 - Refrigerant Piping: Execution requirements for connection to refrigerant piping specified by this section.
  - 5. Section 260503 - Equipment Wiring Connections: Execution requirements for connection to electrical service specified by this section.

1.2 REFERENCES

- A. Air-Conditioning and Refrigeration Institute:
  - 1. ARI 210/240 - Unitary Air-Conditioning and Air-Source Heat Pump Equipment.
  - 2. ARI 365 - Commercial and Industrial Unitary Air-Conditioning Condensing Units.
  - 3. ARI 460 - Remote Mechanical-Draft Air-Cooled Refrigerant Condensers.
- B. American Society of Heating, Refrigerating and Air-Conditioning Engineers:
  - 1. ASHRAE 15 - Safety Code for Mechanical Refrigeration.
  - 2. ASHRAE 20 - Method of Testing for Rating Remote Mechanical-Draft Air-Cooled Refrigerant Condensers.
  - 3. ASHRAE 90.1 - Energy Standard for Buildings Except Low-Rise Residential Buildings.
- C. National Electrical Manufacturers Association:
  - 1. NEMA 250 - Enclosures for Electrical Equipment (1000 Volts Maximum).
- D. Underwriters Laboratories Inc.:
  - 1. UL 207 - Refrigerant-Containing Components and Accessories, Nonelectrical.

1.3 SUBMITTALS

- A. Section 013300 - Submittal Procedures: Submittal procedures.
- B. Shop Drawings: Indicate components, assembly, dimensions, weights and loading, required clearances, and location and size of field connections. Include schematic layouts showing condenser, refrigeration compressors, cooling coils, refrigerant piping and accessories required for complete system.
- C. Product Data: Submit rated capacities, weights, accessories, electrical requirements, and wiring diagrams.
- D. Manufacturer's Certificate: Certify products meet or exceed specified requirements.
- E. Manufacturer's Field Reports: Submit start-up report for each unit.

1.4 CLOSEOUT SUBMITTALS

- A. Section 017000 - Execution and Closeout Requirements: Closeout procedures.
- B. Operation and Maintenance Data: Submit start-up instructions, maintenance instructions, parts lists, controls, and accessories.

1.5 QUALITY ASSURANCE

- A. Construction and Ratings: In accordance with ARI 210/240. Testing in accordance with ASHRAE 20.
- B. Performance Ratings: Energy Efficiency Ratio (EER) not less than prescribed by ASHRAE 90.1 when tested in accordance with ARI 210/240.
- C. Perform Work in accordance with KY City of Ashland, standards.
- D. Maintain one copy each document on site.

1.6 QUALIFICATIONS

- A. Manufacturer: Company specializing in manufacturing products specified in this section with minimum three years' experience.
- B. Installer: Company specializing in performing Work of this section with minimum three years' experience.

1.7 PRE-INSTALLATION MEETINGS

- A. Section 013000 - Administrative Requirements: Pre-installation meeting.
- B. Convene minimum one week prior to commencing work of this section.

1.8 DELIVERY, STORAGE, AND HANDLING

- A. Section 016000 - Product Requirements: Product storage and handling requirements.
- B. Comply with manufacturer's installation instruction for rigging, unloading and transporting units.
- C. Protect units on site from physical damage.

1.9 FIELD MEASUREMENTS

- A. Verify field measurements prior to fabrication.

1.10 WARRANTY

- A. Section 017000 - Execution and Closeout Requirements: Product warranties and product bonds.
- B. Furnish five year manufacturer warranty for compressors.

1.11 MAINTENANCE SERVICE

- A. Section 017000 - Execution and Closeout Requirements: Requirements for maintenance service.
- B. Furnish service and maintenance of condensing units for five years from Date of Substantial Completion.
- C. Examine unit components monthly. Clean, adjust, and lubricate equipment.
- D. Include systematic examination, adjustment, and lubrication of unit, including fan belt replacement, and controls checkout and adjustments. Repair or replace parts in accordance with manufacturer's operating and maintenance data. Use parts produced by manufacturer of original equipment.
- E. Perform work without removing units from service during building normal occupied hours.
- F. Provide emergency call back service during working hours for this maintenance period.
- G. Maintain locally, near Place of the Work, adequate stock of parts for replacement or emergency purposes. Have personnel available to ensure fulfillment of this maintenance service, without unreasonable loss of time.
- H. Perform maintenance work using competent and qualified personnel under supervision of manufacturer or original installer.
- I. Do not assign or transfer maintenance service to agent or subcontractor without prior written consent of Owner.

1.12 EXTRA MATERIALS

- A. Section 017000 - Execution and Closeout Requirements: Spare parts and maintenance products.
- B. Furnish two sets of fan belts.

PART 2 - PRODUCTS

2.1 CONDENSING UNITS

A. Product Description:

1. Packaged, factory assembled, pre-wired unit, suitable for outdoor or indoor use consisting of casing, condensing coil and fans, integral sub-cooling coil and controls.

2.2 HOUSING

- A. House components in galvanized steel panels with weather resistant, baked enamel finish.
- B. Mount starters, disconnects, and controls in weatherproof panel with full opening access doors. Furnish mechanical interlock to disconnect power when door is opened.
- C. Furnish removable access doors or panels with quick fasteners.
- D. Furnish welded steel floor mounting stand and duct collars at coil inlet and fan outlet.

2.3 CONDENSER COILS

- A. Coils: Aluminum fins mechanically bonded to seamless copper tubing. Furnish sub-cooling circuits as applicable. Air test under water to 425 psig and vacuum dehydrate. Seal with holding charge of refrigerant.
- B. Coil Guard: Expanded metal.
- C. Configuration: Two refrigeration circuits each.

2.4 FANS AND MOTORS

- A. Vertical or Horizontal discharge direct driven propeller type condenser fans with fan guard on discharge.
- B. Weatherproof motors suitable for outdoor use, single phase permanent split capacitor or 3 phase, with permanent lubricated ball bearings and built-in current and thermal overload protection.
- C. Horizontal discharge, double width, double inlet type condenser fans, equipped with roller or ball bearings with grease fittings extended to outside of casing, V-belt drive with belt guard.

2.5 CONTROLS

- A. Factory wired and mounted control panel, NEMA 250 Type 1 enclosure, containing fan motor starters, head pressure controls, compressor interlock and control transformer.
- B. Furnish thermostat to cycle fan motors in response to outdoor temperature.
- C. Furnish head pressure switch to cycle fan motors in response to refrigerant condensing pressure.

- D. Furnish solid state control to vary speed of one condenser fan motor in response to refrigerant condensing pressure.
- E. Furnish electronic low ambient control consisting of mixing damper assembly, controlled to maintain constant refrigerant condensing pressure.

## 2.6 ELECTRICAL CHARACTERISTICS AND COMPONENTS

- A. Electrical Characteristics: In accordance with Section 260503.
- B. Motors: In accordance with Section 230513.
- C. Disconnect Switch: Factory mount disconnect switch in on equipment.

## PART 3 - EXECUTION.

### 3.1 INSTALLATION

- A. Install in accordance with ASHRAE 15.
- B. Install refrigerant piping from unit to condensing unit. Install refrigerant specialties furnished with unit.
- C. Install connection to electrical power wiring in accordance with Section 260503.

### 3.2 INTERFACE WITH OTHER PRODUCTS

- A. Install units on vibration isolators on concrete foundations. Refer to Section 230548.

### 3.3 MANUFACTURER'S FIELD SERVICES

- A. Section 014000 - Quality Requirements: Manufacturer's Field services.
- B. Furnish cooling season start-up and winter season shutdown service, for first year of operation. If initial start-up and testing takes place in winter and machines are to remain inoperative. Repeat start-up and testing operation at beginning of first cooling season.

### 3.4 ADJUSTING

- A. Section 017000 - Execution and Closeout Requirements: Testing, adjusting, and balancing.

### 3.5 DEMONSTRATION AND TRAINING

- A. Section 017000 - Execution and Closeout Requirements: Requirements for demonstration and training.
- B. Demonstrate starting, maintenance, and operation of unit.

- C. Demonstrate low ambient operation during winter testing or service specified above.

END OF SECTION 220100 6

SECTION 260519 - LOW-VOLTAGE ELECTRICAL POWER CONDUCTORS AND CABLES

PART 1 - GENERAL

1.1 SUMMARY

- A. Section includes building wire and cable and wiring connectors and connections.
  
- B. Related Sections:
  - 1. Section 260553 - Identification for Electrical Systems: Product requirements for wire identification.

1.2 REFERENCES

- A. International Electrical Testing Association:
  - 1. NETA ATS - Acceptance Testing Specifications for Electrical Power Distribution Equipment and Systems.
  
- B. National Fire Protection Association:
  - 1. NFPA 70 - National Electrical Code.
  - 2. NFPA 262 - Standard Method of Test for Flame Travel and Smoke of Wires and Cables for Use in Air-Handling Spaces.
  
- C. Underwriters Laboratories, Inc.:
  - 1. UL 1277 - Standard for Safety for Electrical Power and Control Tray Cables with Optional Optical-Fiber Members.

1.3 SYSTEM DESCRIPTION

- A. Product Requirements: Provide products as follows:
  - 1. Solid conductor for feeders and branch circuits 10 AWG and smaller.
  - 2. Stranded conductors for control circuits.
  - 3. Conductor not smaller than 12 AWG for power and lighting circuits.
  - 4. Conductor not smaller than 16 AWG for control circuits.
  - 5. Increase wire size in branch circuits to limit voltage drop to a maximum of 3 percent.
  
- B. Wiring Methods: Provide the following wiring methods:
  - 1. Concealed Dry Interior Locations: Use only building wire, Type THHN/THWN insulation, in raceway.
  - 2. Exposed Dry Interior Locations: Use only building wire, Type THHN/THWN insulation, in raceway.
  - 3. Above Accessible Ceilings: Use only building wire, Type THHN/THWN insulation, in raceway.
  - 4. Wet or Damp Interior Locations: Use only building wire, Type THHN/THWN insulation, in raceway.
  - 5. Exterior Locations: Use only building wire, Type THHN/THWN insulation, in raceway.
  - 6. Underground Locations: Use only building wire, Type THHN/THWN insulation, in raceway.

1.4 DESIGN REQUIREMENTS

- A. Conductor sizes are based on copper per NEC.

1.5 SUBMITTALS

- A. Product Data: Submit for building wire.

1.6 QUALIFICATIONS

- A. Manufacturer: Company specializing in manufacturing products specified in this section with minimum three years experience.

1.7 COORDINATION

- A. Where wire and cable destination is indicated and routing is not shown, determine routing and lengths required.
- B. Wire and cable routing indicated is approximate unless dimensioned.

PART 2 - PRODUCTS

2.1 BUILDING WIRE

- A. Product Description: Single conductor insulated wire.
- B. Conductor: Copper. Soft drawn annealed copper having a conductivity of not less than 98% of that of pure copper.
- C. Insulation Voltage Rating: 600 volts.
- D. Insulation Temperature Rating: 75 degrees C.
- E. Insulation: NFPA 70; Type THHN/THWN insulation for feeders and branch circuits

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Verify interior of building has been protected from weather.
- B. Verify mechanical work likely to damage wire and cable has been completed.
- C. Verify raceway installation is complete and supported.

3.2 PREPARATION

- A. Completely and thoroughly swab raceway before installing wire.



### 3.3 INSTALLATION

- A. All wiring shall be run in conduit or other type raceways unless specifically noted.
- B. Horizontal runs of low voltage fire alarm, telephone, data, and controls may be run without a raceway in equipment rooms and accessible ceiling spaces where allowed by code. Where run without raceways, cables shall be routed and grouped together utilizing U.L. approved J hooks by Caddy, Raco or approved equal attached to the building structure and space 4'-0" maximum in a neat orderly arrangement. Wiring shall be routed parallel or perpendicular to building lines. Ceilings considered accessible shall only be those with lay in panels or T bar grids. Hangers used to support wiring run without raceways shall be Caddy CAT series or B-Line BCH series J-hooks or other hangers with mounting as appropriate to the location. Hangers shall be submitted for approval. Do not use wire wraps or tie straps to support cable. Provide attachment accessory suitable for the substrate the hanger is being attached to. Wiring run without raceways shall be bundled together with reusable Velcro wraps (not nylon tie wraps) at least once between each 4'-0" support. Wiring must be routed on the supports as high as possible, free and clear of mechanical equipment, lighting fixtures, piping, conduits, ductwork, building structural members and any other building equipment or items. Each wiring system (fire alarm, telecom, etc.) shall be run separate with separate hangers. Do not support from ceiling systems supports, HVAC ductwork, conduit, piping, etc. Where wiring run without raceways penetrates walls or ceilings a metal conduit sleeve with bushings at each end shall be provided for the penetration. Cables shall not be run through holes in walls or ceilings. Each cable shall be continuous, without splices or connections from the source to the connected device. Routing shall be parallel or perpendicular to building walls. Support arrangement and tension on cables shall be minimized to prevent exceeding the maximum cable bending radius. Where cables transition from sections run without a raceway into sections run with a raceway, a bushing shall be installed on the entrance to the raceway (conduit, wire mold, etc.). All fire alarm wiring shall have a red colored jacket.
- C. Route wire and cable to meet Project conditions.
- D. Install wire and cable in accordance with NECA "Standard of Installation".
- E. Neatly train and lace wiring inside boxes, equipment, and panelboards.
- F. Identify and color code wire and cable under provisions of Section 260553. Identify each conductor with its circuit number or other designation indicated.
- G. Special Techniques--Building Wire in Raceway:
  - 1. Pull conductors into raceway at same time.
  - 2. Install building wire 4 AWG and larger with pulling equipment.
- H. Special Techniques - Wiring Connections:
  - 1. Clean conductor surfaces before installing lugs and connectors.
  - 2. Make splices, taps, and terminations to carry full ampacity of conductors with no perceptible temperature rise.
  - 3. Tape uninsulated conductors and connectors with electrical tape to 150 percent of insulation rating of conductor.
- I. Install terminal lugs on ends of 600 volt wires unless lugs are furnished on connected device, such as circuit breakers.
- J. Size lugs in accordance with manufacturer's recommendations terminating wire sizes. Install 2-hole type lugs to connect wires 4 AWG and larger to copper bus bars.

- K. For terminal lugs fastened together such as on motors, transformers, and other apparatus, or when space between studs is small enough that lugs can turn and touch each other, insulate for dielectric strength of 2-1/2 times normal potential of circuit.
- L. Except where specifically allowed, feeders shall be run their entire length without joints or splices.
- M. Splices in branch circuit wiring shall be made only at outlets or in accessible junction boxes. Splices in branch circuit wiring shall be listed for the quantity, types and sizes of the conductors connected. Splices shall be made with compression type solderless connectors or spring loaded, tapered, screw on type insulated units (wirenuts). Push-in, plastic body type connectors are not allowed. Do not use wirenuts on splices of solid wiring to stranded wiring. Terminations or splices for conductors No. 6 AWG and larger shall use compression type connecting lugs made with a hydraulic type compression tool approved by the manufacturer. All splices and terminations shall be insulated in an approved manner by an integral or separate cover or by taping to provide insulating value equal to that of the conductors being joined.
- N. For multiwire branch circuits, there shall be a maximum of three phase conductors (of different phases) for each neutral conductor.
- O. For multiwire branch circuits (multiple phases sharing a common neutral) which are not the end of the line, the neutral conductor shall not route through the receptacle per NEC 300-13 (b). For such instances, splice from the incoming neutral conductor in the box with one conductor going to the device and one continuing to the next receptacle on the run such that the device can be removed without losing the neutral connection to the downstream devices.

### 3.4 WIRE COLOR

- A. General:
  - 1. For all wire sizes, install wire colors in accordance with the following:
    - a. Black and red for single phase circuits at 120/240 volts. Neutral – White and Ground – Green.
    - b. Black, red, and blue for circuits at 120/208 volts single or three phase. Neutral – White and Ground – Green.
    - c. Brown, orange, and yellow for circuits at 277/480 volts three phase. Neutral – Gray and Ground – Green.
    - d. Color coding shall be continuous the full length of wire No. 10 and smaller. On larger sizes, identification shall be by color-coded phasing tape at each box and connection.
- B. Neutral Conductors: White or Gray. When two or more neutrals are located in one conduit, provide separate neutral conductors with a continuous, factory applied tracer stripe matching the color of the respective phase conductor.
- C. Branch Circuit Conductors: Install three or four wire home runs with each phase uniquely color coded.
- D. Feeder Circuit Conductors: Uniquely color code each phase.
- E. Ground Conductors: Green colored insulation shall only be used for equipment grounding conductors. Insulation for isolated equipment grounding conductors shall be green with yellow tracers.
- F. Surface printing at regular intervals on all conductors shall indicate manufacturer, size, voltage and insulation type.

3.5 FIELD QUALITY CONTROL

- A. Inspect and test in accordance with NETA ATS, except Section 4.
- B. Perform inspections and tests listed in NETA ATS, Section 7.3.1.

END OF SECTION 260519

SECTION 260526 - GROUNDING AND BONDING FOR ELECTRICAL SYSTEMS

PART 1 GENERAL

1.1 SUMMARY

- A. Section Includes:
  - 1. Rod electrodes.
  - 2. Active electrodes.
  - 3. Wire.
  - 4. Grounding well components.
  - 5. Mechanical connectors.
  - 6. Exothermic connections.
  
- B. Related Sections:
  - 1. Section 264100 - Facility Lightning Protection: Grounding of lightning protection system.

1.2 REFERENCES

- A. Institute of Electrical and Electronics Engineers:
  - 1. IEEE 142 - Recommended Practice for Grounding of Industrial and Commercial Power Systems.
  - 2. IEEE 1100 - Recommended Practice for Powering and Grounding Electronic Equipment.
  
- B. International Electrical Testing Association:
  - 1. NETA ATS - Acceptance Testing Specifications for Electrical Power Distribution Equipment and Systems.
  
- C. National Fire Protection Association:
  - 1. NFPA 70 - National Electrical Code.

1.3 SYSTEM DESCRIPTION

- A. Grounding systems use the following elements as grounding electrodes:
  - 1. Metal underground water pipe.
  - 2. Metal building frame.
  - 3. Ground ring.
  - 4. Rod electrode.

1.4 PERFORMANCE REQUIREMENTS

- A. Grounding System Resistance: 5 ohms maximum.

1.5 SUBMITTALS

- A. Product Data: Submit data on grounding electrodes and connections.
  
- B. Test Reports: Indicate overall resistance to ground and resistance of each electrode.

- C. Manufacturer's Installation Instructions: Submit for active electrodes.
- D. Manufacturer's Certificate: Certify Products meet or exceed specified requirements.

#### 1.6 CLOSEOUT SUBMITTALS

- A. Project Record Documents: Record actual locations of components and grounding electrodes.

#### 1.7 QUALITY ASSURANCE

- A. Provide grounding materials conforming to requirements of NEC, IEEE 142, and UL labeled.
- B. Perform Work in accordance with State, Local Municipality and the National Electric Code.

#### 1.8 QUALIFICATIONS

- A. Manufacturer: Company specializing in manufacturing Products specified in this section with minimum three years experience.
- B. Installer: Company specializing in performing work of this section with minimum 3 years experience.

#### 1.9 DELIVERY, STORAGE, AND HANDLING

- A. Accept materials on site in original factory packaging, labeled with manufacturer's identification.
- B. Protect from weather and construction traffic, dirt, water, chemical, and mechanical damage, by storing in original packaging.
- C. Do not deliver items to project before time of installation. Limit shipment of bulk and multiple-use materials to quantities needed for immediate installation.

#### 1.10 COORDINATION

- A. Complete grounding and bonding of building reinforcing steel prior concrete placement.

### PART 2 PRODUCTS

#### 2.1 ROD ELECTRODES

- A. Furnish materials in accordance with State, Local Municipality and the National Electric Code.
- B. Product Description:
  - 1. Material: Copper.
  - 2. Diameter: 3/4 inch.
  - 3. Length: 10 feet.

- C. Connector: Connector for exothermic welded connection.

## 2.2 WIRE

- A. Material: Stranded copper.
- B. Foundation Electrodes: 4 AWG.
- C. Grounding Electrode Conductor: Copper conductor bare.
- D. Bonding Conductor: Copper conductor bare.

## 2.3 GROUNDING WELL COMPONENTS

- A. Well Pipe: 8 inches NPS by 24 inches long concrete or fiberglass pipe with belled end.
- B. Well Cover: Cast iron or Fiberglass with legend "GROUND" embossed on cover.

## 2.4 EXOTHERMIC CONNECTIONS

- A. Furnish materials in accordance with State, Local Municipality and the National Electric Code.
- B. Product Description: Exothermic materials, accessories, and tools for preparing and making permanent field connections between grounding system components.

## PART 3 EXECUTION

### 3.1 EXAMINATION

- A. Verify final backfill and compaction has been completed before driving rod electrodes.

### 3.2 PREPARATION

- A. Remove paint, rust, mill oils, surface contaminants at connection points.

### 3.3 INSTALLATION

- A. Install in accordance with IEEE 142.
- B. Install rod electrodes at locations as indicated on Drawings. Install additional rod electrodes to achieve specified resistance to ground.
- C. Install grounding and bonding conductors concealed from view.
- D. Install grounding well pipe with cover at each rod location. Install well pipe top flush with finished grade.

- E. Install 4 AWG bare copper wire in foundation footing as indicated on Drawings.
- F. Equipment Grounding Conductor: Install separate, insulated conductor within each feeder and branch circuit raceway. Terminate each end on suitable lug, bus, or bushing.
- G. Bond to lightning protection system. Refer to Section 264100.
- H. Install continuous grounding using underground cold water system and building steel as grounding electrode. Where water piping is not available, install artificial station ground by means of driven rods or buried electrodes.
- I. Permanently ground entire light and power system in accordance with NEC, including service equipment, distribution panels, lighting panelboards, switch and starter enclosures, motor frames, grounding type receptacles, and other exposed non-current carrying metal parts of electrical equipment.
- J. Install branch circuits feeding isolated ground receptacles with separate insulated grounding conductor, connected only at isolated ground receptacle, ground terminals, and at ground bus of serving panel.
- K. Accomplish grounding of electrical system by using insulated grounding conductor installed with feeders and branch circuit conductors in conduits. Size grounding conductors in accordance with NEC. Install from grounding bus of serving panel to ground bus of served panel, grounding screw of receptacles, lighting fixture housing, light switch outlet boxes or metal enclosures of service equipment. Ground conduits by means of grounding bushings on terminations at panelboards with installed number 12 conductor to grounding bus.
- L. Grounding electrical system using continuous metal raceway system enclosing circuit conductors in accordance with NEC.
- M. Permanently attach equipment and grounding conductors prior to energizing equipment.
- N. For receptacle and switches which are not the end of the line, the equipment grounding conductor shall not route through the device per NEC 250-114. For such instances, splice from the incoming conductor in the box with one conductor going to the device and one continuing to the next device on the run such that the device can be removed without losing the ground connection to the downstream devices.

#### 3.4 FIELD QUALITY CONTROL

- A. Inspect and test in accordance with NETA ATS, except Section 4.
- B. Grounding and Bonding: Perform inspections and tests listed in NETA ATS, Section 7.13.
- C. Perform ground resistance testing in accordance with IEEE 142.
- D. Perform leakage current tests in accordance with NFPA 99.
- E. Perform continuity testing in accordance with IEEE 142.
- F. When improper grounding is found on receptacles, check receptacles in entire project and correct. Perform retest.

END OF SECTION 260526

SECTION 260529 - HANGERS AND SUPPORTS FOR ELECTRICAL SYSTEMS

PART 1 GENERAL

1.1 SUMMARY

A. Section Includes:

1. Conduit supports.
2. Formed steel channel.
3. Spring steel clips.
4. Sleeves.
5. Mechanical sleeve seals.
6. Firestopping relating to electrical work.
7. Firestopping accessories.
8. Equipment bases and supports.

B. Related Sections:

1. Section 270529 - Hangers and Supports for Communications Systems.
2. Section 280528.29 - Hangers and Supports for Electronic Safety and Security.

1.2 REFERENCES

A. ASTM International:

1. ASTM E84 - Standard Test Method for Surface Burning Characteristics of Building Materials.
2. ASTM E119 - Standard Test Methods for Fire Tests of Building Construction and Materials.
3. ASTM E814 - Standard Test Method for Fire Tests of Through-Penetration Fire Stops.
4. ASTM E1966 - Standard Test Method for Fire-Resistive Joint Systems.

B. FM Global:

1. FM - Approval Guide, A Guide to Equipment, Materials & Services Approved By Factory Mutual Research For Property Conservation.

C. National Fire Protection Association:

1. NFPA 70 - National Electrical Code.

D. Underwriters Laboratories Inc.:

1. UL 263 - Fire Tests of Building Construction and Materials.
2. UL 723 - Tests for Surface Burning Characteristics of Building Materials.
3. UL 1479 - Fire Tests of Through-Penetration Firestops.
4. UL 2079 - Tests for Fire Resistance of Building Joint Systems.
5. UL - Fire Resistance Directory.

E. Intertek Testing Services (Warnock Hersey Listed):

1. WH - Certification Listings.



1.3 DEFINITIONS

- A. Firestopping (Through-Penetration Protection System): Sealing or stuffing material or assembly placed in spaces between and penetrations through building materials to arrest movement of fire, smoke, heat, and hot gases through fire rated construction.

1.4 SYSTEM DESCRIPTION

- A. Firestopping Materials: UL 263 and UL 1479 to achieve fire ratings as noted on Drawings for adjacent construction, but not less than 1 hour fire rating.
  - 1. Ratings may be 3-hours for firestopping in through-penetrations of 4-hour fire rated assemblies unless otherwise required by applicable codes.

1.5 PERFORMANCE REQUIREMENTS

- A. Firestopping: Conform to applicable codes, FM, UL, WH, for fire resistance ratings and surface burning characteristics.
- B. Firestopping: Provide certificate of compliance from authority having jurisdiction indicating approval of materials used.

1.6 SUBMITTALS

- A. Shop Drawings: Indicate system layout with location and detail of trapeze hangers.
- B. Product Data:
  - 1. Hangers and Supports: Submit manufacturers catalog data including load capacity.
  - 2. Firestopping: Submit data on product characteristics, performance and limitation criteria.
- C. Firestopping Schedule: Submit schedule of opening locations and sizes, penetrating items, and required listed design numbers to seal openings to maintain fire resistance rating of adjacent assembly.
- D. Design Data: Indicate load carrying capacity of hangers and supports.
- E. Manufacturer's Installation Instructions:
  - 1. Hangers and Supports: Submit special procedures and assembly of components.
  - 2. Firestopping: Submit preparation and installation instructions.
- F. Manufacturer's Certificate: Certify products meet or exceed specified requirements.
- G. Firestopping Engineering Judgments: For conditions not covered by UL or WH listed designs, submit judgments by licensed professional engineer suitable for presentation to authority having jurisdiction for acceptance as meeting code fire protection requirements.

1.7 QUALITY ASSURANCE

- A. Perform Work in accordance with State, Local Municipality and the National Electric Code.

1.8 QUALIFICATIONS

- A. Manufacturer: Company specializing in manufacturing Products specified in this section with minimum three years experience.
- B. Installer: Company specializing in performing work of this section with minimum 3 years experience.

1.9 DELIVERY, STORAGE, AND HANDLING

- A. Accept materials on site in original factory packaging, labeled with manufacturer's identification.
- B. Protect from weather and construction traffic, dirt, water, chemical, and mechanical damage, by storing in original packaging.

1.10 ENVIRONMENTAL REQUIREMENTS

- A. Do not apply firestopping materials when temperature of substrate material and ambient air is below 60 degrees F.
- B. Maintain this minimum temperature before, during, and for minimum 3 days after installation of firestopping materials.
- C. Provide ventilation in areas to receive solvent cured materials.

PART 2 - PRODUCTS

2.1 CONDUIT SUPPORTS

- A. Manufacturers:
  - 1. Allied Tube & Conduit Corp.
  - 2. Electroline Manufacturing Company
  - 3. O-Z Gedney Co.
- B. Furnish materials in accordance with State, Local Municipality and the National Electric Code.
- C. Hanger Rods: Threaded high tensile strength galvanized carbon steel with free running threads.
- D. Beam Clamps: Malleable Iron, with tapered hole in base and back to accept either bolt or hanger rod. Set screw: hardened steel.
- E. Conduit clamps for trapeze hangers: Galvanized steel, notched to fit trapeze with single bolt to tighten.
- F. Conduit clamps - general purpose: One hole malleable iron for surface mounted conduits.
- G. Cable Ties: High strength nylon temperature rated to 185 degrees F. Self locking.

2.2 FORMED STEEL CHANNEL

- A. Manufacturers:

1. Allied Tube & Conduit Corp.
  2. B-Line Systems.
  3. Midland Ross Corporation, Electrical Products Division.
  4. Unistrut Corp.
- B. Furnish materials in accordance with State, Local Municipality and the National Electric Code.
- C. Product Description: Galvanized 12 gage) thick steel. With holes 1-1/2 inches on center.

## 2.3 SPRING STEEL CLIPS

- A. Manufacturers:
1. Allied Tube & Conduit Corp.
  2. B-Line Systems.
  3. Midland Ross Corporation, Electrical Products Division.
  4. Unistrut Corp.
- B. Furnish materials in accordance with State, Local Municipality and the National Electric Code.
- C. Product Description: Mounting hole and screw closure.

## 2.4 SLEEVES

- A. Furnish materials in accordance with State, Local Municipality and the National Electric Code.
- B. Sleeves for Through Non-fire Rated Floors: 18 gage thick galvanized steel.
- C. Sleeves for Through Non-fire Rated Beams, Walls, Footings, and Potentially Wet Floors: Steel pipe or 18 gage thick galvanized steel.
- D. Sleeves for Through Fire Rated and Fire Resistive Floors and Walls, and Fire Proofing: Prefabricated fire rated sleeves including seals, UL listed.
- E. Fire-stopping Insulation: Glass fiber type, non-combustible.

## 2.5 MECHANICAL SLEEVE SEALS

- A. Manufacturers:
1. Thunderline Link-Seal, Inc.
  2. NMP Corp.
- B. Furnish materials in accordance with State, Local Municipality and the National Electric Code.
- C. Product Description: Modular mechanical type, consisting of interlocking synthetic rubber links shaped to continuously fill annular space between object and sleeve, connected with bolts and pressure plates causing rubber sealing elements to expand when tightened, providing watertight seal and electrical insulation.

## 2.6 FIRESTOPPING

- A. Manufacturers:

1. Dow Corning Corp.
  2. Fire Trak Corp.
  3. Hilti Corp.
  4. International Protective Coating Corp.
  5. 3M Fire Protection Products
- B. Furnish materials in accordance with State, Local Municipality and the National Electric Code.
- C. Color: As selected from manufacturer's full range of colors.

## 2.7 FIRESTOPPING ACCESSORIES

- A. Primer: Type recommended by firestopping manufacturer for specific substrate surfaces and suitable for required fire ratings.
- B. Dam Material: Permanent:
1. Mineral fiberboard.
  2. Mineral fiber matting.
  3. Sheet metal.
  4. Plywood or particle board.
  5. Alumina silicate fire board.
- C. Installation Accessories: Provide clips, collars, fasteners, temporary stops or dams, and other devices required to position and retain materials in place.
- D. General:
1. Furnish UL listed products.
  2. Select products with rating not less than rating of wall or floor being penetrated.
- E. Non-Rated Surfaces:
1. Stamped steel, chrome plated, hinged, split ring escutcheons or floor plates or ceiling plates for covering openings in occupied areas where conduit is exposed.
  2. For exterior wall openings below grade, furnish modular mechanical type seal consisting of interlocking synthetic rubber links shaped to continuously fill annular space between conduit and cored opening or water-stop type wall sleeve.

## PART 3 - EXECUTION

### 3.1 EXAMINATION

- A. Verify openings are ready to receive sleeves.
- B. Verify openings are ready to receive firestopping.

### 3.2 PREPARATION

- A. Clean substrate surfaces of dirt, dust, grease, oil, loose material, or other matter affecting bond of firestopping material.
- B. Remove incompatible materials affecting bond.

- C. Install damming materials to arrest liquid material leakage.
- D. Obtain permission from Architect/Engineer before using powder-actuated anchors.
- E. Do not drill or cut structural members.

### 3.3 INSTALLATION - HANGERS AND SUPPORTS

- A. Anchors and Fasteners:
  - 1. Concrete Structural Elements: Provide expansion anchors.
  - 2. Steel Structural Elements: Provide beam clamps or welded fasteners.
  - 3. Concrete Surfaces: Provide self-drilling anchors and expansion anchors.
  - 4. Hollow Masonry, Plaster, and Gypsum Board Partitions: Provide toggle bolts and hollow wall fasteners.
  - 5. Solid Masonry Walls: Provide expansion anchors and preset inserts.
  - 6. Sheet Metal: Provide sheet metal screws.
  - 7. Wood Elements: Provide wood screws.
- B. Inserts:
  - 1. Install inserts for placement in concrete forms.
  - 2. Install inserts for suspending hangers from reinforced concrete slabs and sides of reinforced concrete beams.
  - 3. Provide hooked rod to concrete reinforcement section for inserts carrying pipe over 4 inches.
  - 4. Where concrete slabs form finished ceiling, locate inserts flush with slab surface.
  - 5. Where inserts are omitted, drill through concrete slab from below and provide through-bolt with recessed square steel plate and nut above slab.
- C. Locate and install anchors, fasteners, and supports in accordance with NECA "Standard of Installation".
- D. Install conduit and raceway support and spacing in accordance with NEC.
- E. Do not fasten supports to pipes, ducts, mechanical equipment, or conduit.
- F. Install multiple conduit runs on common hangers.
- G. Supports:
  - 1. Fabricate supports from structural steel or formed steel channel. Install hexagon head bolts to present neat appearance with adequate strength and rigidity. Install spring lock washers under nuts.
  - 2. Install surface mounted cabinets and panelboards with minimum of four anchors.
  - 3. In wet and damp locations install steel channel supports to stand cabinets and panelboards 1 inch off wall.
  - 4. Support vertical conduit at every other floor.

### 3.4 INSTALLATION - FIRESTOPPING

- A. Install material at fire rated construction perimeters and openings containing penetrating sleeves, piping, ductwork, conduit and other items, requiring firestopping.
- B. Apply primer where recommended by manufacturer for type of firestopping material and substrate involved, and as required for compliance with required fire ratings.
- C. Apply firestopping material in sufficient thickness to achieve required fire and smoke rating.

- D. Compress fibered material to maximum 40 percent of its uncompressed size.
- E. Fire Rated Surface:
  - 1. Seal opening at floor, wall, partition, ceiling, and roof as follows:
    - a. Install sleeve through opening and extending beyond minimum of 1 inch on both sides of building element.
    - b. Size sleeve allowing minimum of 1 inch void between sleeve and building element.
    - c. Pack void with backing material.
    - d. Seal ends of sleeve with UL listed fire resistive silicone compound to meet fire rating of structure penetrated.
  - 2. Where cable tray and conduit penetrates fire rated surface, install firestopping product in accordance with manufacturer's instructions.
- F. Non-Rated Surfaces:
  - 1. Seal opening through non-fire rated wall, partition floor, ceiling, and roof opening as follows:
    - a. Install sleeve through opening and extending beyond minimum of 1 inch on both sides of building element.
    - b. Size sleeve allowing minimum of 1 inch void between sleeve and building element.
    - c. Install type of firestopping material recommended by manufacturer.
  - 2. Install escutcheons, floor plates or ceiling plates where conduit, penetrates non-fire rated surfaces in occupied spaces. Occupied spaces include rooms with finished ceilings and where penetration occurs below finished ceiling.
  - 3. Exterior wall openings below grade: Assemble rubber links of mechanical seal to size of conduit and tighten in place, in accordance with manufacturer's instructions.
  - 4. Interior partitions: Seal pipe penetrations at computer rooms, telecommunication rooms and data rooms. Apply sealant to both sides of penetration to completely fill annular space between sleeve and conduit.

### 3.5 INSTALLATION - EQUIPMENT BASES AND SUPPORTS

- A. Provide housekeeping pads of concrete, minimum 3-1/2 inches thick and extending 6 inches beyond supported equipment.
- B. Using templates furnished with equipment, install anchor bolts, and accessories for mounting and anchoring equipment.
- C. Construct supports of steel members. Brace and fasten with flanges bolted to structure.

### 3.6 INSTALLATION - SLEEVES

- A. Exterior watertight entries: Seal with adjustable interlocking rubber links.
- B. Conduit penetrations not required to be watertight: Sleeve and fill with silicon foam.
- C. Set sleeves in position in forms. Provide reinforcing around sleeves.
- D. Size sleeves large enough to allow for movement due to expansion and contraction. Provide for continuous insulation wrapping.
- E. Extend sleeves through floors 1 inch above finished floor level. Caulk sleeves.

- F. Where conduit or raceway penetrates floor, ceiling, or wall, close off space between conduit or raceway and adjacent work with stuffing, fire stopping or insulation and caulk airtight. Provide close fitting metal collar or escutcheon covers at both sides of penetration.
- G. Install chrome plated steel escutcheons at finished surfaces.

3.7 FIELD QUALITY CONTROL

- A. Inspect installed firestopping for compliance with specifications and submitted schedule.

3.8 CLEANING

- A. Clean adjacent surfaces of firestopping materials.

3.9 PROTECTION OF FINISHED WORK

- A. Protect adjacent surfaces from damage by material installation.

END OF SECTION 260529

SECTION 260533 - RACEWAY AND BOXES FOR ELECTRICAL SYSTEMS

PART 1 - GENERAL

1.1 SUMMARY

- A. Section includes conduit and tubing, surface raceways, wireways, outlet boxes, pull and junction boxes, and handholes.
- B. Related Sections:
  - 1. Section 260526 - Grounding and Bonding for Electrical Systems.
  - 2. Section 260529 - Hangers and Supports for Electrical Systems.
  - 3. Section 260553 - Identification for Electrical Systems.
  - 4. Section 262716 - Electrical Cabinets and Enclosures.
  - 5. Section 262726 - Wiring Devices.
  - 6. Section 270533 - Conduits and Backboxes for Communications Systems.
  - 7. Section 270536 - Cable Trays for Communications Systems.
  - 8. Section 280528.33 - Conduits and Backboxes for Electronic Safety and Security.

1.2 UNIT PRICE - MEASUREMENT AND PAYMENT

- A. Raceway:
  - 1. Basis of Measurement: By linear foot.
  - 2. Basis of Payment: Includes materials, delivery, handling, and installing.
- B. Boxes:
  - 1. Basis of Measurement: By cubic foot.
  - 2. Basis of Payment: Includes materials, delivery, handling, and installing.

1.3 REFERENCES

- A. American National Standards Institute:
  - 1. ANSI C80.1 - Rigid Steel Conduit, Zinc Coated.
  - 2. ANSI C80.3 - Specification for Electrical Metallic Tubing, Zinc Coated.
  - 3. ANSI C80.5 - Aluminum Rigid Conduit - (ARC).
- B. National Electrical Manufacturers Association:
  - 1. NEMA 250 - Enclosures for Electrical Equipment (1000 Volts Maximum).
  - 2. NEMA FB 1 - Fittings, Cast Metal Boxes, and Conduit Bodies for Conduit and Cable Assemblies.
  - 3. NEMA OS 1 - Sheet Steel Outlet Boxes, Device Boxes, Covers, and Box Supports.
  - 4. NEMA OS 2 - Nonmetallic Outlet Boxes, Device Boxes, Covers, and Box Supports.
  - 5. NEMA RN 1 - Polyvinyl Chloride (PVC) Externally Coated Galvanized Rigid Steel Conduit and Intermediate Metal Conduit.
  - 6. NEMA TC 2 - Electrical Polyvinyl Chloride (PVC) Tubing and Conduit.
  - 7. NEMA TC 3 - PVC Fittings for Use with Rigid PVC Conduit and Tubing.



#### 1.4 SYSTEM DESCRIPTION

- A. Raceway and boxes located as indicated on Drawings, and at other locations required for splices, taps, wire pulling, equipment connections, and compliance with regulatory requirements. Raceway and boxes are shown in approximate locations unless dimensioned. Provide raceway to complete wiring system.
- B. Underground: Provide Schedule 40 PVC. Provide nonmetallic handholes.
- C. Underground MV feeders: Provide Schedule 40 PVC encased in 3" minimum of red concrete unless directionally bored. Conduit for directional bores shall be continuous Schedule 80 HDPE coiled in reels for direct burial service. There shall be no splices in directionally bored conduit.
- D. In or Under Slab on Grade: Provide Schedule 40 PVC.
- E. Outdoor Locations, Above Grade: Provide galvanized rigid steel conduit with threaded fittings. Provide galvanized rigid steel outlet, pull, and junction boxes.
- F. Embedded in or run through concrete Slab Above Grade: Provide galvanized rigid steel with threaded fittings.
- G. Wet Locations: Provide Schedule 40 PVC. Provide nonmetallic outlet, junction, and pull boxes. Provide flush mounting outlet box in finished areas.
- H. Damp Locations: Provide galvanized rigid steel. Provide galvanized rigid steel outlet with threaded fittings, junction, and pull boxes. Provide flush mounting outlet box in finished areas.
- I. Concealed Dry Locations: Provide electrical metallic tubing (EMT) with compression type fittings. Set screw fittings shall not be used. Provide sheet-metal boxes. Provide flush mounting outlet box in finished areas. Provide hinged enclosure for large pull boxes.
- J. Exposed Dry Locations: electrical metallic tubing (EMT) with compression type fittings. Provide sheet-metal boxes. Provide flush mounting outlet box in finished areas. Provide hinged enclosure for large pull boxes.
- K. Provide an insulated bushing on the ends of all conduits 1" size and larger.
- L. Conduit connections to outdoor enclosures shall be watertight with listed weatherproof hubs, not with only locknuts and shall be made on the bottom or sides of the enclosure (no top penetrations).
- M. Conduits exposed in the Outdoor Court Seating Structure (both levels) which is exterior by protected from the weather may be EMT.

#### 1.5 DESIGN REQUIREMENTS

- A. Minimum Raceway Size: 3/4 inch unless otherwise specified.

#### 1.6 SUBMITTALS

- A. Product Data: Submit for the following:
  - 1. Flexible metal conduit.
  - 2. Liquidtight flexible metal conduit.
  - 3. Nonmetallic conduit.
  - 4. Flexible nonmetallic conduit.

5. Nonmetallic tubing.
6. Raceway fittings.
7. Conduit bodies.
8. Surface raceway.
9. Wireway.
10. Pull and junction boxes.
11. Handholes.

- B. Manufacturer's Installation Instructions: Submit application conditions and limitations of use stipulated by Product testing agency specified under Regulatory Requirements. Include instructions for storage, handling, protection, examination, preparation, and installation of Product.

#### 1.7 CLOSEOUT SUBMITTALS

- A. Project Record Documents:
1. Record actual routing of conduits larger than 2 inch.
  2. Record actual locations and mounting heights of outlet, pull, and junction boxes.

#### 1.8 DELIVERY, STORAGE, AND HANDLING

- A. Protect conduit from corrosion and entrance of debris by storing above grade. Provide appropriate covering.
- B. Protect PVC conduit from sunlight.

#### 1.9 COORDINATION

- A. Coordinate mounting heights, orientation and locations of outlets mounted above counters, benches, and backsplashes.

### PART 2 - PRODUCTS

#### 2.1 METAL CONDUIT

- A. Manufacturers:
1. Carlon Electrical Products.
  2. Hubbell Wiring Devices
  3. Thomas & Betts Corp.
- B. Rigid Steel Conduit: ANSI C80.1.
- C. Rigid Aluminum Conduit: ANSI C80.5.
- D. Fittings and Conduit Bodies: NEMA FB 1; material to match conduit.

#### 2.2 FLEXIBLE METAL CONDUIT

- A. Manufacturers:

1. Carlon Electrical Products.
2. Hubbell Wiring Devices
3. Thomas & Betts Corp.

B. Product Description: Interlocked aluminum construction.

C. Fittings: NEMA FB 1.

### 2.3 LIQUIDTIGHT FLEXIBLE METAL CONDUIT

A. Manufacturers:

1. Carlon Electrical Products.
2. Hubbell Wiring Devices
3. Thomas & Betts Corp.

B. Product Description: Interlocked aluminum construction with PVC jacket.

C. Fittings: NEMA FB 1.

### 2.4 ELECTRICAL METALLIC TUBING (EMT)

A. Manufacturers:

1. Carlon Electrical Products.
2. Hubbell Wiring Devices
3. Thomas & Betts Corp.

B. Product Description: ANSI C80.3; galvanized tubing.

C. Fittings and Conduit Bodies: NEMA FB 1; steel type.

### 2.5 NONMETALLIC CONDUIT

A. Manufacturers:

1. Carlon Electrical Products.
2. Hubbell Wiring Devices
3. Thomas & Betts Corp.

B. Product Description: NEMA TC 2; Schedule 40 PVC.

C. Fittings and Conduit Bodies: NEMA TC 3.

### 2.6 SURFACE METAL RACEWAY

A. Manufacturers:

1. Carlon Electrical Products.
2. Hubbell Wiring Devices
3. Thomas & Betts Corp.

B. Product Description: Sheet metal channel with fitted cover, suitable for use as surface metal raceway.

- C. Size: as required.
- D. Finish: Gray enamel.
- E. Fittings, Boxes, and Extension Rings: Furnish manufacturer's standard accessories; match finish on raceway.

## 2.7 WIREWAY

- A. Manufacturers:
  - 1. Carlon Electrical Products.
  - 2. Hubbell Wiring Devices
  - 3. Thomas & Betts Corp.
- B. Product Description: Oiltight and dust-tight type wireway.
- C. Knockouts: Manufacturer's standard.
- D. Size: length and size as indicated on Drawings.
- E. Cover: Screw cover with full gaskets.
- F. Connector: Flanged.
- G. Fittings: Lay-in type with drip shield.
- H. Finish: Rust inhibiting primer coating with gray enamel finish.

## 2.8 OUTLET BOXES

- A. Manufacturers:
  - 1. Carlon Electrical Products.
  - 2. Hubbell Wiring Devices
  - 3. Thomas & Betts Corp.
- B. Sheet Metal Outlet Boxes: NEMA OS 1, galvanized steel.
  - 1. Luminaire and Equipment Supporting Boxes: Rated for weight of equipment supported; furnish 1/2 inch male fixture studs where required.
  - 2. Concrete Ceiling Boxes: Concrete type.
  - 3. Outlet boxes shall have the required volume capacity for the number of conductors and devices housed.
  - 4. Outlet boxes in concealed conduit systems shall be flush mounted, galvanized steel of sufficient size to accommodate the devices contained and be securely fastened to wall or ceiling framing for a rigid installation.
  - 5. Outlet boxes for lighting fixtures shall be 4" octagon, galvanized steel, not less than 1-1/2" deep, with fixture stud fastened through from the back of the box.
  - 6. Outlet boxes for receptacles and switches shall be not less than 4" square and 1-1/2" deep.
  - 7. Outlet boxes for data and communications outlets shall be deep type, not less than 4" square and 2-1/4" deep.
- C. Nonmetallic Outlet Boxes: NEMA OS 2.

- D. Cast Boxes: NEMA FB 1, Type FD, cast ferrous alloy. Furnish gasketed cover by box manufacturer. Furnish threaded hubs.
  - 1. Outlet boxes for switches and receptacles in exposed conduit systems shall be cast iron or aluminum, factory finished, Type FS or FD, with number of gangs as required.
- E. Wall Plates for Finished Areas: As specified in Section 262726.
- F. Wall Plates for Unfinished Areas: Furnish gasketed cover.
- G. Device boxes shall have box extension rings with the required number of gang openings and with a depth to match the wall finish material so that the face of the box extension is exactly flush with wall face.
- H. Outlet boxes shall not be installed back to back in walls or floors.

## 2.9 PULL AND JUNCTION BOXES

- A. Manufacturers:
  - 1. Carlon Electrical Products.
  - 2. Hubbell Wiring Devices
  - 3. Thomas & Betts Corp.
- B. Sheet Metal Boxes: NEMA OS 1, galvanized steel.
- C. Hinged Enclosures: As specified in Section 262716.
- D. Surface Mounted Cast Metal Box: NEMA 250, Type 4X; flat-flanged, surface mounted junction box:
  - 1. Material: Cast aluminum.
  - 2. Cover: Furnish with ground flange, neoprene gasket, and stainless steel cover screws.
- E. In-Ground Cast Metal Box: NEMA 250, Type 6, outside flanged, recessed cover box for flush mounting:
  - 1. Material: composite, fiberglass.
  - 2. Cover: Nonskid cover with neoprene gasket and stainless steel cover screws.
  - 3. Cover Legend: "ELECTRIC".
- F. Fiberglass Concrete composite Handholes: Die-molded, glass-fiber concrete composite hand holes:
  - 1. Cable Entrance: Pre-cut 6 inch x 6 inch cable entrance at center bottom of each side.
  - 2. Cover: Glass-fiber concrete composite, weatherproof cover with nonskid finish.

## PART 3 - EXECUTION

### 3.1 EXAMINATION

- A. Verify outlet locations and routing and termination locations of raceway prior to rough-in.

### 3.2 INSTALLATION

- A. Install raceway and boxes in accordance with NECA "Standard of Installation".
- B. Ground and bond raceway and boxes in accordance with Section 260526.

- C. Fasten raceway and box supports to structure and finishes in accordance with Section 260529.
- D. Identify raceway and boxes in accordance with Section 260553.
- E. Arrange raceway and boxes to maintain headroom and present neat appearance.

### 3.3 INSTALLATION - RACEWAY

- A. Raceway routing is shown in approximate locations unless dimensioned. Route to complete wiring system.
- B. Arrange raceway supports to prevent misalignment during wiring installation.
- C. Support raceway using coated steel or malleable iron straps, lay-in adjustable hangers, clevis hangers, and split hangers.
- D. Group related raceway; support using conduit rack. Construct rack using steel channel specified in Section 260529 ; provide space on each for 25 percent additional raceways.
- E. Do not support raceway with wire or perforated pipe straps. Remove wire used for temporary supports
- F. Do not attach raceway to ceiling support wires or other piping systems.
- G. Construct wireway supports from steel channel specified in Section 260529.
- H. Route exposed raceway parallel and perpendicular to walls.
- I. Route raceway installed above accessible ceilings parallel and perpendicular to walls.
- J. Route conduit in and under slab from point-to-point.
- K. Maximum Size Conduit in Slab Above Grade: 3/4 inch. Do not cross conduits in slab larger than 1/2 inch.
- L. Maintain clearance between raceway and piping for maintenance purposes.
- M. Maintain 12 inch clearance between raceway and surfaces with temperatures exceeding 104 degrees F.
- N. Cut conduit square using saw or pipe cutter; de-burr cut ends.
- O. Bring conduit to shoulder of fittings; fasten securely.
- P. Join nonmetallic conduit using cement as recommended by manufacturer. Wipe nonmetallic conduit dry and clean before joining. Apply full even coat of cement to entire area inserted in fitting. Allow joint to cure for minimum 20 minutes.
- Q. Install conduit hubs to fasten conduit to sheet metal boxes in damp and wet locations and to cast boxes.
- R. Install no more than equivalent of three 90 degree bends between boxes. Install conduit bodies to make sharp changes in direction, as around beams. Install hydraulic one-shot bender to fabricate bends in metal conduit larger than 2 inch size.
- S. Avoid moisture traps; install junction box with drain fitting at low points in conduit system.

- T. Install fittings to accommodate expansion and deflection where raceway crosses expansion joints.
- U. Install suitable pull string or cord in each empty raceway except sleeves and nipples.
- V. Install suitable caps to protect installed conduit against entrance of dirt and moisture.
- W. Surface Raceway: Install flat-head screws, clips, and straps to fasten raceway channel to surfaces; mount plumb and level. Install insulating bushings and inserts at connections to outlets and corner fittings.
- X. Close ends and unused openings in wireway.
- Y. For recessed light fixtures, provide a maximum of 4 feet of steel constructed flexible metal conduit or MC cable between the last branch circuit wiring junction box and the fixture. Wiring in flexible conduit or MC cable shall be #12 size minimum with a green equipment ground wire. Flexible conduit to each fixture shall be from a hard conduit connected junction box to the fixture. Looping from fixture to fixture with flexible conduit or MC cable is not allowed.

### 3.4 INSTALLATION - BOXES

- A. Install wall mounted boxes at elevations to accommodate mounting heights as indicated on Drawings.
- B. Adjust box location up to 10 feet prior to rough-in to accommodate intended purpose.
- C. Orient boxes to accommodate wiring devices oriented as specified in Section 262726.
- D. Install pull boxes and junction boxes above accessible ceilings and in unfinished areas only.
- E. In Accessible Ceiling Areas: Install outlet and junction boxes no more than 6 inches from ceiling access panel or from removable recessed luminaire.
- F. Locate flush mounting box in masonry wall to require cutting of masonry unit corner only. Coordinate masonry cutting to achieve neat opening.
- G. Do not install flush mounting box back-to-back in walls; install with minimum 6 inches separation. Install with minimum 24 inches separation in acoustic rated walls.
- H. Secure flush mounting box to interior wall and partition studs. Accurately position to allow for surface finish thickness.
- I. Install stamped steel bridges to fasten flush mounting outlet box between studs.
- J. Install flush mounting box without damaging wall insulation or reducing its effectiveness.
- K. Install adjustable steel channel fasteners for hung ceiling outlet box.
- L. Do not fasten boxes to ceiling support wires or other piping systems.
- M. Support boxes independently of conduit.
- N. Install gang box where more than one device is mounted together. Do not use sectional box.
- O. Install gang box with plaster ring for single device outlets.

3.5 INTERFACE WITH OTHER PRODUCTS

- A. Install conduit to preserve fire resistance rating of partitions and other elements, using materials and methods as required.
- B. Route conduit through roof openings for piping and ductwork or through suitable roof jack with pitch pocket.
- C. All penetrations made in walls, floors or other building partitions for raceways, cables, equipment, etc. including penetrations in concealed areas (ceilings, chases, etc.) shall be either bore drilled or core drilled as required. Bust/poke-throughs with hand tools shall not be used to penetrate and will not be accepted. Any bust/poke through penetrations will be patched and redone with a drilled penetration by the contractor. All penetration work shall be neat and debris cleaned up after completion. Any walls or ceilings damaged due to penetration work shall be repaired. Any penetrations through walls or ceilings in visible finished areas shall be patched and painted, as required, to restore the finish around the penetration to its original condition.
- D. Locate outlet boxes to allow luminaires positioned as indicated on reflected ceiling plan.
- E. Align adjacent wall mounted outlet boxes for switches, thermostats, and similar devices.

3.6 ADJUSTING

- A. Adjust flush-mounting outlets to make front flush with finished wall material.
- B. Install knockout closures in unused openings in boxes.

3.7 CLEANING

- A. Clean interior of boxes to remove dust, debris, and other material.
- B. Clean exposed surfaces and restore finish.

END OF SECTION 260533



SECTION 260923 - LIGHTING CONTROL DEVICES

PART 1 – GENERAL

1.1 SUMMARY

- A. Section Includes:
  - 1. Lighting contactors.
  - 2. Occupancy sensors.
  - 3. Photocells.
  
- B. Related Sections:
  - 1. Section 260519 – Low-Voltage Electrical Power Conductors and Cables.
  - 2. Section 260533 – Raceway and Boxes for Electrical Systems: Product requirements for raceway and boxes for placement by this section.
  - 3. Section 260553 – Identification for Electrical Systems: Product requirements for electrical identification items for placement by this section.
  - 4. Section 262416 – Panelboards.
  - 5. Section 262726 – Wiring Devices: Product requirements for wiring devices for placement by this section.

1.2 REFERENCES

- A. National Electrical Manufacturers Association:
  - 1. NEMA FU 1 – Low Voltage Cartridge Fuses.
  - 2. NEMA ICS 2 – Industrial Control and Systems: Controllers, Contractors, and Overload Relays, Rated Not More Than 2000 Volts AC or 750 Volts DC.
  - 3. NEMA ICS 4 – Industrial Control and Systems: Terminal Blocks.
  - 4. NEMA ICS 5 – Industrial Control and Systems: Control Circuit and Pilot Devices.
  - 5. NEMA ICS 6 – Industrial Control and Systems: Enclosures.
  - 6. NEMA KS 1 – Enclosed and Miscellaneous Distribution Equipment Switches (600 Volts Maximum).

1.3 SYSTEM DESCRIPTION

- A. Where indicated on drawings or required by applicable code, provide automatic shutoff for lighting inside building larger than 5000 square feet. Control shutoff by method conforming to ICC IECC.
  
- B. Where indicated on drawings or required by applicable code, provide automatic shutoff for lighting outside building. Control shutoff by method conforming to ICC IECC.

1.4 SUBMITTALS

- A. Shop Drawings: Indicate dimensioned drawings of lighting control system components and accessories.
  - 1. One Line Diagram: Indicating system configuration indicating panels, number and type of switches or devices.
  - 2. Include typical wiring diagrams for each component.
  
- B. Product Data: Submit manufacturer's standard product data for each system component.

- C. Manufacturer's Installation Instructions: Submit for each system component.
- D. Manufacturer's Certificate: Certify Products meet or exceed specified requirements.

#### 1.5 CLOSEOUT SUBMITTALS

- A. Project Record Documents: Record the following information:
  - 1. Actual locations of components and record circuiting and switching arrangements.
  - 2. Wiring diagrams reflecting field installed conditions with identified and numbered, system components and devices.
- B. Operation and Maintenance Data:
  - 1. Submit replacement parts numbers.
  - 2. Submit manufacturer's published installation instructions and operating instructions.
  - 3. Recommended renewal parts list.

#### 1.6 QUALITY ASSURANCE

- A. Perform Work in accordance with State, Local Municipality and the National Electric Code.

#### 1.7 QUALIFICATIONS

- A. Manufacturer: Company specializing in manufacturing products specified in this section with minimum three years experience.

#### 1.8 DELIVERY, STORAGE, AND HANDLING

- A. Accept components on site in manufacturer's packaging. Inspect for damage.
- B. Protect components by storing in manufacturer's containers indoor protected from weather.

#### 1.9 WARRANTY

- A. Furnish five year manufacturer warranty for components.

#### 1.10 EXTRA MATERIALS

- A. Furnish two of each switch type.
- B. Furnish two of each occupancy sensor type.

PART 2 – PRODUCTS

2.1 LIGHTING CONTACTORS

- A. Furnish materials in accordance with State, Local Municipality and the National Electric Code.
- B. Product Description: NEMA ICS 2, magnetic lighting contactor.
- C. Configuration: Electrically held.
- D. Coil Operating Voltage: 120 volts, 60 Hertz.
- E. Poles: To match circuit configuration and control function.
- F. Contact Rating: Conductor overcurrent protection, considering derating for continuous loads.
- G. Accessories:
  - 1. Selector Switch: ON/OFF/AUTOMATIC function, with rotary action.
  - 2. Indicating Light: Green lens, transformer type, with led lamp.
  - 3. Auxiliary Contacts: One, field convertible in addition to seal-in contact.
  - 4. Relays: NEMA ICS 2, 30Ampere.
- H. Enclosure: NEMA ICS 6, to meet conditions. Fabricate enclosure from steel finished with manufacturer's standard gray enamel aluminum.
  - 1. Interior Dry Locations: Type 1.
  - 2. Exterior Locations: Type 3R.

2.2 OCCUPANCY SENSOR

- A. Furnish materials in accordance with State, Local Municipality and the National Electric Code.
- B. Compatible with modular relay panels. Capable of being wired directly to Class 2 or 2P wiring without auxiliary components or devices.
- C. Separate sensitivity and time delay adjustments with LED indication of sensed movement. User adjustable time-delay: 30 seconds to 30 minutes.
- D. Furnish with manual override.
- E. Operation: Silent.
- F. Room Sensors: As indicated on Drawings and appropriate for the space.
- G. Corridor and Hallway Sensors:
  - 1. Capable of detecting motion 14 feet wide and 80 feet long with one sensor mounted 10 feet above floor.
  - 2. Capable of detecting motion in warehouse aisle 10 feet wide and 60 feet long or 100 feet long when mounted 22 feet above floor.
  - 3. Capable of being wired in master-slave configuration to extend area of coverage.

## 2.3 PHOTOCELLS

- A. Furnish materials in accordance with State, Local Municipality and the National Electric Code.
- B. General: Consist of sensor mounted as indicated on Drawings with separate control-calibration module. Sensor connected to control-calibration module via single shielded conductor with maximum distance of 500 feet. Control unit powered by 24 VAC.
- C. Control-Calibration Module: Furnish with the following:
  - 1. Capable of being switched between 4 measurement ranges.
  - 2. Separate trip points for high and low response settings.
  - 3. Momentary contact device to override photocell relays.
  - 4. Three minute time delay between switching outputs to avoid nuisance tripping.
- D. Sensor Devices: Each sensor employs photo diode technology to allow linear response to daylight within illuminance range.
  - 1. Exterior Lighting: Hooded sensor, horizontally mounted, employing flat lens, and working range 1-10 footcandles in 10 percent increments. Entire sensor encased in optically clear epoxy resin.
  - 2. Indoor Lighting: Sensor with Fresnel lens providing for 60 degree cone shaped response area to monitor indoor office lighting levels.
  - 3. Atriums: Sensor with translucent dome with 180 degree field of view and respond in range of 100-1,000 footcandles.

## 2.4 PHOTOCCELL CONTROL UNIT

- A. Furnish materials in accordance with State, Local Municipality and the National Electric Code.
- B. Product Description: Photodiode control unit with PHOTOCCELL ENABLE and MASTER OVERRIDE inputs for remote control, 3 minute time delay, and with selectable ranges for 1-10 footcandle and 10-100 footcandle.

## PART 3 - EXECUTION

### 3.1 INSTALLATION

- A. Mount occupancy sensors, and photocells as indicated on Drawings.
- B. Install wiring in accordance with Section 260519.
- C. Use only properly color coded, stranded wire. Install wire sizes as indicated on Drawings. Install wire in conduit in accordance with Section 260533.
- D. Label each low voltage wire clearly indicating connecting relay panel. Refer to Section 260553.
- E. Mount relay as indicated on Drawings. Wire numbered relays in panel to control power to each load. Install relays to be accessible. Allow space around relays for ventilation and circulation of air.
- F. Identify power wiring with circuit breaker number controlling load. When multiple circuit breaker panels are feeding into relay panel, label wires to indicate originating panel designation.
- G. Label each low voltage wire with relay number at each switch or sensor.

3.2 MANUFACTURER'S FIELD SERVICES

- A. Furnish services for minimum of one day for check, test, and start-up. Perform the following services:
  - 1. Check installation of panelboards.
  - 2. Test operation of remote controlled devices.
  - 3. Repair or replace defective components.

3.3 ADJUSTING

- A. Test each system component after installation to verify proper operation.
- B. Test relays, contactors, and switches after installation to confirm proper operation.
- C. Confirm correct loads are recorded on directory card in each panel.

3.4 DEMONSTRATION

- A. Demonstrate operation of the following system components:
  - 1. Operation of occupancy sensors.
  - 2. Operation of photocell.
- B. Furnish 4 hours to instruct Owner's personnel in operation and maintenance of system. Schedule training with Owner, provide at least 7 days notice to Architect/Engineer of training date.

END OF SECTION 260923

SECTION 262726 - WIRING DEVICES

PART 1 - GENERAL

1.1 SUMMARY

- A. Section includes wall switches; wall dimmers; receptacles; multi-outlet assembly; and device plates and decorative box covers.
- B. Related Sections:
  - 1. Section 260533 - Raceway and Boxes for Electrical Systems: Outlet boxes for wiring devices.

1.2 REFERENCES

- A. National Electrical Manufacturers Association:
  - 1. NEMA WD 1 - General Requirements for Wiring Devices.
  - 2. NEMA WD 6 - Wiring Devices-Dimensional Requirements.

1.3 SUBMITTALS

- A. Product Data: Submit manufacturer's catalog information showing dimensions, colors, and configurations.

1.4 QUALIFICATIONS

- A. Manufacturer: Company specializing in manufacturing products specified in this section with minimum three years experience.

1.5 EXTRA MATERIALS

- A. Furnish two of each style, size, and finish wall plate.

PART 2 - PRODUCTS

2.1 WALL SWITCHES

- A. Manufacturers; Wall Switches:
  - 1. Hubbell.
  - 2. Cooper.
  - 3. Leviton.
  - 4. Lutron.
  - 5. Pass & Seymour.

- B. Product Description: NEMA WD 1, Heavy-Duty, AC only general-use snap switch.
- C. Body and Handle: White plastic with toggle handle.
- D. Ratings:
  - 1. Voltage: 120-277 volts, AC.
  - 2. Current: 20 amperes.

## 2.2 RECEPTACLES

- A. Manufacturers:
  - 1. Hubbell.
  - 2. Cooper.
  - 3. Pass & Seymour.
- B. Product Description: NEMA WD 1, Heavy-duty general use receptacle.
- C. Device Body: White plastic.
- D. Configuration: NEMA WD 6, type.
- E. Convenience Receptacle: Type 5-20.
- F. GFCI Receptacle: Convenience receptacle with integral ground fault circuit interrupter to meet regulatory requirements.

## 2.3 WALL PLATES

- A. Manufacturers:
  - 1. Hubbell.
  - 2. Cooper.
  - 3. Pass & Seymour.
- B. Decorative Cover Plate: White, smooth lined nylon.
- C. Weatherproof Cover Plate: Gasketed, non-metallic type plate with upward operating self-closing spring door cover.
- D. Provide permanent label on the coverplate with the panel designation and circuit number of the circuit serving the device. Labeling shall use laminated, scratch resistant, 1/2" wide polyester adhesive backed tape, black letters on clear background, Panduit LS4M or Brother P-Touch labeling system or equal system.

## PART 3 - EXECUTION

### 3.1 EXAMINATION

- A. Verify outlet boxes are installed at proper height.

- B. Verify wall openings are neatly cut and completely covered by wall plates.
- C. Verify branch circuit wiring installation is completed, tested, and ready for connection to wiring devices.

### 3.2 PREPARATION

- A. Clean debris from outlet boxes.

### 3.3 INSTALLATION

- A. Install in accordance with NECA "Standard of Installation".
- B. Install devices plumb and level.
- C. Wiring devices shall mount securely to the device backboxes with no play.
- D. For receptacles securely attach the devices yoke to the back box or back box to wall structure such that there is minimal movement of the device when a plug is inserted or removed and the device is not dependent on the plate to keep it in position. For instances where the back box is loose, secure the back box to the wall structure. For instances where the mounting ears of the device do not touch the box ring due to improper extension ring depth and do not securely sit on the wall finish due to incorrect wall opening size, where boxes are set back more than ¼" from the face of the finished wall/ceiling provide an adjustable box extender ring (Bridgeport BXE series or approved equal). Where boxes are set back less than ¼" from the face of the finished wall/ceiling provide a device leveler and retainer (Caddy RLC or approved equal). Provide any other work and accessories to provide rigid, level installation of the device to the box.
- E. Install switches with OFF position down.
- F. Install receptacles with grounding pole on bottom.
- G. Connect wiring device grounding terminal to outlet box with bonding jumper and branch circuit equipment grounding conductor.
- H. Install wall plates on flush mounted switches, receptacles, and blank outlets.
- I. Install decorative plates on switch, receptacle, and blank outlets in finished areas.
- J. Connect wiring devices by wrapping solid conductor around screw terminal. Install stranded conductor for branch circuits 10 AWG and smaller. When stranded conductors are used in lieu of solid, use crimp on fork terminals for device terminations. Do not place bare stranded conductors directly under device screws.
- K. Install galvanized steel plates on outlet boxes and junction boxes in unfinished areas, above accessible ceilings, and on surface mounted outlets.

### 3.4 INTERFACE WITH OTHER PRODUCTS

- A. Coordinate locations of outlet boxes provided under Section 260533 to obtain mounting heights as specified and as indicated on drawings.



- B. Install wall switch **48 inches** above finished floor or as specified on drawings.
- C. Install convenience receptacle **18 inches** above finished floor or as specified on drawings.
- D. Install convenience receptacle **6 inches** above back splash of counter or as specified on drawings.

3.5 FIELD QUALITY CONTROL

- A. Inspect each wiring device for defects.
- B. Operate each wall switch with circuit energized and verify proper operation.
- C. Verify each receptacle device is energized.
- D. Test each receptacle device for proper polarity.
- E. Test each GFCI receptacle device for proper operation.

3.6 ADJUSTING

- A. Adjust devices and wall plates to be flush and level.

3.7 CLEANING

- A. Clean exposed surfaces to remove splatters and restore finish.

END OF SECTION 262726

SECTION 262819 - ENCLOSED SWITCHES

PART 1 – GENERAL

1.1 SUMMARY

- A. Section Includes:
  - 1. Fusible.
  - 2. Nonfusible switches.
- B. Related Requirements:
  - 1. Section 260529 – Hangers and Supports for Electrical Systems.
  - 2. Section 260553 – Identification for Electrical Systems.

1.2 REFERENCE STANDARDS

- A. National Electrical Manufacturers Association:
  - 1. NEMA FU 1 – Low Voltage Cartridge Fuses.
  - 2. NEMA KS 1 – Enclosed and Miscellaneous Distribution Equipment Switches (600 Volts Maximum).
- B. International Electrical Testing Association:
  - 1. NETA ATS – Acceptance Testing Specifications for Electrical Power Distribution Equipment and Systems.

1.3 SUBMITTALS

- A. Product Data: Submit switch ratings and enclosure dimensions.

1.4 CLOSEOUT SUBMITTALS

- A. Project Record Documents: Record actual locations of enclosed switches and ratings of installed fuses.

1.5 QUALIFICATIONS

- A. Manufacturer: Company specializing in manufacturing products specified in this section with minimum three years experience.

PART 2 - PRODUCTS

2.1 FUSIBLE SWITCH ASSEMBLIES

- A. Description: NEMA KS 1, Type HD, enclosed load interrupter knife switch. Handle lockable in OFF position. Positive quick make, quick break operating mechanisms.

- B. Operation:
  - 1. Switch Ratings
    - a. Switch Rating: Horsepower rated for AC or DC as indicated on Drawings.
    - b. Short Circuit Current Rating: UL listed for 200,000 rms symmetrical amperes when used with or protected by Class R or Class J fuses (30-600 ampere switches employing appropriate fuse rejection schemes)..
- C. Materials:
  - 1. Fuse clips: Designed to accommodate NEMA FU 1, Class RK5 fuses.
  - 2. Enclosure: NEMA KS 1, to meet conditions. Fabricate enclosure from steel finished with manufacturer's standard gray enamel aluminum.
    - a. Interior Dry Locations: Type 1.
    - b. Exterior Locations: Type 3R.
  - 3. Service Entrance: Switches identified for use as service equipment are to be labeled for this application. Furnish solid neutral assembly and equipment ground bar.
  - 4. Furnish switches with entirely copper current carrying parts.
  - 5. Provide one spare set of fuses (3 minimum) for each type and size fuse used on the project.

## 2.2 NONFUSIBLE SWITCH ASSEMBLIES

- A. Description: NEMA KS 1, Type HD enclosed load interrupter knife switch. Handle lockable in OFF position. Positive quick make, quick break operating mechanisms.
- B. Operation:
  - 1. Switch Ratings
    - a. Switch Rating: Horsepower rated for AC or DC as indicated on Drawings.
    - b. Short Circuit Current Rating: UL listed for 200,000 rms symmetrical amperes when used with or protected by Class R or Class J fuses (30-600 ampere switches employing appropriate fuse rejection schemes)..
- C. Materials:
  - 1. Enclosure: NEMA KS 1, to meet conditions. Fabricate enclosure from steel finished with manufacturer's standard gray enamel aluminum.
    - a. Interior Dry Locations: Type 1.
    - b. Exterior Locations: Type 3R.
  - 2. Service Entrance: Switches identified for use as service equipment are to be labeled for this application. Furnish solid neutral assembly and equipment ground bar.
  - 3. Furnish switches with entirely copper current carrying parts.

## PART 3 - EXECUTION

### 3.1 INSTALLATION

- A. Install enclosed switches where indicated.
- B. Install enclosed switches plumb. Provide supports in accordance with Section 260529.
- C. Height: 5 feet to operating handle.

- D. Install engraved plastic nameplates in accordance with Section 260553. Engrave nameplates with the equipment served and the panel and circuit number supplying the switch.
- E. Apply adhesive tag on inside door of each fused switch indicating NEMA fuse class and size installed.

3.2 FIELD QUALITY CONTROL

- A. Inspect and test in accordance with NETA ATS, except Section 4.
- B. Perform inspections and tests listed in NETA ATS, Section 7.5.

3.3 CLEANING

- A. Clean existing enclosed switches to remain or to be reinstalled.

END OF SECTION 262819

## SECTION 265100 - INTERIOR LIGHTING

### PART 1 – GENERAL

#### 1.1 SUMMARY

- A. Section includes interior luminaires, lamps, ballasts, and accessories.
- B. Related Sections:
  - 1. Section 260526 – Grounding and Bonding for Electrical Systems.
  - 2. Section 260533 – Raceway and Boxes for Electrical Systems.

#### 1.2 REFERENCES

- A. American National Standards Institute:
  - 1. ANSI C82.1 – American National Standard for Lamp Ballast-Line Frequency Fluorescent Lamp Ballast.
  - 2. ANSI C82.4 – American National Standard for Ballasts-for High-Intensity-Discharge and Low-Pressure Sodium Lamps (Multiple-Supply Type).

#### 1.3 SUBMITTALS

- A. Shop Drawings: Indicate dimensions and components for each luminaire not standard product of manufacturer.
- B. Product Data: Submit dimensions, ratings, and performance data.

#### 1.4 QUALIFICATIONS

- A. Manufacturer: Company specializing in manufacturing products specified in this section with minimum three years experience.

#### 1.5 FIELD MEASUREMENTS

- A. Verify field measurements prior to fabrication.

### PART 2 – PRODUCTS

#### 2.1 INTERIOR LUMINAIRES

- A. Product Description: Complete interior luminaire assemblies, with features, options, and accessories as scheduled.

## 2.2 FLUORESCENT LAMPS

- A. Fluorescent lamps shall be energy efficient type w/ 4100 deg k correlated color temperature. 48" lamps are to be T-8 using manufacturer's premium energy efficient electronic type ballasts. 96" lamps are not to be used.

## 2.3 FLUORESCENT BALLASTS

- A. Product Description: Electronic ballast rapid start less than 10 percent THD High-power-factor type electromagnetic ballast certified by Certified Ballast Manufacturers, Inc. to comply with ANSI C82.1, suitable for lamps specified, with voltage to match luminaire voltage.
  1. Operate lamps in instant start mode.
  2. Operate multiple lamps as parallel circuit, operating remaining lamp(s) at full light output upon failure of other lamp(s) on the same ballast.
  3. Individual ballasts specifically designed and UL Listed to operate one, two, three or four lamps of a single fixture as scheduled on the drawings.
  4. Operate lamps at rated lumen output and life specified by the lamp manufacturer.
  5. Operate lamps at a frequency higher than 20 kHz.
  6. Operate at a rated circuit voltage (120 or 277 V) and at an input frequency of 60 Hz, and tolerate +/- 10% sustained voltage variation without damage to the ballast and maintain light output at +/- 10% variation.
  7. Comply with EMI and RFI limits set by FCC (CRF 47 Part 18) for non-consumer applications and not interfere with normal electrical equipment.
  8. Power Factor shall be not less than 0.95.
  9. Lamp Crest Factor shall be 1.7 or less.
  10. Ballast Factor shall be greater than 0.85.
  11. Sound rating shall be "A".
  12. Withstand transients as per ANSI C.62.41 for location Category A.
  13. Ballast shall have internal thermal protection.
  14. Shall be provided with a minimum two (2) year parts and labor warranty.
  15. Ballasts shall be by Advance, Motorola, Universal, Triad, Valmont, or approved equal.

## 2.4 HIGH INTENSITY DISCHARGE (HID) BALLASTS

- A. Product Description: ANSI C82.4, metal halide lamp ballast, suitable for lamp specified, with voltage to match luminaire voltage.

## PART 3 - EXECUTION

### 3.1 INSTALLATION

- A. Each fixture shall be supported independently from the building structure.
- B. Install suspended luminaires using pendants supported from swivel hangers. Install pendant length required to suspend luminaire at indicated height.
- C. Support all luminaires independent of ceiling system.
- D. Locate recessed ceiling luminaires as indicated on reflected ceiling plan.

- E. Install surface mounted luminaires plumb and adjust to align with building lines and with each other. Secure to prevent movement.
- F. Exposed Grid Ceilings: Support surface-mounted luminaires on grid ceiling directly from building structure or Install auxiliary members spanning ceiling grid members to support surface mounted luminaires.
- G. Install recessed luminaires to permit removal from below.
- H. Install recessed luminaires using accessories and firestopping materials to meet regulatory requirements for fire rating.
- I. Install clips to secure recessed grid-supported luminaires in place.
- J. Install wall-mounted luminaires at height as scheduled.
- K. Install accessories furnished with each luminaire.
- L. Connect luminaires to branch circuit outlets provided under Section 260533 using flexible conduit.
- M. Make wiring connections to branch circuit using building wire with insulation suitable for temperature conditions within luminaire.
- N. Install specified lamps in each luminaire.
- O. Ground and bond interior luminaires in accordance with Section 260526.

### 3.2 FIELD QUALITY CONTROL

- A. Operate each luminaire after installation and connection. Inspect for proper connection and operation.

### 3.3 ADJUSTING

- A. Aim and adjust luminaires.

### 3.4 CLEANING

- A. Remove dirt and debris from enclosures.
- B. Clean photometric control surfaces as recommended by manufacturer.
- C. Clean finishes and touch up damage.

### 3.5 PROTECTION OF FINISHED WORK

- A. Relamp luminaires having failed lamps at Substantial Completion.

END OF SECTION 265100

SECTION 283100 – FIRE ALARM

PART 1 GENERAL

1.1. DESCRIPTION:

- A. This section of the specification includes the furnishing, installation, connection and testing of fire alarm equipment required to form a complete, operative, coordinated system. It shall include, but not be limited to, alarm initiating devices, alarm notification appliances, Fire Alarm Control Panel (FACP), auxiliary control devices, annunciators, and wiring as shown on the drawings and specified herein.
- B. The fire alarm system shall comply with requirements of NFPA 72 The National Fire Alarm and Signaling Code- 2010 Edition, and Local Code and Ordinance except as modified and supplemented by this specification. The system shall be electrically supervised and monitor the integrity of all conductors.
- C. The system and its components shall be Underwriters Laboratories, Inc. listed under the appropriate UL testing standard as listed herein for fire alarm applications and the installation and equipment used shall be in compliance with the UL listing.
- E. The installing company shall be licensed by the Contracting Board of the State of Alabama as a Fire Alarm Contractor, hold a Class A License from the State Fire Marshal, and employ an alarm technician certified by NICET with a minimum Level 3 Fire Alarm Technology. The installing contractor shall provide a certificate of factory training in the fire alarm system provided.

1.2. SCOPE:

- A. Provide a complete, non-proprietary, electrically supervised, addressable intelligent, manual and automatic, Supervising Station Fire Alarm System throughout the work area as shown on the drawings. The system will be in compliance with the required and advisory portions of NFPA 72 National Fire Alarm Code, the UL listings or Factory Mutual approvals, the ADA, and recommendations of the equipment manufacturer except as modified herein. The fire alarm system will include manual stations, system smoke detectors, horns, visual alarms, and remote monitoring. The FACP will be capable of handling a minimum of 50 individually identified sensors within the main control panel. Audio visual devices will be provided in all common areas as defined by ADA to include a weatherproof audio visual device one on the exterior of the building at or near the Fire Department Connection for the Sprinkler System. Monitoring shall include supervision of isolation valves and shut off valves for the existing sprinkler system flow and tamper switches. Sprinkler flow shall initiate notification throughout the work area. Activation of tamper switches on the sprinkler system shall annunciate tamper conditions on the work area FACP. Activation of initiating devices in the work area will only provide notification in the work area.
- B. Basic Performance:
  - 1. Alarm, trouble and supervisory signals from all intelligent reporting devices shall be encoded on NFPA Style 4 (Class B) Signaling Line Circuits (SLC).
  - 2. Initiation Device Circuits (IDC) shall be wired Class B (NFPA Style A) as part of an addressable device connected by the SLC Circuit.
  - 3. Notification Appliance Circuits (NAC) shall be wired Class B (NFPA Style Y) as part of an addressable device connected by the SLC Circuit.
  - 4. 5. Alarm signals arriving at the FACP shall not be lost following a primary power failure (or outage) until the



alarm signal is processed and recorded.

C. BASIC SYSTEM FUNCTIONAL OPERATION

When a fire alarm condition is detected and reported by one of the system initiating devices, the following functions shall immediately occur:

1. The system alarm LED on the system display shall flash.
2. A local piezo electric signal in the control panel shall sound.
3. A backlit LCD display shall indicate all information associated with the fire alarm condition, including the type of alarm point and its location within the protected premises.
4. Printing and history storage equipment shall log the information associated each new fire alarm control panel condition, along with time and date of occurrence.
5. All system output programs assigned via control-by-event interlock programming to be activated by the particular point in alarm shall be executed, and the associated system outputs (notification appliances and/or relays) shall be activated.

1.3. SUBMITTALS

A. General:

1. Two copies of all submittals shall be submitted to the Architect/Engineer for review.
2. The contractor shall supply proof that such substitute equipment equals or exceeds the features, functions, performance, and quality of the specified equipment.

B. Shop Drawings:

1. Sufficient information, clearly presented, shall be included to determine compliance with drawings and specifications. Minimum information to be supplied shall comply with requirements in Section 907 of the International Fire Code – 2015 Edition. Shop Drawings shall be to scale.
2. Include manufacturer's name(s), model numbers, ratings, power requirements, equipment layout, device arrangement, complete wiring point-to-point diagrams, and conduit layouts.
3. Show annunciator layout, configurations, and terminations.

C. Manuals:

1. Submit simultaneously with the shop drawings, complete operating and maintenance manuals listing the manufacturer's name(s), including technical data sheets.
2. Wiring diagrams shall indicate internal wiring for each device and the interconnections between the items of equipment.
3. Provide a clear and concise description of operation that gives, in detail, the information required to properly operate the equipment and system.

D. Software Modifications

1. Provide the services of a factory trained and authorized technician to perform all system software modifications, upgrades or changes. Response time of the technician to the site shall not exceed 4 hours.
2. Provide all hardware, software, programming tools and documentation necessary to modify the fire alarm system on site. Modification includes addition and deletion of devices, circuits, zones and changes to system operation and custom label changes for devices or zones. The system structure and software shall place no limit on the type or extent of software modifications on-site.

E. Certifications:

Together with the shop drawing submittal, submit a certification from the major equipment manufacturer indicating that the proposed supervisor of the installation and the proposed performer of contract maintenance is an authorized representative of the major equipment manufacturer. Include names and addresses in the certification.

1.4. GUARANTY:

All work performed and all material and equipment furnished under this contract shall be free from defects and shall remain so for a period of at least one (1) year from the date of acceptance. The full cost of maintenance, labor and materials required to correct any defect during this one year period shall be included in the submittal bid.

1.5. APPLICABLE STANDARDS AND SPECIFICATIONS:

The specifications and standards listed below form a part of this specification. The system shall fully comply with the latest issue of these standards, if applicable.

A. International Fire Code – 2015 Edition.

B. National Fire Protection Association (NFPA) - USA:

No. 13                 Sprinkler Systems  
No. 72                 National Fire Alarm Code

C. Underwriters Laboratories Inc. (UL) - USA:

No. 268                Smoke Detectors for Fire Protective Signaling Systems  
No. 864                Control Units for Fire Protective Signaling Systems  
No. 268A              Smoke Detectors for Duct Applications  
No. 521                Heat Detectors for Fire Protective Signaling Systems  
No. 464                Audible Signaling Appliances  
No. 38                 Manually Actuated Signaling Boxes  
No. 346                Waterflow Indicators for Fire Protective Signaling Systems  
No. 1076 Control Units for Burglar Alarm Proprietary Protective Signaling Systems  
No. 1971 Visual Notification Appliances

1.8. APPROVALS:

A. The system shall have proper listing and/or approval from the following nationally recognized agencies:  
UL           Underwriters Laboratories Inc.

B. The fire alarm control panel shall meet UL Standard 864 Ninth Edition (Control Units) and UL Standard 1076 (Proprietary Burglar Alarm Systems).

PART 2.0         PRODUCTS

2.1.         EQUIPMENT AND MATERIAL, GENERAL:

A. All equipment and components shall be new, and the manufacturer's current model. The materials, appliances, equipment and devices shall be tested and listed by a nationally recognized approvals agency for use as part of a protective signaling system, meeting the National Fire Alarm Code.

B. All equipment and components shall be installed in strict compliance with manufacturers' recommendations. Consult the manufacturer's installation manuals for all wiring diagrams, schematics, physical equipment sizes, etc., before beginning system installation.

- C. All equipment shall be attached to walls and ceiling/floor assemblies and shall be held firmly in place (e.g., detectors shall not be supported solely by suspended ceilings). Fasteners and supports shall be adequate to support the required load.
- 2.2. CONDUIT AND WIRE:
- A. Conduit:
1. Conduit shall be in accordance with The National Electrical Code (NEC), local and state requirements.
  2. All wiring shall be installed in conduit or raceway. Conduit fill shall not exceed 40 percent of interior cross sectional area where three or more cables are contained within a single conduit.
  3. Cable must be separated from any open conductors of power, or Class 1 circuits, and shall not be placed in any conduit, junction box or raceway containing these conductors, per NEC Article 760-55.
  4. Wiring for 24 volt DC control, alarm notification, emergency communication and similar power-limited auxiliary functions may be run in the same conduit as initiating and signaling line circuits. All circuits shall be provided with transient suppression devices and the system shall be designed to permit simultaneous operation of all circuits without interference or loss of signals.
  5. Conduit shall not enter the fire alarm control panel, or any other remotely mounted control panel equipment or backboxes, except where conduit entry is specified by the FACP manufacturer.
  6. Conduit shall be 3/4-inch (19.1 mm) minimum with a factory applied red finish.
- B. Wire:
1. All fire alarm system wiring shall be new.
  2. Wiring shall be in accordance with local, state and national codes (e.g., NEC Article 760) and as recommended by the manufacturer of the fire alarm system. Number and size of conductors shall be as recommended by the fire alarm system manufacturer, but not less than 18 AWG (1.02 mm) for Initiating Device Circuits and Signaling Line Circuits, and 14 AWG (1.63 mm) for Notification Appliance Circuits.
  3. All wire and cable shall be listed and/or approved by a recognized testing agency for use with a protective signaling system.
  4. Wire and cable shall have a fire resistance rating suitable for the installation as indicated in NFPA 70 (e.g., FPLR).
  5. Wiring used for the multiplex communication circuit (SLC) shall be twisted and unshielded and support a minimum wiring distance of 12,500 feet. The design of the system shall permit use of IDC and NAC wiring in the same conduit with the SLC communication circuit.
  6. All field wiring shall be electrically supervised for open circuit and ground fault.
  7. The fire alarm control panel shall be capable of t-tapping Class B (NFPA Style 4) Signaling Line Circuits (SLCs). Systems that do not allow or have restrictions in, for example, the amount of t-taps, length of t-taps etc., are not acceptable.
- C. Terminal Boxes, Junction Boxes and Cabinets:
- All boxes and cabinets shall be UL listed for their use and purpose.
- D. Initiating circuits shall be arranged to serve like categories (manual, smoke, waterflow). Mixed category circuitry shall not be permitted except on signaling line circuits connected to intelligent reporting devices.
- E. The fire alarm control panel shall be connected to a separate dedicated branch circuit, maximum 20 amperes. This circuit shall be labeled at the main power distribution panel as FIRE ALARM. Fire alarm control panel primary power wiring shall be 12 AWG. The control panel cabinet shall be grounded securely to either a cold water pipe or grounding rod. Surge suppression is required.
- 2.3. FIRE ALARM CONTROL PANEL:

- A. Siemens MXLV, Fike Cybercat 50, Fire-Lite MS9050UD or approved equal.
- 2.4. AUXILIARY POWER SUPPLY – NOTIFICATION APPLIANCE EXTENDER:
- A. Same Manufacturer as the Fire Alarm Control Panel.
- 2.5. SYSTEM COMPONENTS:
- A. Strobe lights shall meet the requirements of the ADA, UL Standard 1971, be fully synchronized, and shall meet the following criteria:
    - 1. The maximum pulse duration shall be 2/10 of one second
    - 2. Strobe intensity shall meet the requirements of UL 1971.
    - 3. The flash rate shall meet the requirements of UL 1971.
    - 4. Provide clear lenses.
  - B. Horn/Strobes:
    - 1. White in color with the word "Fire" in red. Gentex, System Sensor, Cooper Wheelock or approved equal compatible with the equipment connected thereto.
  - C. All interfaces and associated equipment are to be protected so that they will not be affected by voltage surges or line transients consistent with UL standard 864.
  - D. Field Wiring Terminal Blocks  
  
For ease of service all panel I/O wiring terminal blocks shall be removable, plug-in types and have sufficient capacity for #18 to #12 AWG wire. Terminal blocks that are permanently fixed are not acceptable.
- 2.6. SYSTEM COMPONENTS - ADDRESSABLE DEVICES
- A. Addressable Devices - General
    - 1. Addressable devices shall use simple to install and maintain decade, decimal address switches. Devices shall be capable of being set to an address in a range of 001 to 159.
    - 2. Addressable devices, which use a binary-coded address setting method, such as a DIP-switch, are not an allowable substitute.
    - 3. Detectors shall be intelligent (analog) and addressable, and shall connect with two wires to the fire alarm control panel Signaling Line Circuits.
    - 4. Addressable devices shall store an internal identifying code that the control panel shall use to identify the type of device.
    - 5. Addressable modules shall mount in a 4-inch square (101.6 mm square), 2-1/8 inch (54 mm) deep electrical box. An optional surface mount Lexan enclosure shall be available.
  - B. Addressable Manual Fire Alarm Box (manual station)
    - 1. Double actin addressable manual fire alarm boxes shall, on command from the control panel, send data to the panel representing the state of the manual switch and the addressable communication module status. They shall use a key operated test-reset lock, and shall be designed so that after actual emergency operation, they cannot be restored to normal use except by the use of a key.
    - 2. All operated stations shall have a positive, visual indication of operation and utilize a key type reset.
    - 3. Manual fire alarm boxes shall be constructed of Lexan with clearly visible operating instructions provided on the cover. The word FIRE shall appear on the front of the stations in raised letters, 1.75 inches (44 mm) or larger.

C. Addressable Dry Contact Monitor Module

1. Addressable monitor modules shall be provided to connect one supervised IDC zone of conventional alarm initiating devices (any N.O. dry contact device) to one of the fire alarm control panel SLCs.
2. The IDC zone shall be suitable for Style D or Style B operation. An LED shall be provided that shall flash under normal conditions, indicating that the monitor module is operational and in regular communication with the control panel.
3. For difficult to reach areas, the monitor module shall be available in a miniature package and shall be no larger than 2-3/4 inch (70 mm) x 1-1/4 inch (31.7 mm) x 1/2 inch (12.7 mm). This version need not include Style D or an LED.

D. Addressable Relay Module

1. Addressable Relay Modules shall be available for HVAC control and other building functions. The relay shall be form C and rated for a minimum of 2.0 Amps resistive or 1.0 Amps inductive. The relay coil shall be magnetically latched to reduce wiring connection requirements, and to insure that 100% of all auxiliary relay or NACs may be energized at the same time on the same pair of wires.

E. Isolator Module

1. Isolator modules shall be provided to automatically isolate wire-to-wire short circuits on an SLC Class A or Class B branch. The isolator module shall limit the number of modules or detectors that may be rendered inoperative by a short circuit fault on the SLC loop segment or branch. At least one isolator module shall be provided for each floor or protected zone of the building.
2. If a wire-to-wire short occurs, the isolator module shall automatically open-circuit (disconnect) the SLC. When the short circuit condition is corrected, the isolator module shall automatically reconnect the isolated section.
3. The isolator module shall not require address-setting, and its operations shall be totally automatic. It shall not be necessary to replace or reset an isolator module after its normal operation.
4. The isolator module shall provide a single LED that shall flash to indicate that the isolator is operational and shall illuminate steadily to indicate that a short circuit condition has been detected and isolated.

2.7. BATTERIES:

- A. The battery shall have sufficient capacity to power the fire alarm system for not less than twenty-four hours plus 5 minutes of alarm upon a normal AC power failure.
- B. The batteries are to be completely maintenance free. No liquids are required. Fluid level checks for refilling, spills, and leakage shall not be required.
- C. If necessary to meet standby requirements, external battery and charger systems may be used.

PART 3.0 - EXECUTION

3.1. INSTALLATION:

- A. Installation shall be in accordance with the NEC, NFPA 72, local and state codes, as shown on the drawings, and as recommended by the major equipment manufacturer.
- B. All conduit, junction boxes, conduit supports and hangers shall be concealed in finished areas and may be exposed in unfinished areas. Smoke detectors shall not be installed prior to the system programming and test period. If construction is ongoing during this period, measures shall be taken to protect smoke detectors from contamination and physical damage.

- C. All fire detection and alarm system devices, control panels and remote annunciators shall be flush mounted when located in finished areas and may be surface mounted when located in unfinished areas.
- D. Manual fire alarm boxes shall be suitable for surface mounting or semi-flush mounting as shown on the plans, and shall be installed not less than 42 inches (1067 mm), nor more than 48 inches (122 mm) from the handle to the finished floor.
- E. All connections shall be made with screw terminals, wire nuts are prohibited.
- F. Provide a minimum of 25% spare capacity on all NAC circuits and power supplies.

3.2. TEST:

The service of a competent, factory-trained technician authorized by the manufacturer of the fire alarm equipment shall be provided to technically supervise and participate during all of the adjustments and tests for the system. All testing shall be in accordance with NFPA 72, Chapter 7.

- A. Before energizing the cables and wires, check for correct connections and test for short circuits, ground faults, continuity, and insulation.
- B. Open initiating device circuits and verify that the trouble signal actuates.
- C. Open and short signaling line circuits and verify that the trouble signal actuates.
- D. Open and short notification appliance circuits and verify that trouble signal actuates.
- E. Ground all circuits and verify response of trouble signals.
- F. Check presence and audibility of tone at all alarm notification devices.
- G. Check installation, supervision, and operation of all intelligent smoke detectors using the walk test.
- H. Each of the alarm conditions that the system is required to detect should be introduced on the system. Verify the proper receipt and the proper processing of the signal at the FACP and the correct activation of the control points.
- I. When the system is equipped with optional features, the manufacturer's manual shall be consulted to determine the proper testing procedures. This is intended to address such items as verifying controls performed by individually addressed or grouped devices, sensitivity monitoring, verification functionality and similar.

3.3. FINAL INSPECTION:

- A. At the final inspection, a factory-trained representative of the manufacturer of the major equipment shall demonstrate that the system functions properly in every respect.

3.4. INSTRUCTION:

- A. Instruction shall be provided as required for operating the system. Hands-on demonstrations of the operation of all system components and the entire system including program changes and functions shall be provided.

END OF SECTION 283100

**SECTION 31 3116**  
**TERMITE CONTROL**

**PART 1 GENERAL**

**1.01 SECTION INCLUDES**

- A. Chemical soil treatment.

**1.02 RELATED REQUIREMENTS**

**1.03 REFERENCE STANDARDS**

- A. Title 7, United States Code, 136 through 136y - Federal Insecticide, Fungicide and Rodenticide Act; 1947 (Revised 2001).

**1.04 SUBMITTALS**

- A. See Section 01 3000 - Administrative Requirements, for submittal procedures.
- B. Product Data: Indicate toxicants to be used, composition by percentage, dilution schedule, intended application rate.
- C. Test Reports: Indicate regulatory agency approval reports when required.
- D. Manufacturer's Application Instructions: Indicate caution requirements and usage regulations.
- E. Manufacturer's Certificate: Certify that toxicants meet or exceed specified requirements.
- F. Certificate of compliance from authority having jurisdiction indicating approval of toxicants.
- G. Record moisture content of soil before application.
- H. Maintenance Data: Indicate re-treatment schedule .
- I. Warranty: Submit warranty and ensure that forms have been completed in Owner's name.

**1.05 QUALITY ASSURANCE**

- A. Installer Qualifications: Company specializing in performing this type of work and:
  - 1. Having minimum of 2 years documented experience.
  - 2. Approved by manufacturer of treatment materials.
  - 3. Licensed in the State in which the Project is located.

**1.06 WARRANTY**

- A. See Section 01 7800 - Closeout Submittals, for additional warranty requirements.
- B. Provide five year installer's warranty against damage to building caused by termites.
  - 1. Include coverage for repairs to building and to contents damaged due to building damage. Repair damage and, if required, re-treat.
  - 2. Inspect annually and report in writing to Owner. Provide inspection service for five years from Date of Substantial Completion.

**PART 2 PRODUCTS**

**2.01 MATERIALS**

- A. Manufacturers:
  - 1. Bayer Environmental Science Corp; Product Premise Pro: [www.backedbybayer.com/pest-management](http://www.backedbybayer.com/pest-management).
  - 2. FMC Professional Solutions; Product Transport: [www.fmcprosolutions.com/#sle](http://www.fmcprosolutions.com/#sle).
  - 3. Syngenta Professional Products; Product Altriset: [www.syngentaprofessionalproducts.com/#sle](http://www.syngentaprofessionalproducts.com/#sle).
  - 4. Substitutions: See Section 01 6000 - Product Requirements.
- B. Toxicant Chemical: EPA approved; synthetically color dyed to permit visual identification of treated soil.
- C. Diluent: Recommended by toxicant manufacturer.

## **2.02 MIXES**

- A. Mix toxicant to manufacturer's instructions.

## **PART 3 EXECUTION**

### **3.01 EXAMINATION**

- A. Verify that soil surfaces are unfrozen, sufficiently dry to absorb toxicant, and ready to receive treatment.
- B. Verify final grading is complete.

### **3.02 APPLICATION**

- A. Comply with requirements of U.S. EPA and applicable state and local codes.
- B. Spray apply toxicant in accordance with manufacturer's instructions.
- C. Apply toxicant at following locations:
  - 1. Under Slabs-on-Grade.
  - 2. In Crawl Spaces.
  - 3. At Both Sides of Foundation Surface.
  - 4. Soil Within 10 feet of Building Perimeter For a Depth of minimum 4 feet.
- D. Under slabs, apply toxicant immediately prior to installation of vapor barrier.
- E. At foundation walls, apply toxicant immediately prior to finish grading work outside foundations.
- F. Apply extra treatment to structure penetration surfaces such as pipe or ducts, and soil penetrations such as grounding rods or posts.
- G. Re-treat disturbed treated soil with same toxicant as original treatment.
- H. If inspection or testing identifies the presence of termites, re-treat soil and re-test.

### **3.03 PROTECTION**

- A. Do not permit soil grading over treated work.

**END OF SECTION**



**SECTION 32 3113**  
**CHAIN LINK FENCES AND GATES**

**PART 1 GENERAL**

**1.01 SECTION INCLUDES**

- A. Posts, rails, and frames.
- B. Excavation for post bases; concrete foundation for posts and center drop for gates.
- C. Manual gates with related hardware.
- D. Accessories.

**1.02 RELATED REQUIREMENTS**

- A. Section 03 3000 - Cast-in-Place Concrete: Concrete anchorage for posts.

**1.03 REFERENCE STANDARDS**

- A. ASTM A123/A123M - Standard Specification for Zinc (Hot-Dip Galvanized) Coatings on Iron and Steel Products; 2017.
- B. ASTM A153/A153M - Standard Specification for Zinc Coating (Hot-Dip) on Iron and Steel Hardware; 2016a.
- C. ASTM A392 - Standard Specification for Zinc-Coated Steel Chain-Link Fence Fabric; 2011a (Reapproved 2017).
- D. ASTM A1011/A1011M - Standard Specification for Steel, Sheet and Strip, Hot-Rolled, Carbon, Structural, High-Strength Low-Alloy, High-Strength Low-Alloy with Improved Formability, and Ultra-High Strength; 2018a.
- E. ASTM C94/C94M - Standard Specification for Ready-Mixed Concrete; 2019a.
- F. ASTM F567 - Standard Practice for Installation of Chain-Link Fence; 2014a.
- G. ASTM F1043 - Standard Specification for Strength and Protective Coatings on Steel Industrial Fence Framework; 2018.
- H. ASTM F1083 - Standard Specification for Pipe, Steel, Hot-Dipped Zinc-Coated (Galvanized) Welded, for Fence Structures; 2018.
- I. CLFMI CLF-FIG0111 - Field Inspection Guide; 2014.
- J. CLFMI CLF-PM0610 - Product Manual; 2017.
- K. CLFMI CLF-SFR0111 - Security Fencing Recommendations; 2014.
- L. CLFMI WLG 2445 - Wind Load Guide for the Selection of Line Post and Line Post Spacing; 2018.

**1.04 SUBMITTALS**

- A. See Section 01 3000 - Administrative Requirements, for submittal procedures.
- B. Product Data: Provide data on fabric, posts, accessories, fittings and hardware.
- C. Design Calculations: For high wind load areas, provide calculations for fence fabric and accessory selection as well as line post spacing and foundation details. See CLFMI WLG 2445 for line post and spacing guidance.
- D. Shop Drawings: Indicate plan layout, spacing of components, post foundation dimensions, hardware anchorage, and schedule of components. See CLFMI CLF-PM0610, and CLFMI CLF-SFR0111 for planning and design recommendations.
- E. Samples: Submit two samples of fence fabric, privacy screens, 18 inch by 18 inch in size illustrating construction and finish.
- F. Manufacturer's Installation Instructions: Indicate installation requirements and foundation requirements.
- G. Manufacturer's Qualification Statement.

- H. Fence Installer Qualification Statement.
- I. Project Record Documents: Accurately record actual locations of property perimeter posts relative to property lines and easements.

### **1.05 QUALITY ASSURANCE**

- A. Manufacturer Qualifications: Company specializing in manufacturing products specified in this section, with not less than five years of documented experience.
- B. Fence Installer: Company with demonstrated successful experience installing similar projects and products, with not less than five years of documented experience.

### **1.06 WARRANTY**

- A. See Section 01 7800 - Closeout Submittals, for additional warranty requirements.
- B. Correct defective Work within a five year period after Date of Substantial Completion.

## **PART 2 PRODUCTS**

### **2.01 MATERIALS**

- A. ASTM A1011/A1011M, Designation SS; hot-rolled steel strip, cold formed to pipe configuration, longitudinally welded construction, minimum yield strength of 50 ksi; zinc coating complying with ASTM F1043 and ASTM F1083.
- B. Line Posts: Type I round.
- C. Terminal, Corner, Rail, Brace, and Gate Posts: Type I round.
- D. Comply with CLFMI CLF-PM0610.
- E. ASTM A392 zinc coated steel chain link fabric.
- F. Comply with CLFMI CLF-PM0610.
- G. Ready-mixed, complying with ASTM C94/C94M; normal Portland cement; 2,500 psi strength at 28 days, 3 inch slump; 5/8 inch nominal size aggregate.

### **2.02 COMPONENTS**

- A. Line Posts: 2.38 inch diameter.
- B. Corner and Terminal Posts: 2.88 inch diameter.
- C. Gate Posts: 3-1/2 inch diameter.
- D. Top and Brace Rail: 1.66 inch diameter, plain end, sleeve coupled.
- E. Bottom Rail: 1.66 inch diameter, plain end, sleeve coupled.
- F. Gate Frame: 1.66 inch diameter for welded fabrication.
- G. Fabric: 2 inch diamond mesh interwoven wire, 6 gage, 0.1920 inch thick, top selvage knuckle end closed, bottom selvage twisted tight.
- H. Tension Wire: 6 gage, 0.1920 inch thick steel, single strand.
- I. Tie Wire: Aluminum alloy steel wire.

### **2.03 MANUAL GATES AND RELATED HARDWARE**

- A. Hardware for Single Swinging Gates: 180 degree hinges, 2 for gates up to 60 inches high, 3 for taller gates; fork latch with gravity drop and padlock hasp; keeper to hold gate in fully open position.
- B. Hardware for Double Swinging Gates: 180 degree hinges, 2 for gates up to 60 inches high, 3 for taller gates; drop bolt on inactive leaf engaging socket stop set in concrete, active leaf latched to inactive leaf preventing raising of drop bolt, padlock hasp; keepers to hold gate in fully open position.
- C. Hinges: Finished to match fence components.
  - 1. Brackets: Round.

2. Mounting: Center.
3. Closing: Manual.

#### **2.04 ACCESSORIES**

- A. Caps: Cast steel galvanized; sized to post diameter, set screw retainer.
- B. Fittings: Sleeves, bands, clips, rail ends, tension bars, fasteners and fittings; steel.
- C. Wind and Privacy Screens: Knitted polyethylene fabric, 90 percent block, taped and brass grommeted edges 24 inches on center for attachment by cable ties or hog rings. Color as selected from manufacturer's standard offerings.

#### **2.05 FINISHES**

- A. Components (Other than Fabric): Galvanized in accordance with ASTM A123/A123M, at 1.7 ounces per square foot.
- B. Hardware: Hot-dip galvanized to weight required by ASTM A153/A153M.
- C. Accessories: Same finish as framing.

### **PART 3 EXECUTION**

#### **3.01 EXAMINATION**

- A. Verification of Conditions: Verify that areas are clear of obstructions or debris.

#### **3.02 PREPARATION**

- A. Removal: Obstructions or debris.

#### **3.03 INSTALLATION**

- A. Install framework, fabric, accessories and gates in accordance with ASTM F567.
- B. Place fabric on outside of posts and rails.
- C. Set intermediate posts plumb, in concrete footings with top of footing 2 inches above finish grade. Slope top of concrete for water runoff.
- D. Line Post Footing Depth Below Finish Grade: ASTM F567.
- E. Corner, Gate and Terminal Post Footing Depth Below Finish Grade: ASTM F567.
- F. Brace each gate and corner post to adjacent line post with horizontal center brace rail and diagonal truss rods. Install brace rail one bay from end and gate posts.
- G. Provide top rail through line post tops and splice with 6 inch long rail sleeves.
- H. Install center brace rail on corner gate leaves.
- I. Do not stretch fabric until concrete foundation has cured 28 days.
- J. Stretch fabric between terminal posts or at intervals of 100 feet maximum, whichever is less.
- K. Position bottom of fabric 2 inches above finished grade.
- L. Fasten fabric to top rail, line posts, braces, and bottom tension wire with tie wire at maximum 15 inches on centers.
- M. Attach fabric to end, corner, and gate posts with tension bars and tension bar clips.
- N. Install bottom tension wire stretched taut between terminal posts.
- O. Do not attach the hinged side of gate to building wall; provide gate posts.
- P. Install hardware and gate with fabric to match fence.
- Q. Provide concrete center drop to footing depth and drop rod retainers at center of double gate openings.
- R. Install gate locking device specified in Section 08 7100.

### 3.04 NUTS AND BOLTS

- A. Bolts: Carriage bolts used for fittings shall be installed with the head on the secure side of the fence. All bolts shall be peened over to prevent removal of the nut.

### 3.05 GATE INSTALLATION

- A. Swing Gates: Installation of swing gates and gateposts in compliance with ASTM F567. Direction of swing shall be [inward] [outward. Gates shall be plumb in the closed position having a bottom clearance of 3 in. (76 mm) grade permitting. Hinge and latch offset opening space from the gate frame to the post shall be no greater than 3 in. (76 mm) in the closed position. Double gate drop bar receivers shall be set in a concrete footing minimum 6 in. (152 mm) diameter 24 in. (609.6 mm) deep. Gate leaf holdbacks shall be installed for all double gates.
- B. Horizontal Slide Gates: Install according to manufacturers instructions and in accordance with ASTM F567. Gates shall be plum in the closed position, installed to slide with an initial pull force no greater than 40 lbs. Double gate drop bar receivers to be installed in a concrete footing minimum 6 in. (152 mm) diameter, 24 in. (609.6 mm) deep. Roller guards and guide posts must be installed on Type I external roller cantilever slide gate in compliance with ASTM F1184. Ground clearance shall be 3 in, grade permitting.
- C. Electrically operated gates and accessories must be manufactured and installed in compliance with ASTM F2200 and UL 325.

### 3.06 TOLERANCES

- A. Maximum Variation From Plumb: 1/4 inch.
- B. Maximum Offset From True Position: 1 inch.
- C. Do not infringe on adjacent property lines.

### 3.07 FIELD QUALITY CONTROL

- A. See Section 01 4000 - Quality Requirements, for additional requirements.
- B. Layout: Verify that fence installation markings are accurate to design, paying attention to gate locations, underground utilities, and property lines.
- C. Post Settings: Randomly inspect three locations against design for:
  - 1. Hole diameter.
  - 2. Hole depth.
  - 3. Hole spacing.
- D. Fence Height: Randomly measure fence height at three locations or at areas that appear out of compliance with design.
- E. Gates: Inspect for level, plumb, and alignment.
- F. Workmanship: Verify neat installation free of defects. See CLFMI CLF-FIG0111 for field inspection guidance.

### 3.08 CLEANING

- A. Leave immediate work area neat at end of each work day.
- B. Clean jobsite of excess materials; scatter excess material from post hole excavations uniformly away from posts. Remove excess material if required.
- C. Clean fence with mild household detergent and clean water rinse well.
- D. Remove mortar from exposed posts and other fencing material using a 10 percent solution of muriatic acid followed immediately by several rinses with clean water.
- E. Touch up scratched surfaces using materials recommended by manufacturer. Match touched-up paint color to factory-applied finish.

**3.09 CLOSEOUT ACTIVITIES**

- A. See Section 01 7800 - Closeout Submittals, for closeout submittals.

**END OF SECTION**