

**PROJECT MANUAL**

**100% CONSTRUCTION DOCUMENTS**

**ORANGE BEACH RECREATION COMPLEX NEW GYMNASIUM  
ORANGE BEACH, ALABAMA**



DAVIS  
ARCHITECTS

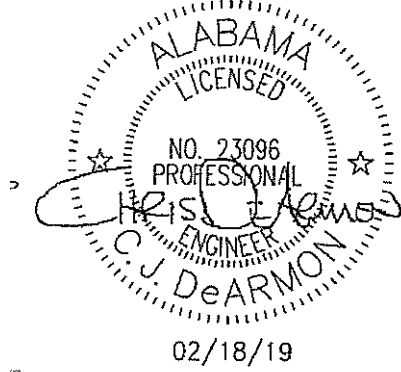
120 Twenty-Third Street South  
Birmingham, AL 35233  
TEL: 205/322-7482  
FAX: 205/322-7485

Architect's Project # 3891.01  
Resolution No. 18-167

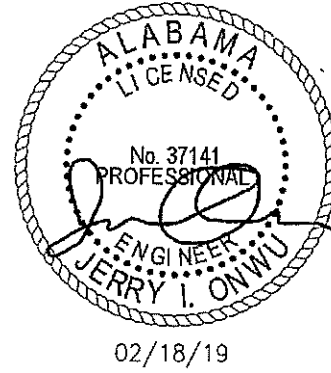


February 18, 2019

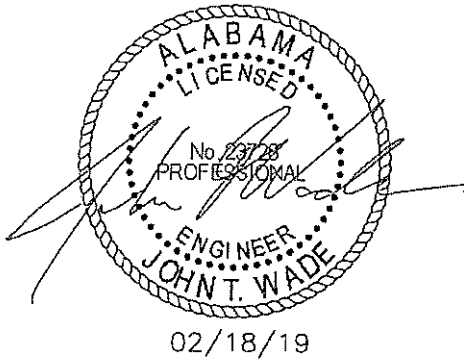
MECHANICAL & PLUMBING ENGINEER



ELECTRICAL ENGINEER



FIRE PROTECTION ENGINEER



STRUCTURAL ENGINEER



CIVIL ENGINEER

**SECTION 00 0110**  
**TABLE OF CONTENTS**

**PROCUREMENT AND CONTRACTING REQUIREMENTS**

**1.01 DIVISION 00 -- PROCUREMENT AND CONTRACTING REQUIREMENTS**

- 00 0107 - Seals Page
- 00 0110 - Table of Contents
- 00 1113 – Advertisement for Bids- PENDING**
- 00 2113 - Instructions to Bidders
- 00 3110 – Available Project Information
  - Report of Geotechnical Exploration
- 00 4000 - Procurement Forms and Supplements
- 00 4100 - Proposal Form
- 00 4102 – Attachment A to Bid Form Sales Tax
- 00 4301 – Bid form Supplements Cover Sheet
- 00 4310 – Statement of Compliance
- 00 4310.10 – Affidavit of Contractor
- 00 4313 – Bid Bond
- 00 4325 – Substitution Request Form during Bidding/Negotiation
- 00 4519.12 – Disclosure Statement
- 00 5000 - Contracting Forms and Supplements
- 00 5200 – Agreement Form
- 00 5213 – Exhibit A to Agreement Form
- 00 6113.13 - Performance Bond
- 00 6113.16 – Labor and Material Bond
- 00 6276 - Application and Certification for Payment
- 00 6276.18 - Progress Schedule and Report
- 00 6325 – Substitution Request Form after Bidding/Negotiation
- 00 6363 - Contract Change Order
- 00 6516 - Certificate of Substantial Completion
- 00 6536.13 - General Contractors Roofing Guarantee
- 00 6573.13 - Form of Advertisement for Completion
- 00 7200 - General Conditions of the Contract
- 00 7200.13 – Contractors Affidavit of Release of Lien
- 00 7300.13 – Supplement to the General Conditions of the Contract
- 00 7323 – ADR Application for Sales and Use Tax Certification

**SPECIFICATIONS**

**DIVISION 01 -- GENERAL REQUIREMENTS**

- 01 1000 - Summary
- 01 2000 - Price and Payment Procedures
- 01 2100 – Allowances

- 01 2200 – Unit Prices
- 01 2300 – Alternates
- 01 2500 - Substitution Procedures
- 01 2976.13 – Sales and Use Tax Savings
- 01 3000 - Administrative Requirements
- 01 3216 - Construction Progress Schedule
- 01 3233 – Photographic Documentation
- 01 4000 - Quality Requirements
- 01 5000 - Temporary Facilities and Controls
- 01 5813 - Temporary Project Sign
- 01 6000 - Product Requirements
- 01 7000 - Execution and Closeout Requirements
- 01 7700 – Closeout Procedures
- 01 7800 - Closeout Submittals
- 01 7900 - Demonstration and Training

**DIVISION 02 -- EXISTING CONDITIONS**

- 02 4100 – Selective Demolition

**DIVISION 03 -- CONCRETE**

- 03 3000 – Cast-In-Place Concrete
- 03 3511 – Concrete Floor Finishes

**DIVISION 04 – MASONRY**

- 04 2000 – Unit Masonry

**DIVISION 05 -- METALS**

- 05 3100 – Steel Decking
- 05 4000 – Cold-Form Metal Framing
- 05 5113 – Metal Pan Stairs
- 05 5213 – Pipe and Tube Railings

**DIVISION 06 -- WOOD, PLASTICS, AND COMPOSITES**

- 06 1000 – Rough Carpentry
- 06 1600 – Sheathing
- 06 2000 – Rough Carpentry

**DIVISION 07 -- THERMAL AND MOISTURE PROTECTION**

- 07 0533 – Fire and Smoke Assembly Identification
- 07 1326 – Self-Adhering Sheet Waterproofing
- 07 1400 – Fluid Applied Waterproofing
- 07 2100 – Thermal Insulation
- 07 2500 – Weather Barriers
- 07 5423 – Thermoplastic Polyolefin (TPO) Membrane Roofing
- 07 6200 – Sheet Metal Flashing and Trim
- 07 7129 – Manufactured Roof Expansion Joints
- 07 8400 – Firestopping



- 07 9100 – Preformed Joint Seals
- 07 9200 – Joint Seals
- 07 9513.13 – Interior Expansion Joint Cover Assemblies
- 07 9513.16 – Exterior Expansion Joint Cover Assemblies

**DIVISION 08 -- OPENINGS**

- 08 1113 – Hollow Metal Doors and Frames
- 08 3100 – Access Doors and Panels
- 08 7000 – Door Hardware

**DIVISION 09 – FINISHES**

- 09 0561 – Common Work Results for Flooring Preparation
- 09 2116 – Non-Structural Metal Framing
- 09 2900 – Gypsum Board
- 09 5100 – Acoustical Ceilings
- 09 6513 – Resilient Base and Accessories
- 09 6566 – Resilient Sheet Athletic Flooring
- 09 8400 – Acoustic Room Components
- 09 9113 – Exterior Painting
- 09 9123 – Interior Painting
- 09 9600 – High Performance Coatings

**DIVISION 10 – SPECIALTIES**

- 10 1400 – Signage
- 10 4400 – Fire Protection Specialties
- 10 7316 – Canopies

**DIVISION 11 – EQUIPMENT**

- 11 6623 – Gymnasium Equipment
- 11 6643 – Interior Scoreboards
- 11 6653 – Gymnasium Curtains

**DIVISION 12 – FURNISHINGS**

- 12 6613 – Telescoping Bleachers

**DIVISION 13 – SPECIAL CONSTRUCTION**

- 13 3419 – Metal Building Systems

**DIVISION 21 – FIRE SUPPRESSION**

- 21 1313 – Fire Sprinkler

**DIVISION 22 – PLUMBING**

- 22 0500 – Common Work Results for Plumbing
- 22 0700 – Plumbing Insulation
- 22 1000 – Plumbing Piping and Pumps
- 22 4000 – Plumbing Fixtures

**DIVISION 23 -- HEATING, VENTILATING, AND AIR-CONDITIONING (HVAC)**

- 23 0500 – Common Work Results for HVAC
- 23 0593 – Testing Adjusting and Balancing

- 23 0700 – HVAC Insulation
- 23 2000 – HVAC Piping and Pumps
- 23 3000 – HVAC Air Distribution
- 23 6313 – Air Cooled Refrigerant Condensers

**DIVISION 26 -- ELECTRICAL**

- 26 0519 – Low Voltage Electrical Power Conductors and Cables
- 26 0526 – Grounding and Bonding for Electrical Equipment
- 26 0529 – Hangers and Supports for Electrical Systems
- 26 0533 – Raceway and Boxes for Electrical Systems
- 26 0923 – Lighting Control Devices
- 26 2726 – Wiring Devices
- 26 2819 – Enclosed Switches
- 26 5100 – Interior Lighting

**DIVISION 27 -- COMMUNICATIONS**

**DIVISION 28 -- ELECTRONIC SAFETY AND SECURITY**

- 28 3100 – Fire Alarm

**DIVISION 31 -- EARTHWORK**

- 31 1000 – Site Clearing
- 31 3116 - Termite Control

**DIVISION 32 -- EXTERIOR IMPROVEMENTS**

**DIVISION 33 -- UTILITIES**

**END OF SECTION**



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

### **1.0 INTRODUCTION**

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

### **2.0 BID DOCUMENTS**

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

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 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 The City is not responsible for any oral instructions.

### **5.0 PREPARATION OF BID**

- 5.1 The bid must be submitted on the Bid Form furnished. All information required by the Bid Documents must be given to constitute a complete bid.



- 5.2 The Bidder must print, in figures, without interlineations, alterations, or erasures, a Unit Price. The Bidder shall then print the total sum on the line designated as "Bid Total." The City will check the total sum printed by the Bidder, and, in case of error or discrepancy, the unit price shall prevail and the total shall be corrected.
- 5.3 Prices and all information must be legible. Illegible or vague bids may be rejected.
- 5.4 All signatures must be written. Facsimile, printed, or typewritten signatures are not acceptable.
- 5.5 Under penalty of perjury, the Bidder certifies by signature on the Bid Form that:
  - The bid has been arrived at by the Bidder independently and has been submitted without collusion with any other vendor of materials, supplies, equipment, or services for the type described in the Invitation to Bid; and
  - The contents of the bid have not been communicated by the Bidder; nor to his/her best knowledge and belief by any of his/her employees or agents to any person not an employee or agent of the Bidder or its surety on any bond furnished herewith prior to the official opening of the bid.

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

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

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

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

## **8.0 RIGHT TO REJECT BID**

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



right to reject any and all bids for any reason and to waive any informality or irregularity in the bids received.

## **9.0 BASIS OF AWARD**

- 9.1 The City will award a single contract, dependent on the availability of funds.
- 9.2 The contract will be awarded to the lowest responsive qualified contractor, subject to the City's right to reject any or all bids and to waive informality and irregularity in bids and bidding.
- 9.3 The City shall have the right to accept alternates in any order or combination, unless otherwise specifically provided in the bid documents, and to determine the low bidder on the basis of the sum of the base bid and alternates accepted.

## **10.0 SAMPLE OF MATERIALS**

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

## **11.0 PRE-QUALIFICATION OF CONTRACTORS**

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

## **12.0 EXECUTION OF CONTRACT**

- 12.1 Within ten (10) days of Notice of Award, the Contractor shall deliver to the City proof of insurance as required by Contract Documents. All proof of insurance shall be approved by the City before the Contractor may proceed with Work.
- 12.2 The Contractor shall commence work within ten (10) days following receipt of the Notice to Proceed or on a date stipulated in the authorization to proceed.

## **13.0 LAWS AND REGULATIONS**

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

## **14.0 ALABAMA LICENSE CONTRACTOR**

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

## **15.0 BUSINESS LICENSE**



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

**16.0 BID BOND**

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

**17.0 PERFORMANCE BOND**

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

**18.0 LABOR & MATERIALS BOND**

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

**19.0 INSURANCE REQUIREMENTS**

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

**20.0 COMPLETION DATE**

20.1 Unless otherwise specified by the City, the Contractor shall commence the work within ten (10) days from the date of receipt of the Notice to Proceed, and shall complete the work within thirty (30) calendar days from the date of receipt of the Notice to Proceed.

20.2 The completion date shall not be extended except for unavoidable delays caused by, but not limited to, fires, floods, storms, strikes, accidents, or other circumstances beyond the Contractor's control. The Contractor may request additional completion time within one week from the occurrence of the delay. The City shall be the sole judge of such "unavoidable delays," and the extent thereof. In the event that such a determination is made, the date of completion shall be extended by a length of time equal to that lost by such circumstances. The City shall not be liable to the Contractor for any damages or additional compensation as a consequence of any delay, hindrance, interference, or other similar event beyond the City's control. Failure by the Contractor to notify the City within one week from the occurrence of delay will constitute a forfeiture of any potential time extension.

**21.0 LIQUIDATED DAMAGES**

21.1 Deduction at the rate of Three Hundred Dollars (\$300.00) per day shall be made from the total Contract price for each and every calendar day beyond the thirty (30) days from the date of Notice to Proceed that the work remains not satisfactorily completed.

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

**22.0 DEFAULT OF CONTRACTOR**

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

**23.0 PAYMENT**





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

**SECTION 00 3100**  
**AVAILABLE PROJECT INFORMATION**

**PART 1 GENERAL**

**1.01 EXISTING CONDITIONS**

- A. Certain information relating to existing surface and subsurface conditions and structures is available to bidders but will not be part of the Contract Documents, as follows:
- B. Alabama Line Locator Service - Alabama 811: [www.al1call.com](http://www.al1call.com).
  - 1. To utilize AL 811 services and comply with Alabama Law excavators need to call Alabama 811 at least 48 hours, excluding weekends and holidays, prior to commencing work.
  - 2. Contact Alabama 811 by calling 1-800-292-8525, or #DIG which is a free call with certain wireless providers. Approved users may notify AL 811's members through the remote ticket entry program.
- C. Geotechnical Report: Report of Geotechnical Exploration, Proposed New Gym, 4849 Wilson Boulevard, Orange Beach, Alabama, Prepared by GeoCon Engineering & materials Testing, Inc. and dated March 27, 2018.
  - 1. Copy is attached following this Section.
  - 2. This report identifies properties of below grade conditions and offers recommendations for the design of foundations, prepared primarily for the use of Architect.
  - 3. The commendations described shall not be construed as a requirement of this Contract, unless specifically reference in the Contract Documents.
  - 4. This report, by its nature cannot reveal all conditions that exist on the site. Should subsurface conditions be found to vary substantially from this report, changes in the design and construction of foundations will be made, with resulting credits or expenditures to the Contract Price accruing to Owner.

**PART 2 PRODUCTS (NOT USED)**

**PART 3 EXECUTION (NOT USED)**

**END OF SECTION**



## Report of Geotechnical Exploration

**Proposed New Gym**  
4849 Wilson Boulevard  
Orange Beach, Alabama  
GeoCon Project No. DL 1173-18

Prepared For:  
Mr. Tim Tucker  
**City of Orange Beach**  
Post Office Box 458  
Orange Beach, Alabama 36561

Date: March 27, 2018

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

# GeoCon

Engineering & Materials Testing, Inc.

March 27, 2018

**City of Orange Beach**  
Post Office Box 458  
Orange Beach, Alabama 36561

Attn: Mr. Tim Tucker

**RE: Report of Geotechnical Exploration**  
Proposed New Gym  
4849 Wilson Boulevard  
Orange Beach, Alabama  
GeoCon Project No. DL 1173-18

Dear Mr. Tucker:

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, 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



## TABLE OF CONTENTS

	Page No.
1.0 Project Description .....	3
2.0 Geotechnical Exploration .....	3
3.0 Soil Conditions Encountered .....	4
4.0 Ground Water Conditions Encountered .....	4
5.0 Site Preparation Recommendations .....	4
5.1 General Site Preparation.....	4
5.2 Site Drainage.....	5
5.3 Subgrade Processing & Proof-roll Testing .....	5
5.4 Unit Costs.....	5
5.5 Placement of Structural Fill.....	5
5.6 Testing Requirements.....	6
6.0 Shallow Foundation Recommendations .....	6
6.1 Foundation Design.....	6
6.2 Foundation Construction.....	7
7.0 Ground Floor Slabs .....	7
8.0 Closure .....	7



## **1.0 Project Description**

The project subject to this report is the construction of a new gymnasium located at 4849 Wilson Boulevard in Orange Beach, Alabama. Specifically, the site of the new building addition is located along the west side of the existing gymnasium. The location of the site is shown on the attached Site Location Map (Figure 1). During our March 2018 field exploration, the area of the new building addition was clear and open.

We anticipate that the new building addition will connect to the existing metal framed building. 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 anticipate that the new building finished floor elevations (FFE) will match the existing building's FFE. Topographic information was not provided at the time of this report; however, ground elevations in the proposed addition area appeared to be relatively flat. We anticipate that 12 to 18 inches of structural fill will be required in the building area to establish the building's FFE.

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 five (5) Cone Penetration Test (CPT) soundings to depths of about 25 feet below the existing ground surface. The test soundings were located at the site by GeoCon Engineering personnel who used the provided site plan and existing site features as reference. The approximate CPT 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).

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 initially penetrated approximately 2 to 8 inches of organic topsoil material. Below the topsoil, the soundings penetrated sand soils described as “fill” material to a depth of about 12 inches below the existing ground surface. Below the “fill” soils, the soundings penetrated sand soils with varying amounts of silt to depths of 14 to 17 feet, followed by sensitive fine grained silty clay soils intermixed with silty sand layers to sounding termination at depths of 25 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 sensitive fine grained silty clay soils were in a very soft condition. The soil conditions penetrated are described in more detail on the CPT Logs attached in the Appendix.

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

Ground water was encountered at depths of 1½ feet 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 Site Preparation Recommendations**

#### **5.1 General Site Preparation**

Areas beneath and 5 feet beyond the building footprint should be designated as the “building pad” (except for adjacent to the existing building). The initial phase of site preparation should include the complete removal of any old foundation systems, debris, surface vegetation, organic topsoil, etc. from within the “controlled areas”. Care should be taken to remove all buried utilities from within the footprint of the new building. The test soundings encountered organic topsoil to depths of about 2 to 8 inches below the existing ground surface. We recommend that the building pad be undercut to a depth of at least 8 inches to remove organic topsoil material.

Care should be taken not to damage the existing structures during the undercutting and compaction activities. Undercut adjacent to the existing structures would need to be done in small sections so not to undermine the foundations supporting the existing buildings. 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.



## 5.2 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.

## 5.3 Subgrade Processing & Proof-Roll Testing

Following the removal of old foundation systems, buried utilities, organic topsoil, debris, unsuitable soils, root systems, etc., and prior to the placement of fill or new structural elements, the top 12 inches of exposed subgrade in the "controlled areas" should be scarified, moisture conditioned and compacted to 95% ASTM D-698 standard density. The exposed subgrade should also be proof-rolled with a static smooth drum roller. The processed subgrade and proof-roll test should be reviewed by the project geotechnical consultant. Subgrade soils which fail to properly compact or subgrade soils that exhibit excessive rutting or pumping should be undercut as per the recommendation of the project geotechnical consultant. The resulting excavation should be backfilled with structural fill and compacted to 98% ASTM D-698 standard density.

## 5.4 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.

## 5.5 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



Structural fill should be placed in 8 to 12 inch loose lifts and compacted to 98% ASTM D-698 standard compaction at moisture contents within +/- 3% of the material's optimal moisture content. 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.

## **5.6 Testing Requirements**

The geotechnical consultant should monitor and document the results of the topsoil stripping, debris removal, subgrade proof-rolling, 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 8 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.

A minimum of one field density test should be performed per each 150 linear feet (per each 2 ft. of vertical thickness) of fill placed at utility trenches extending through the "controlled areas". 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.

## **6.0 Shallow Foundation Recommendations**

### **6.1 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 18 inches of open graded crushed aggregate (No. 57 stone). Recommendations for foundation construction are provided in Section 6.2 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.

## **6.2 Foundation Construction**

The soundings encountered ground water at a depth of 1½ 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 18 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 re-compaction or stabilization as per the recommendations of GeoCon’s geotechnical engineer. Proper placement of the stone is important to help limit excessive foundation settlement.

## **7.0 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.

## **8.0 Closure**

This report has been prepared for the exclusive use of 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 five (5) CPT soundings 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
- A-4 Laboratory Test Data
- A-5 Unified Soil Classification Chart
- A-6 Important Information about Your Geotechnical Report
- A-7 Terms & Conditions Sheet





Figure 1

NOT TO SCALE  
**SITE LOCATION MAP**  
 Proposed New Gym  
 4849 Wilson Boulevard  
 Orange Beach, AL  
 DL 1173-18

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

Date  
 3/19/2018



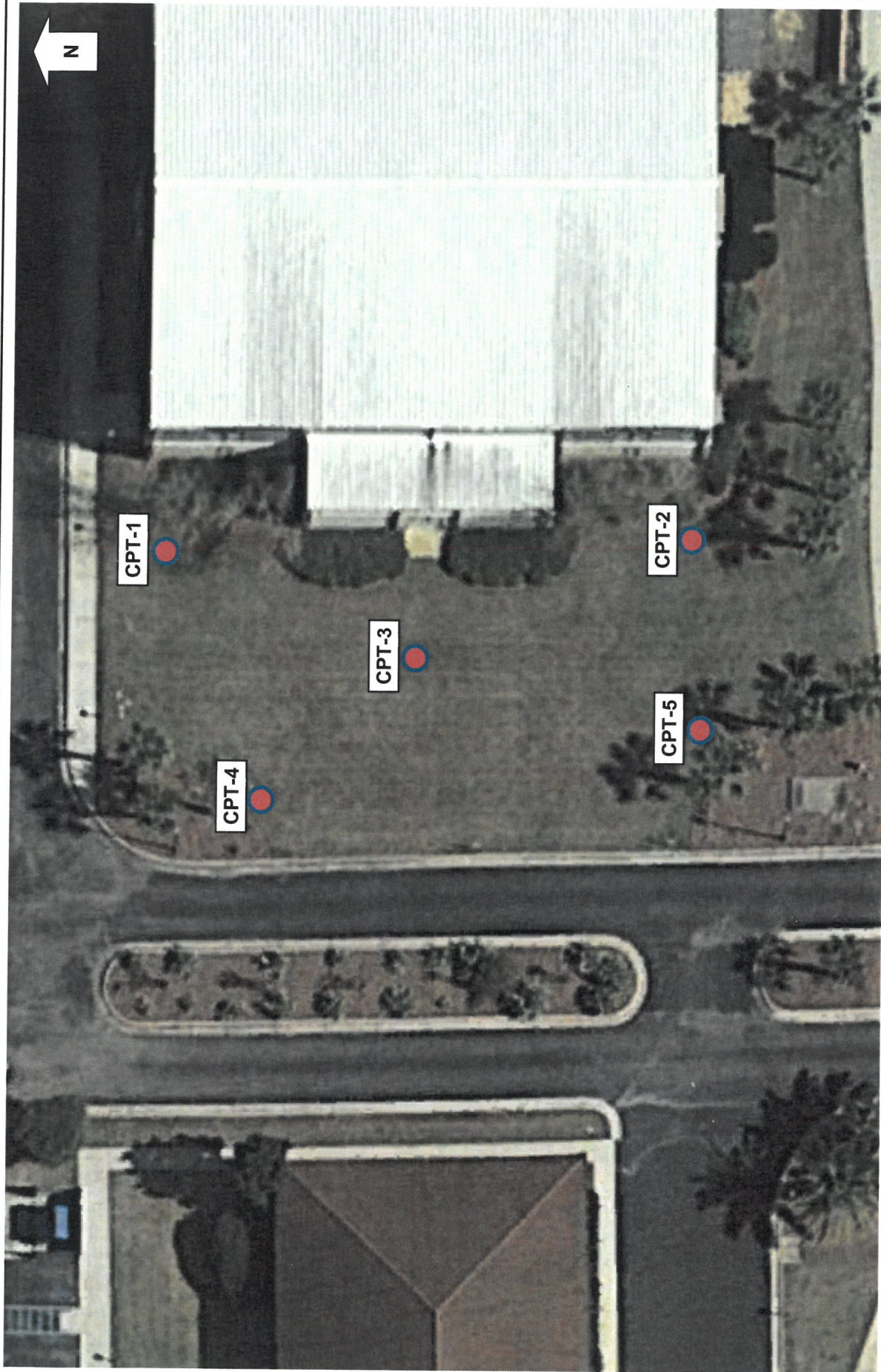


Figure 2

NOT TO SCALE

**TEST LOCATION PLAN**

Proposed New Gym  
 4849 Wilson Boulevard  
 Orange Beach, AL  
 DL 1173-18

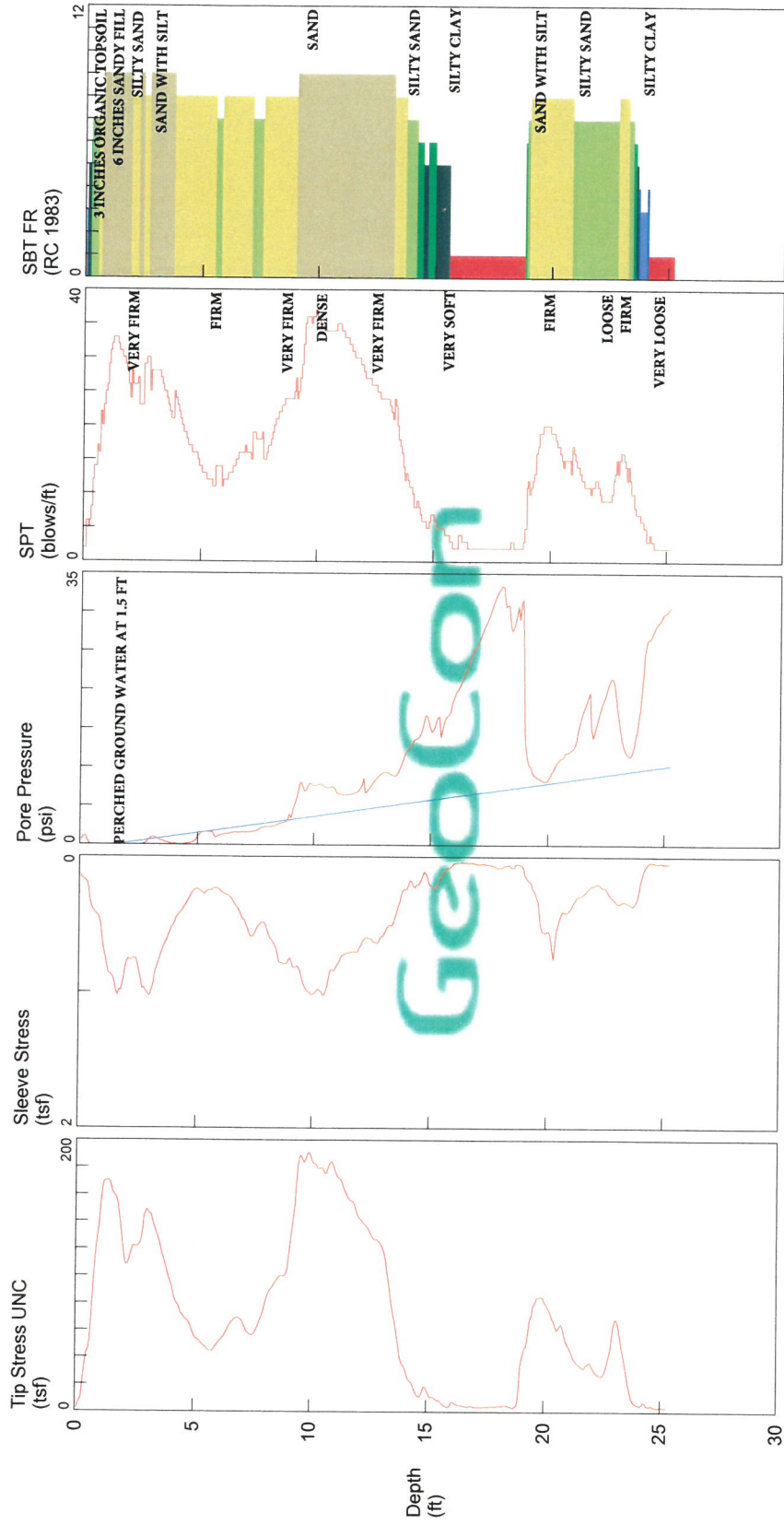
**GEOCON, INC.**  
 22885 McAuliffe Drive  
 Robertsdale, AL 36567

Date  
 3/19/2018

# CPT-1

CPT Testing Done By: GeoCon  
 Proposed: New Gym  
 CUSTOMER: City of Orange Beach  
 LOCATION: Orange Beach, AL  
 HOLE NUMBER: CPT-1

JOB NUMBER: DL 1173-18  
 TEST DATE: 3/19/2018  
 OPERATOR: Chris Rea



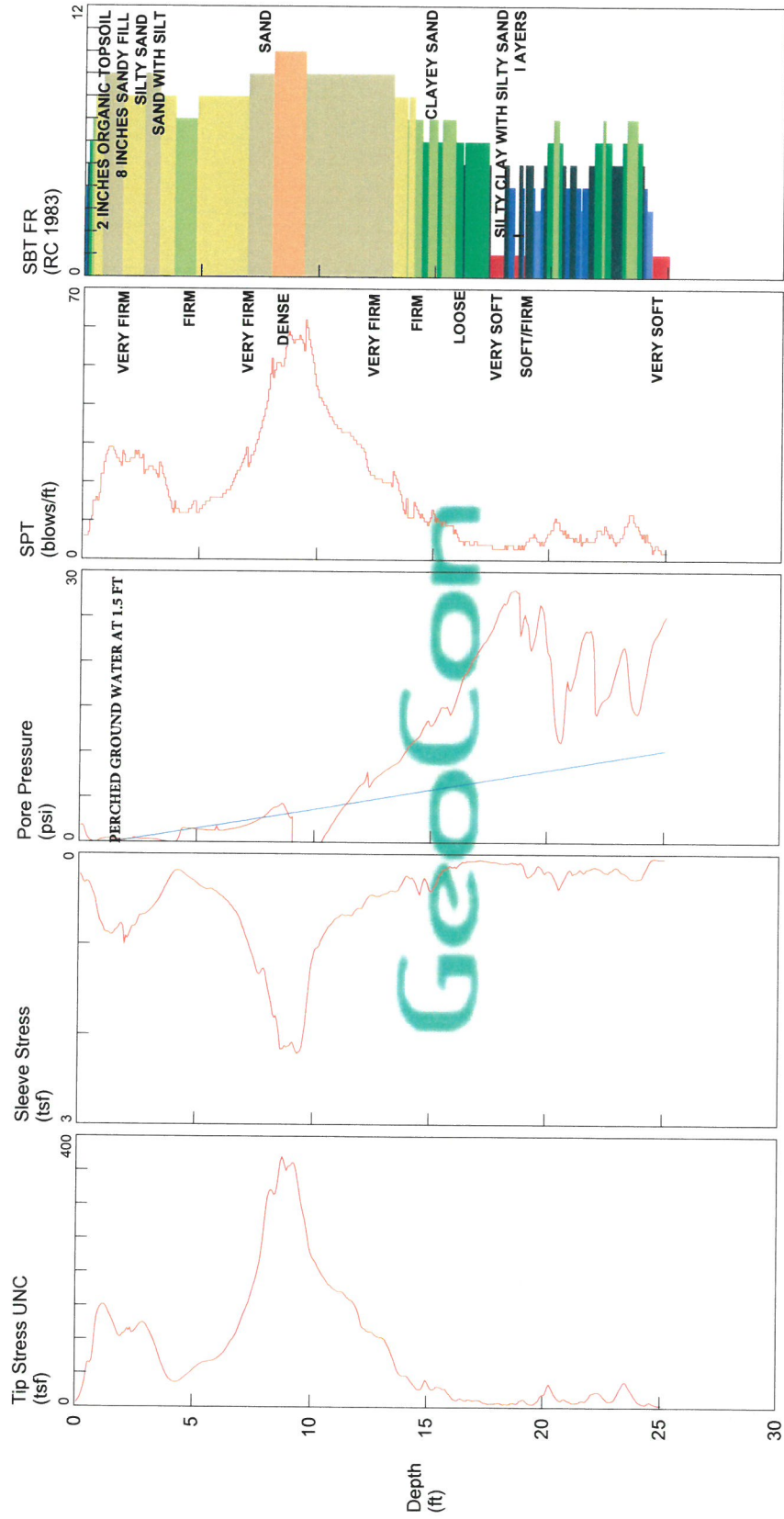
- 1 sensitive fine grained
  - 2 organic material
  - 3 clay
  - 4 silty clay to clay
  - 5 clayey silt to silty clay
  - 6 sandy silt to clayey silt
  - 7 silty sand to sandy silt
  - 8 sand to silty sand
  - 9 sand
  - 10 gravelly sand to sand
  - 11 very stiff fine grained (\*)
  - 12 sand to clayey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



# CPT-2

CPT Testing Done By: GeoCon  
 Proposed: New Gym  
 CUSTOMER: City of Orange Beach  
 LOCATION: Orange Beach, AL  
 HOLE NUMBER: CPT-2

JOB NUMBER: DL 1173-18  
 TEST DATE: 3/19/2018  
 OPERATOR: Chris Rea



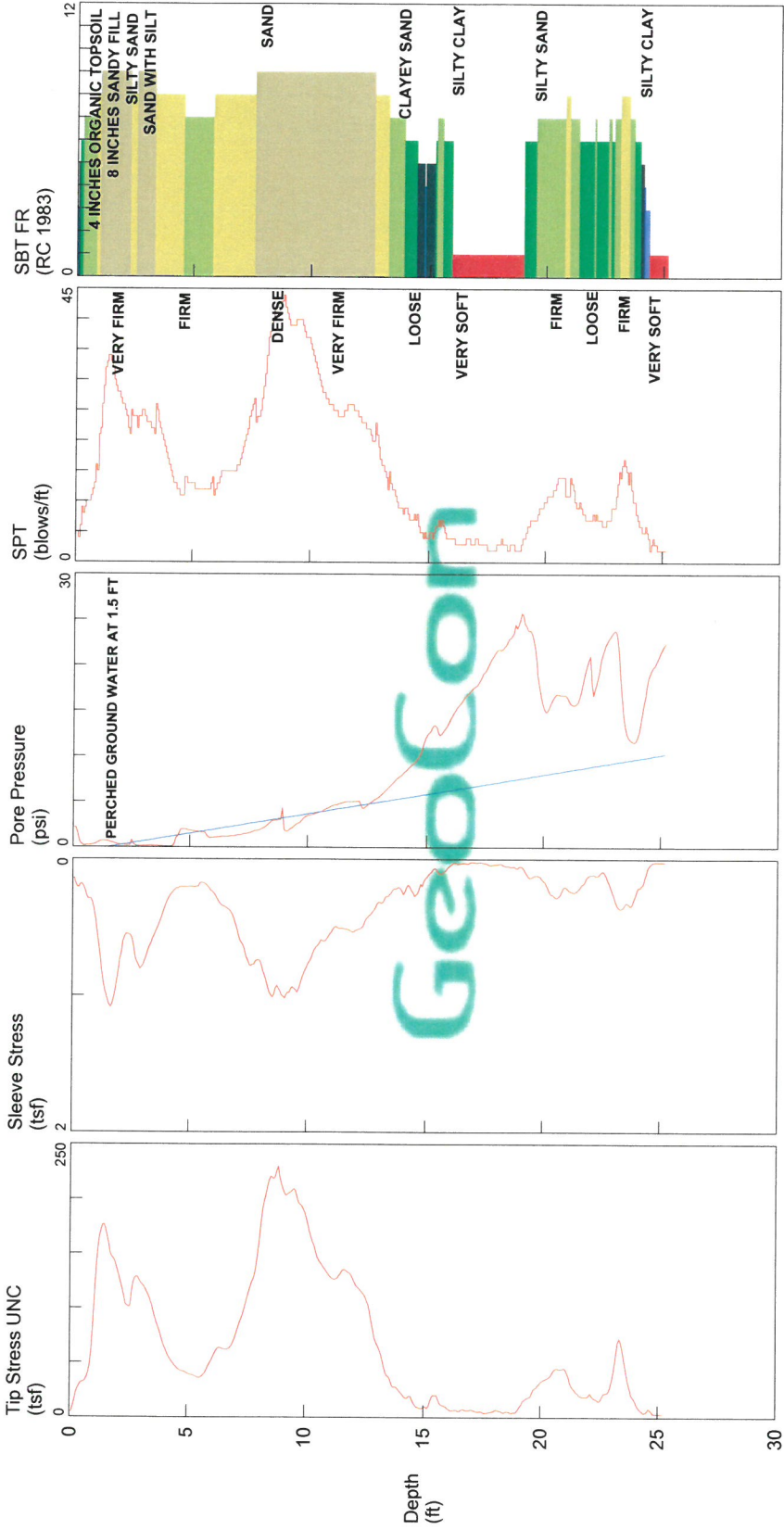
- 1 sensitive fine grained
  - 2 organic material
  - 3 clay
  - 4 silty clay to clay
  - 5 clayey silt to silty clay
  - 6 sandy silt to clayey silt
  - 7 silty sand to sandy silt
  - 8 sand to silty sand
  - 9 sand
  - 10 gravelly sand to sand
  - 11 very stiff fine grained (\*)
  - 12 sand to clayey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



# CPT-3

CPT Testing Done By: GeoCon  
 Proposed: New Gym  
 CUSTOMER: City of Orange Beach  
 LOCATION: Orange Beach, AL  
 HOLE NUMBER: CPT-3

JOB NUMBER: DL 1173-18  
 TEST DATE: 3/19/2018  
 OPERATOR: Chris Rea



- 10 gravelly sand to sand
- 11 very stiff fine grained (\*)
- 12 sand to clayey sand (\*)

- 7 silty sand to sandy silt
- 8 sand to silty sand
- 9 sand

- 4 silty clay to clay
- 5 clayey silt to silty clay
- 6 sandy silt to clayey silt

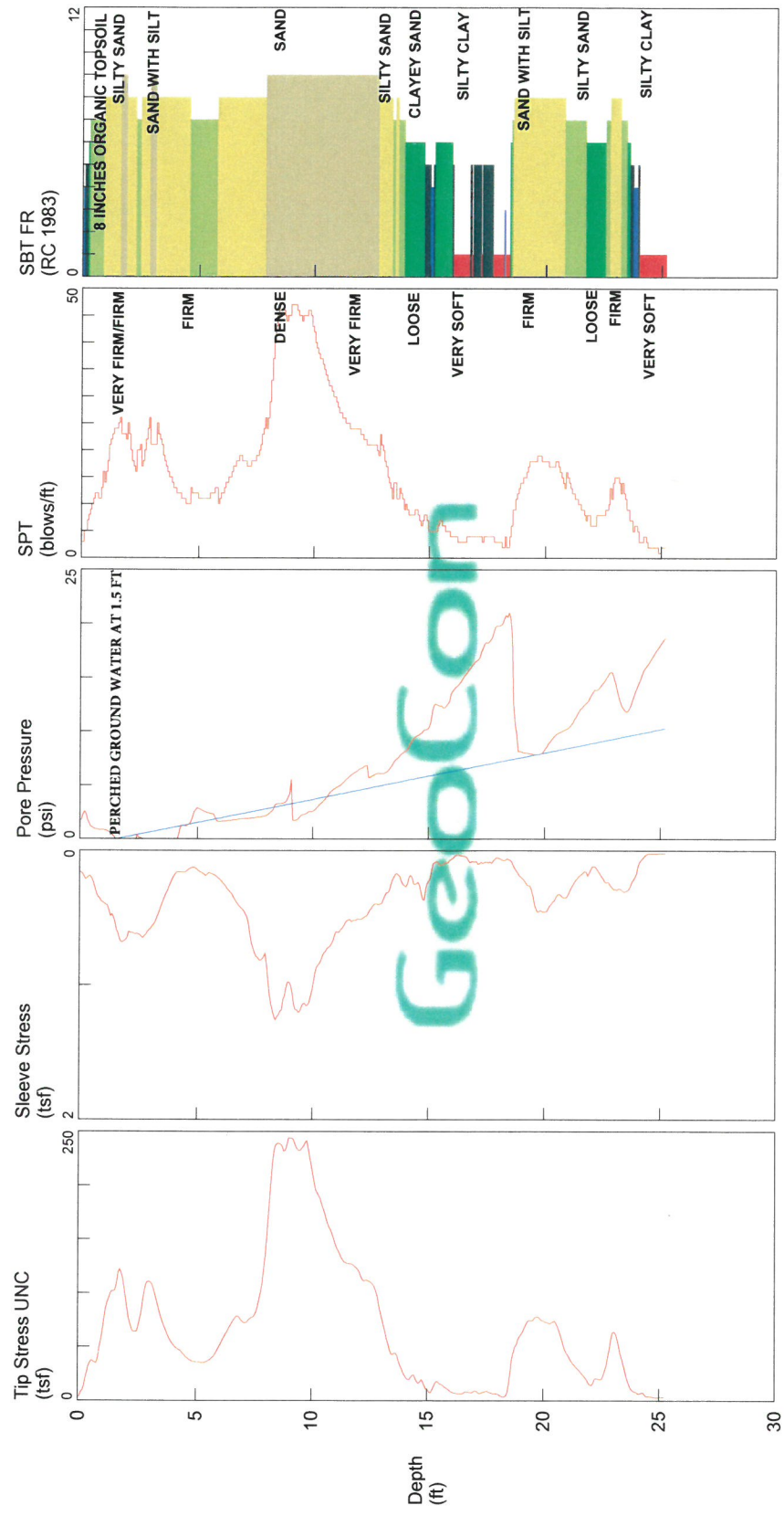
- 1 sensitive fine grained
- 2 organic material
- 3 clay

\*SBT/SPT CORRELATION: UBC-1983

# CPT-4

CPT Testing Done By: GeoCon  
 Proposed: New Gym  
 CUSTOMER: City of Orange Beach  
 LOCATION: Orange Beach, AL  
 HOLE NUMBER: CPT-4

JOB NUMBER: DL 1173-18  
 TEST DATE: 3/19/2018  
 OPERATOR: Chris Rea

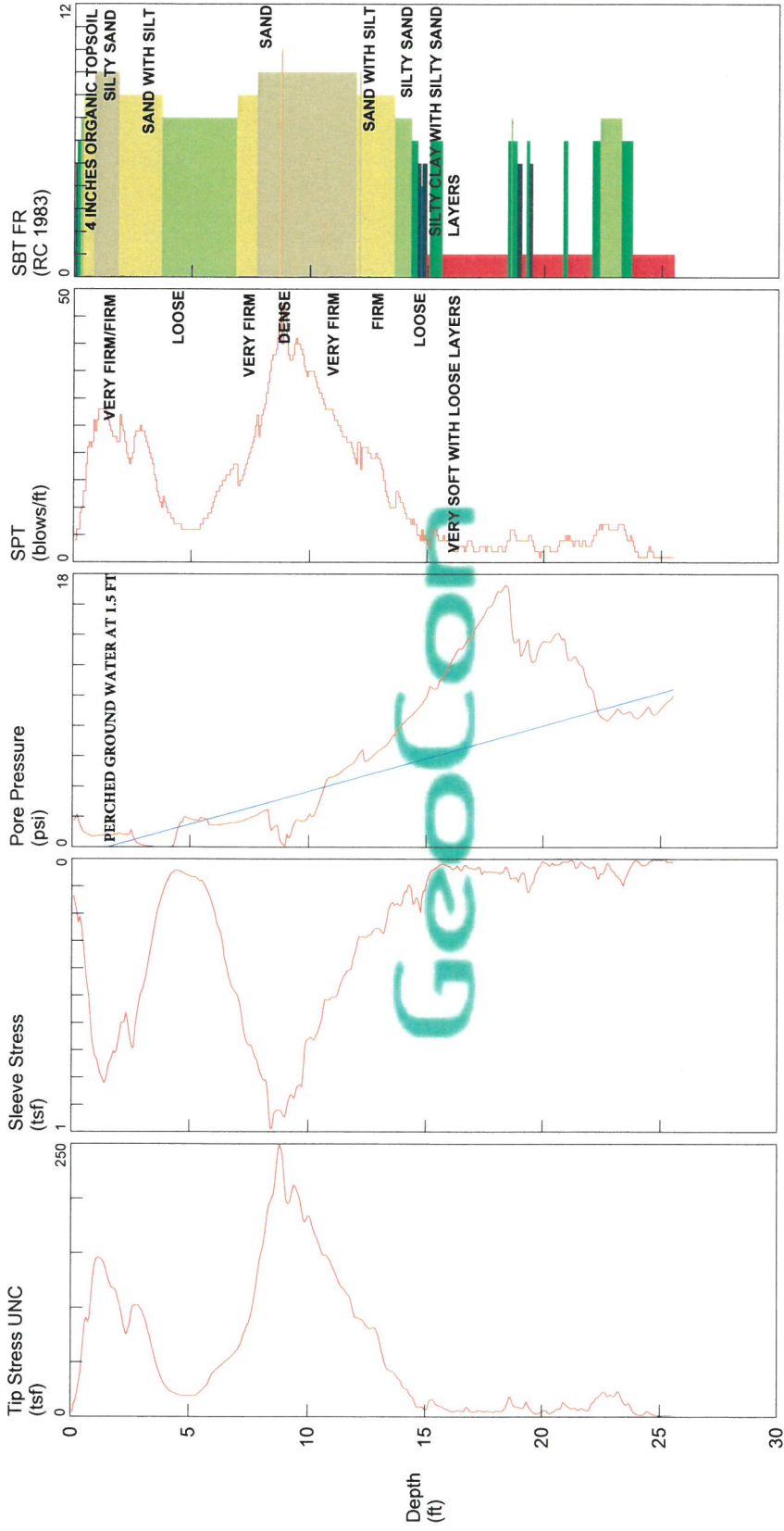


- 1 sensitive fine grained
  - 2 organic material
  - 3 clay
  - 4 silty clay to clay
  - 5 clayey silt to silty clay
  - 6 sandy silt to clayey silt
  - 7 silty sand to sandy silt
  - 8 sand to silty sand
  - 9 sand
  - 10 gravelly sand to sand
  - 11 very stiff fine grained (\*)
  - 12 sand to clayey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

# CPT-5

CPT Testing Done By: GeoCon  
 Proposed: New Gym  
 CUSTOMER: City of Orange Beach  
 LOCATION: Orange Beach, AL  
 HOLE NUMBER: CPT-5

JOB NUMBER: DL 1173-18  
 TEST DATE: 3/19/2018  
 OPERATOR: Chris Rea





# 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)

Copyright 2012 by ASFE, Inc. Duplication, reproduction, or copying of this document, in whole or in part, by any means whatsoever, is strictly prohibited, except with ASFE's specific written permission. Excerpting, quoting, or otherwise extracting wording from this document is permitted only with the express written permission of ASFE, and only for purposes of scholarly research or book review. Only members of ASFE may use this document as a complement to or as an element of a geotechnical engineering report. Any other firm, individual, or other entity that so uses this document without being an ASFE member could be committing negligent or intentional (fraudulent) misrepresentation.

## TERMS AND CONDITIONS

**SERVICES TO BE PROVIDED.** GeoCon Engineering & Material Testing, Inc. (hereinafter GeoCon) is an independent consultant and agrees to provide Client, for its sole benefit and exclusive use, consulting services set forth in our proposal.

**PAYMENT TERMS.** Client agrees to pay our Invoice upon receipt. If payment is not received within 30 days from the invoice date, Client agrees to pay a service charge on the past due amount at a rate of 1.5% per month, and GeoCon reserves the right to suspend all work until payment is received. No deduction shall be made from our invoice on account of liquidated damages or other sums withheld from payments to contractors or others.

**TERMINATION.** Either party may terminate this Agreement without cause upon 20 days advance notice in writing. In the event Client requests termination prior to completion of the proposed services, Client agrees to pay GeoCon for all costs incurred plus reasonable charges associated with termination of the work.

**PROFESSIONAL LIABILITY.** Notwithstanding any other provision of this Agreement, the Engineer's and GeoCon's total liability to the Owner for any loss or damages from claims arising out of or in connection with this Agreement from any cause including the Engineer's strict liability, breach of contract, or professional negligence, errors and omissions (whether claimed in tort, contract, strict liability, nuisance, by statute or otherwise) shall not exceed the lesser of the total contract price of this Agreement or the proceeds paid under Engineer's liability insurance in effect at the time such claims are made. The Owner hereby releases the Engineer from any liability exceeding such amount. In no event shall either party to this Agreement be liable to the other for special, indirect, incidental or consequential damages, whether or not such damages were foreseeable at the time of the commencement of the work under this Agreement.

**SITE OPERATIONS.** Client will arrange for right-of-entry to all applicable properties for the purpose of performing studies, tests and evaluations pursuant to the agreed services. Client represents that it possesses necessary permits and licenses required for its activities at the site.

**OWNERSHIP AND USE OF PROJECT DOCUMENTS.** All documents are instruments of service in respect to the Services, and Engineer shall retain an ownership and proprietary property interest therein (including the right of reuse at the discretion of the Engineer) whether or not the Services are completed. Client may make and retain copies of documents for information and reference in connection with the services by Client. Such documents are not intended or represented to be suitable for reuse by Client or others on extensions of the services or on any other project. Any such reuse or modification without written verification or adaptation by Engineer, as appropriate for the specific purpose intended, will be at Client's sole risk and without liability or legal exposure to Engineer or to Engineer's consultants. Client shall indemnify and hold harmless Engineer and Engineer's consultants from all claims, damages, and expenses including attorneys' fees arising out of or resulting therefrom.

**ADDITIONAL SERVICES OF CONSULTANT.** If authorized in writing by the Client, GeoCon shall furnish additional services that are not considered as an integral part of the Scope of Services outlined in the Proposal Acceptance Sheet. Under this Agreement, all costs for additional services will be negotiated as to activities and compensation. In addition, it is possible that unforeseen conditions may be encountered that could substantially alter the original scope of services. If this occurs, GeoCon will promptly notify and consult with Client and any additional services will be negotiated.

**ASSIGNABILITY.** GeoCon shall not assign any interest on this Agreement, and shall not transfer any interest in the same (whether by assignment or novation), without the prior written consent of the Client; provided, however, that claims for money by GeoCon against Client under this Agreement may be assigned to a bank, trust company, or other financial institution without such approval. Written notice of any such assignment or transfer shall be promptly furnished to the Client.

**SERVICES TO BE CONFIDENTIAL.** All services, including opinions, designs, drawings, plans, specifications, reports and other services and information, to be furnished by GeoCon under this Agreement are confidential and shall not be divulged, in whole or in part, to any person, other than to duly authorized representatives of the client, without prior written approval of the Client, except by testimony under oath in a judicial proceeding or as otherwise required by law. GeoCon shall take all necessary steps to ensure that no member of its organization divulges any such information except as may be required by law.

**CLAIMS.** The parties agree to attempt to resolve any dispute without resort to litigation. However, in the event a claim is made that results in litigation, and the claimant does not prevail at trial, then the claimant shall pay all costs incurred in defending the claim, including reasonable attorney's fees. The claim will be considered proven if the judgment obtained and retained through any applicable appeal is at least ten percent greater than the sum offered to resolve the matter prior to the commencement of trial.

**SEVERABILITY.** It is understood and agreed by the parties hereto, that if any part, term or provision of this Agreement is held by any court of competent jurisdiction to be illegal or in conflict with any applicable law, the validity of the remaining portion or portions of this Agreement shall not be affected and the rights and obligations of the parties shall be construed and enforced as if the Agreement did not contain the particular part, term or provision held to be invalid.

**SURVIVAL.** All obligations arising prior to the termination of this Agreement and all provisions of this Agreement allocating responsibility or liability between Client and GEOCON shall survive the completion of the services and the termination of this Agreement.

**INTEGRATION.** This Agreement, the attached documents and those incorporated herein constitute the entire Agreement between the parties and cannot be changed except by a written instrument signed by both parties.

**GOVERNING LAW.** This Agreement shall be governed in all respects by the laws of the State of Alabama and venue shall be in Baldwin County, Alabama.

**SECTION 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: City of Orange Beach Instructions to Bidders
- C. Substitution Request Form (During Procurement): CSI Form 1.5C, 2013 Edition.
- D. Bid Form: Section 00 4100 - Bid Form.
- E. Procurement Form Supplements:
  - 1. Bid Security Form: AIA A310.
  - 2. Substitution Request Form (for substitutions requested with bid): 00 4325 - Substitution Request Form, CSI/CSC Form 1.5C - Substitution Request Form (During the Bidding/Negotiating Stage).
  - 3. Proposed Schedule of Values Form: AIA G703.
- F. Representations and Certifications:
  - 1. Bidder's Qualifications: AIA A305.

**1.03 REFERENCE STANDARDS**

- A. AIA A305 - Contractor's Qualification Statement; 1986.
- B. AIA A310 - Bid Bond; City of Orange Beach Instructions to Bidders
- C. AIA A701 - Instructions to Bidders; City of Orange Beach Instructions to Bidders
- D. AIA G703 - Continuation Sheet; 1992.
- E. CSI/CSC Form 1.5C - Substitution Request (During the Bidding/Negotiating Stage); Current Edition.

**PART 2 PRODUCTS - NOT USED**

**PART 3 EXECUTION - NOT USED**

**END OF SECTION**



PROPOSAL FORM

TO: **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 Recreation Complex Gym

in accordance with Drawings and Specifications, dated February 18, 2019, 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.

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.

For Alternate No. 1 (Acoustical Wall Panel).....(add)(deduct) \$ \_\_\_\_\_

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 1:** Removal & Replacement of Unsuitable Soils per cubic yard.

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



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.

- END OF PROPOSAL FORM -

**ATTACHMENT 'A' TO BID FORM**  
**Orange Beach Recreation Complex New Gymnasium**  
**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	\$
<b>TOTAL</b>	\$

**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 3891.01**

**PROJECT: Orange Beach Recreation Complex New Gymnasium**

**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 GYMNASIUM  
CITY OF ORANGE BEACH  
ORANGE BEACH, ALABAMA

February 18, 2019  
DAI 3891.01

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



## 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: \_\_\_\_\_



**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:

**CARPET INSTALLATION AT THE ORANGE BEACH EVENT 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

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

\_\_\_\_\_  
Title

\_\_\_\_\_  
Witness

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

\_\_\_\_\_  
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 TARRANT BOARD OF EDUCATION, 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
-----------------------	---------	---	--

---



---



---

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

---



---



---



---

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

---



---



---



---

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

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

---



---



---

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

Signature \_\_\_\_\_ Date \_\_\_\_\_

Notary's Signature \_\_\_\_\_ Date \_\_\_\_\_ Date Notary Expires \_\_\_\_\_

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**

**1.1 CONTRACTOR IS RESPONSIBLE FOR OBTAINING A VALID LICENSE TO USE ALL COPYRIGHTED DOCUMENTS SPECIFIED BUT NOT INCLUDED IN THE PROJECT MANUAL.**

**1.2 AGREEMENT AND CONDITIONS OF THE CONTRACT**

- A. The Agreement is based on AIA A101.
- B. The General Conditions are based on AIA A201.

**1.3 FORMS**

- A. Use the following forms for the specified purposes unless otherwise indicated elsewhere in the Contract Documents.
- B. Bond Forms:
  - 1. Performance and Payment Bond Form: AIA A312.
- C. Post-Award Certificates and Other Forms:
  - 1. Submittal Transmittal Form: AIA G810.
  - 2. List of Subcontractors: AIA G805.
  - 3. Certificate of Insurance Form: Acord certificates as required by insurance type.
  - 4. Schedule of Values Form: AIA G703.
  - 5. Application for Payment Form: AIA G702 and G703.
  - 6. Consent of Surety to Final Payment: AIA G707.
  - 7. Consent of Surety to Reduction of Retainage Form: AIA G707A.
- D. Clarification and Modification Forms:
  - 1. Supplemental Instruction Form: AIA G710.
  - 2. Construction Change Directive Form: AIA G714.
  - 3. 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: AIA G706A.
  - 4. Consent of Surety to Final Payment Form: AIA G707.

**1.4 REFERENCE STANDARDS**

- A. AIA A101 - Standard Form of Agreement Between Owner and Contractor where the basis of payment is a stipulated sum; 2017.
- B. AIA A201 - General Conditions of the Contract for Construction; 2017.
- C. AIA A312 - Performance Bond and Payment Bond; 2010.
- D. AIA G701 - Change Order; 2017.
- E. AIA G702 - Application and Certificate for Payment; 1992.
- F. AIA G703 - Continuation Sheet; 1992.
- G. AIA G704 - Certificate of Substantial Completion; 2000.
- H. AIA G710 - Architect's Supplemental Instructions; 1992.
- I. AIA G714 - Construction Change Directive; 2007.
- J. AIA G810 - Transmittal Letter; 2001.

**PART 2 PRODUCTS - NOT USED**

**PART 3 EXECUTION - NOT USED**

**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)*

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

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

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

Orange Beach Recreation Complex New Gymnasium

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

Davis Architects, Inc.  
120 Twenty Third Street South  
Birmingham, AL 35233  
Phone (205) 322-7482

The Owner and Contractor agree as follows.

**ADDITIONS AND DELETIONS:**  
The author of this document has added information needed for its completion. The author may also have revised the text of the original AIA standard form. An *Additions and Deletions Report* that notes added information as well as revisions to the standard form text is available from the author and should be reviewed. A vertical line in the left margin of this document indicates where the author has added necessary information and where the author has added to or deleted from the original AIA text.

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.



**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:

Init.  
/

*(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.)*

Five (5%) percent.

Init.

**§ 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)*

Init.



§ 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.)*

Init.

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)

# Document A101™ – 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)

Orange Beach Recreation Complex

**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™–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.

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™–2017, General Conditions of the Contract for Construction. Article 11 of A201™–2017 contains additional insurance provisions.

**ELECTRONIC COPYING** of any portion of this AIA® Document to another electronic file is prohibited and constitutes a violation of copyright laws as set forth in the footer of this document.

**§ 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 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.)*

Causes 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.)*

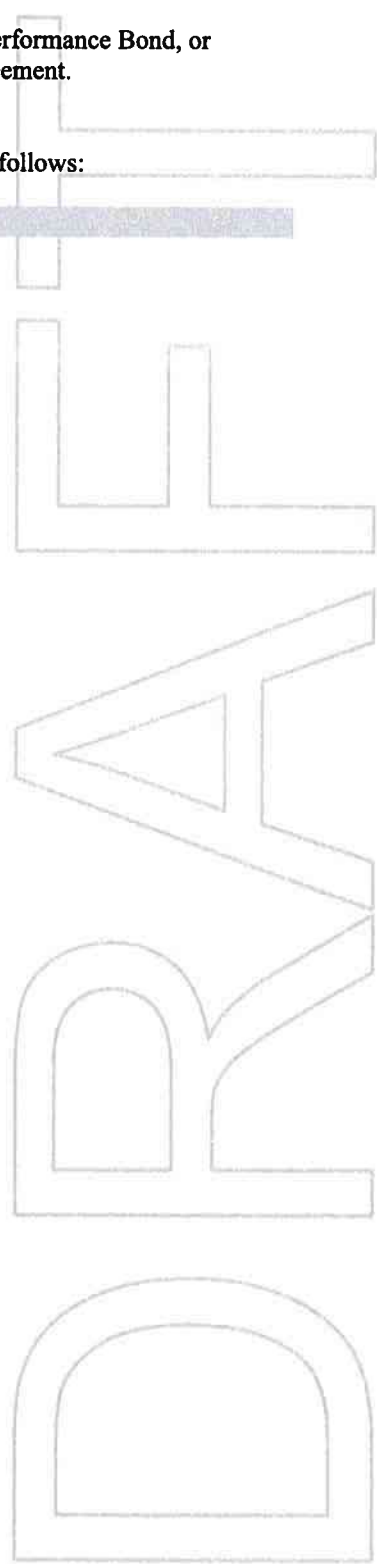
Type	Penal Sum (\$0.00)
Payment Bond	[REDACTED]
Performance Bond	[REDACTED]

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:

[REDACTED]





**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 Oblige, 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 Oblige 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: \_\_\_\_\_

Application and Certificate for Payment

TO OWNER: PROJECT: Orange Beach Recreation Complex

Distribution to: OWNER:

FROM CONTRACTOR: VIA ARCHITECT:

APPLICATION NO: 001  
 PERIOD TO: CONTRACT FOR: General Construction  
 CONTRACT DATE: PROJECT NOS: / /

ARCHITECT:   
 CONTRACTOR:   
 FIELD:   
 OTHER:

CONTRACTOR'S APPLICATION FOR PAYMENT

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

1. ORIGINAL CONTRACT SUM ..... \$0.00  
 2. NET CHANGE BY CHANGE ORDERS ..... \$0.00

3. CONTRACT SUM TO DATE (Line 1 ± 2) ..... \$0.00  
 4. TOTAL COMPLETED & STORED TO DATE (Column G on G703) ..... \$0.00

5. RETAINAGE:  
 a. 0 % of Completed Work (Column D + E on G703) \$0.00  
 b. 0 % of Stored Material (Column F on G703) \$0.00

Total Retainage (Lines 5a + 5b or Total in Column I of G703) ..... \$0.00

6. TOTAL EARNED LESS RETAINAGE ..... \$0.00

7. LESS PREVIOUS CERTIFICATES FOR PAYMENT ..... \$0.00  
 (Line 6 from prior Certificate)

8. CURRENT PAYMENT DUE ..... \$0.00  
 9. BALANCE TO FINISH, INCLUDING RETAINAGE (Line 3 less Line 6) \$0.00

CHANGE ORDER SUMMARY	ADDITIONS	DEDUCTIONS
Total changes approved in previous months by Owner	\$0.00	\$0.00
Total approved this Month	\$0.00	\$0.00
TOTALS	\$0.00	\$0.00
NET CHANGES by Change Order		\$0.00

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

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 ..... \$0.00

(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: By: \_\_\_\_\_ Date: \_\_\_\_\_

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.

AIA Document G702™ - 1992. Copyright © 1953, 1963, 1965, 1971, 1978, 1983 and 1992 by The American Institute of Architects. All rights reserved. WARNING: This AIA® Document is protected by U.S. Copyright Law and International Treaties. Unauthorized reproduction or distribution of this AIA® Document, or any portion of it, may result in severe civil and criminal penalties, and will be prosecuted to the maximum extent possible under the law. This draft was produced by AIA software at 12:18:50 ET on 01/18/2019 under Order No. 7536316524 which expires on 03/06/2019, and is not for resale. User Notes: (389ADASE)

# DRAFT AIA® Document G703™ - 1992

## Continuation Sheet

AIA Document, G702™-1992, Application and Certification for Payment, or G736™-2009, Project Application and Project 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:	001
APPLICATION DATE:	
PERIOD TO:	
ARCHITECT'S PROJECT NO:	

A ITEM NO.	B DESCRIPTION OF WORK	C SCHEDULED VALUE	D WORK COMPLETED		F MATERIALS PRESENTLY STORED (NOT IN D OR E)	G TOTAL COMPLETED AND STORED TO DATE (D + E + F)	H BALANCE TO FINISH (C - G)	I RETAINAGE (IF VARIABLE RATE)
			FROM PREVIOUS APPLICATION (D + E)	THIS PERIOD				
		0.00	0.00	0.00	0.00	0.00	0.00%	0.00
		0.00	0.00	0.00	0.00	0.00	0.00%	0.00
		0.00	0.00	0.00	0.00	0.00	0.00%	0.00
		0.00	0.00	0.00	0.00	0.00	0.00%	0.00
		0.00	0.00	0.00	0.00	0.00	0.00%	0.00
		0.00	0.00	0.00	0.00	0.00	0.00%	0.00
		0.00	0.00	0.00	0.00	0.00	0.00%	0.00
		0.00	0.00	0.00	0.00	0.00	0.00%	0.00
		0.00	0.00	0.00	0.00	0.00	0.00%	0.00
		0.00	0.00	0.00	0.00	0.00	0.00%	0.00
		0.00	0.00	0.00	0.00	0.00	0.00%	0.00
		0.00	0.00	0.00	0.00	0.00	0.00%	0.00
		0.00	0.00	0.00	0.00	0.00	0.00%	0.00
		0.00	0.00	0.00	0.00	0.00	0.00%	0.00
		0.00	0.00	0.00	0.00	0.00	0.00%	0.00
		0.00	0.00	0.00	0.00	0.00	0.00%	0.00
		0.00	0.00	0.00	0.00	0.00	0.00%	0.00
		0.00	0.00	0.00	0.00	0.00	0.00%	0.00
		0.00	0.00	0.00	0.00	0.00	0.00%	0.00
		0.00	0.00	0.00	0.00	0.00	0.00%	0.00
		0.00	0.00	0.00	0.00	0.00	0.00%	0.00
		0.00	0.00	0.00	0.00	0.00	0.00%	0.00
		0.00	0.00	0.00	0.00	0.00	0.00%	0.00
<b>GRAND TOTAL</b>		\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	0.00%	\$0.00

AIA Document G703™ - 1992. Copyright © 1963, 1965, 1966, 1967, 1970, 1978, 1983 and 1992 by The American Institute of Architects. All rights reserved. **WARNING:** This AIA® Document is protected by U.S. Copyright Law and International Treaties. Unauthorized reproduction or distribution of this AIA® Document, or any portion of it, may result in severe civil and criminal penalties, and will be prosecuted to the maximum extent possible under the law. This draft was produced by AIA software at 12:41:14 ET on 01/18/2019 under Order No. 7556316524 which expires on 03/06/2019, and is not for resale.

User Notes: (389ADASB)



<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</b>	
<b>B.C. No.</b>				<b>COMPLETION DATE</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



# DRAFT AIA® Document G701™ - 2017

## Change Order

**PROJECT:** *(Name and address)*  
Orange Beach Recreation Complex

**CONTRACT INFORMATION:**  
Contract For:  
Date:

**CHANGE ORDER INFORMATION:**  
Change Order Number: 001  
Date:

**OWNER:** *(Name and address)*

**ARCHITECT:** *(Name and address)*

**CONTRACTOR:** *(Name and address)*

**THE CONTRACT IS CHANGED AS FOLLOWS:**

*(Insert a detailed description of the change and, if applicable, attach or reference specific exhibits. Also include agreed upon adjustments attributable to executed Construction Change Directives.)*

The original Contract Sum was  
The net change by previously authorized Change Orders  
The Contract Sum prior to this Change Order was  
The Contract Sum will be increased by this Change Order in the amount of  
The new Contract Sum including this Change Order will be  
The Contract Time will be increased by Zero (0) days.  
The new date of Substantial Completion will be

\$	_____	0.00
\$	_____	0.00
\$	_____	0.00
\$	_____	0.00
\$	_____	0.00

**NOTE:** This Change Order does not include adjustments to the Contract Sum or Guaranteed Maximum Price, or the Contract Time, that have been authorized by Construction Change Directive until the cost and time have been agreed upon by both the Owner and Contractor, in which case a Change Order is executed to supersede the Construction Change Directive.

**NOT VALID UNTIL SIGNED BY THE ARCHITECT, CONTRACTOR AND OWNER.**

\_\_\_\_\_  
**ARCHITECT** *(Firm name)*

\_\_\_\_\_  
**CONTRACTOR** *(Firm name)*

\_\_\_\_\_  
**OWNER** *(Firm name)*

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

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

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

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

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

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

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

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

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

# DRAFT AIA® Document G704™ - 2017

## Certificate of Substantial Completion

<b>PROJECT:</b> <i>(name and address)</i> Orange Beach Recreation Complex New Gymnasium	<b>CONTRACT INFORMATION:</b> Contract For: General Construction  Date:	<b>CERTIFICATE INFORMATION:</b> Certificate Number: 001  Date:
<b>OWNER:</b> <i>(name and address)</i> City of Orange Beach 4099 Orange Beach Blvd. Orange Beach, FL 36561	<b>ARCHITECT:</b> <i>(name and address)</i> Davis Architects, Inc. 120 Twenty Third Street South Birmingham, AL 35233	<b>CONTRACTOR:</b> <i>(name and address)</i>

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.)*

_____ <b>ARCHITECT</b> <i>(Firm Name)</i>	_____ <b>SIGNATURE</b>	_____ <b>PRINTED NAME AND TITLE</b>	_____ <b>DATE OF SUBSTANTIAL COMPLETION</b>
--	---------------------------	--	--

### 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:

_____ <b>CONTRACTOR</b> <i>(Firm Name)</i>	_____ <b>SIGNATURE</b>	_____ <b>PRINTED NAME AND TITLE</b>	_____ <b>DATE</b>
---	---------------------------	--	----------------------

_____ <b>OWNER</b> <i>(Firm Name)</i>	_____ <b>SIGNATURE</b>	_____ <b>PRINTED NAME AND TITLE</b>	_____ <b>DATE</b>
--	---------------------------	--	----------------------

**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.

 **AIA**® Document A201™ – 2017

**General Conditions of the Contract for Construction**

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

Orange Beach Recreation Complex  
Orange Beach, FL

THE OWNER:  
(Name, legal status and address)

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

THE ARCHITECT:  
(Name, legal status and address)

Davis Architects, Inc.  
120 Twenty Third Street South  
Birmingham, AL 35233  
Telephone Number (205) 322-7482

TABLE OF ARTICLES

- 1 GENERAL PROVISIONS
- 2 OWNER
- 3 CONTRACTOR
- 4 ARCHITECT
- 5 SUBCONTRACTORS
- 6 CONSTRUCTION BY OWNER OR BY SEPARATE CONTRACTORS
- 7 CHANGES IN THE WORK
- 8 TIME
- 9 PAYMENTS AND COMPLETION
- 10 PROTECTION OF PERSONS AND PROPERTY
- 11 INSURANCE AND BONDS
- 12 UNCOVERING AND CORRECTION OF WORK

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™, Guide for Supplementary Conditions.

**ELECTRONIC COPYING** of any portion of this AIA® Document to another electronic file is prohibited and constitutes a violation of copyright laws as set forth in the footer of this document.

**13 MISCELLANEOUS PROVISIONS**

**14 TERMINATION OR SUSPENSION OF THE CONTRACT**

**15 CLAIMS AND DISPUTES**



## INDEX

(Topics and numbers in bold are Section headings.)

### **Acceptance of Nonconforming Work**

9.6.6, 9.9.3, **12.3**

### Acceptance of Work

9.6.6, 9.8.2, 9.9.3, 9.10.1, 9.10.3, **12.3**

### **Access to Work**

**3.16**, 6.2.1, 12.1

### Accident Prevention

10

### Acts and Omissions

3.2, 3.3.2, 3.12.8, 3.18, 4.2.3, 8.3.1, 9.5.1, 10.2.5,  
10.2.8, 13.3.2, 14.1, 15.1.2, 15.2

### Addenda

1.1.1

### Additional Costs, Claims for

3.7.4, 3.7.5, 10.3.2, 15.1.5

### **Additional Inspections and Testing**

9.4.2, 9.8.3, 12.2.1, **13.4**

### **Additional Time, Claims for**

3.2.4, 3.7.4, 3.7.5, 3.10.2, 8.3.2, **15.1.6**

### **Administration of the Contract**

3.1.3, **4.2**, 9.4, 9.5

### Advertisement or Invitation to Bid

1.1.1

### Aesthetic Effect

4.2.13

### **Allowances**

**3.8**

### **Applications for Payment**

4.2.5, 7.3.9, 9.2, **9.3**, 9.4, 9.5.1, 9.5.4, 9.6.3, 9.7, 9.10

### Approvals

2.1.1, 2.3.1, 2.5, 3.1.3, 3.10.2, 3.12.8, 3.12.9,  
3.12.10.1, 4.2.7, 9.3.2, 13.4.1

### **Arbitration**

8.3.1, 15.3.2, **15.4**

## **ARCHITECT**

4

### Architect, Definition of

**4.1.1**

### Architect, Extent of Authority

2.5, 3.12.7, 4.1.2, 4.2, 5.2, 6.3, 7.1.2, 7.3.4, 7.4, 9.2,  
9.3.1, 9.4, 9.5, 9.6.3, 9.8, 9.10.1, 9.10.3, 12.1, 12.2.1,  
13.4.1, 13.4.2, 14.2.2, 14.2.4, 15.1.4, 15.2.1

### Architect, Limitations of Authority and Responsibility

2.1.1, 3.12.4, 3.12.8, 3.12.10, 4.1.2, 4.2.1, 4.2.2,  
4.2.3, 4.2.6, 4.2.7, 4.2.10, 4.2.12, 4.2.13, 5.2.1, 7.4,  
9.4.2, 9.5.4, 9.6.4, 15.1.4, 15.2

### Architect's Additional Services and Expenses

2.5, 12.2.1, 13.4.2, 13.4.3, 14.2.4

### Architect's Administration of the Contract

3.1.3, 3.7.4, 15.2, 9.4.1, 9.5

### Architect's Approvals

2.5, 3.1.3, 3.5, 3.10.2, 4.2.7

### Architect's Authority to Reject Work

3.5, 4.2.6, 12.1.2, 12.2.1

### Architect's Copyright

1.1.7, 1.5

### Architect's Decisions

3.7.4, 4.2.6, 4.2.7, 4.2.11, 4.2.12, 4.2.13, 4.2.14, 6.3,  
7.3.4, 7.3.9, 8.1.3, 8.3.1, 9.2, 9.4.1, 9.5, 9.8.4, 9.9.1,  
13.4.2, 15.2

### Architect's Inspections

3.7.4, 4.2.2, 4.2.9, 9.4.2, 9.8.3, 9.9.2, 9.10.1, 13.4

### Architect's Instructions

3.2.4, 3.3.1, 4.2.6, 4.2.7, 13.4.2

### Architect's Interpretations

4.2.11, 4.2.12

### Architect's Project Representative

4.2.10

### Architect's Relationship with Contractor

1.1.2, 1.5, 2.3.3, 3.1.3, 3.2.2, 3.2.3, 3.2.4, 3.3.1, 3.4.2,  
3.5, 3.7.4, 3.7.5, 3.9.2, 3.9.3, 3.10, 3.11, 3.12, 3.16,  
3.18, 4.1.2, 4.2, 5.2, 6.2.2, 7, 8.3.1, 9.2, 9.3, 9.4, 9.5,  
9.7, 9.8, 9.9, 10.2.6, 10.3, 11.3, 12, 13.3.2, 13.4, 15.2

### Architect's Relationship with Subcontractors

1.1.2, 4.2.3, 4.2.4, 4.2.6, 9.6.3, 9.6.4, 11.3

### Architect's Representations

9.4.2, 9.5.1, 9.10.1

### Architect's Site Visits

3.7.4, 4.2.2, 4.2.9, 9.4.2, 9.5.1, 9.9.2, 9.10.1, 13.4

### Asbestos

10.3.1

### Attorneys' Fees

3.18.1, 9.6.8, 9.10.2, 10.3.3

### Award of Separate Contracts

6.1.1, 6.1.2

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

**5.2**

### **Basic Definitions**

**1.1**

### Bidding Requirements

1.1.1

### Binding Dispute Resolution

8.3.1, 9.7, 11.5, 13.1, 15.1.2, 15.1.3, 15.2.1, 15.2.5,  
15.2.6.1, 15.3.1, 15.3.2, 15.3.3, 15.4.1

### Bonds, Lien

7.3.4.4, 9.6.8, 9.10.2, 9.10.3

### **Bonds, Performance, and Payment**

7.3.4.4, 9.6.7, 9.10.3, **11.1.2**, 11.1.3, **11.5**

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

**1.8**

### Building Permit

3.7.1

### **Capitalization**

**1.3**

### Certificate of Substantial Completion

9.8.3, 9.8.4, 9.8.5

### **Certificates for Payment**

4.2.1, 4.2.5, 4.2.9, 9.3.3, 9.4, 9.5, 9.6.1, 9.6.6, 9.7,  
9.10.1, 9.10.3, 14.1.1.3, 14.2.4, 15.1.4  
Certificates of Inspection, Testing or Approval  
13.4.4  
Certificates of Insurance  
9.10.2  
**Change Orders**  
1.1.1, 3.4.2, 3.7.4, 3.8.2.3, 3.11, 3.12.8, 4.2.8, 5.2.3,  
7.1.2, 7.1.3, 7.2, 7.3.2, 7.3.7, 7.3.9, 7.3.10, 8.3.1,  
9.3.1.1, 9.10.3, 10.3.2, 11.2, 11.5, 12.1.2  
**Change Orders, Definition of**  
7.2.1  
**CHANGES IN THE WORK**  
2.2.2, 3.11, 4.2.8, 7, 7.2.1, 7.3.1, 7.4, 8.3.1, 9.3.1.1,  
11.5  
**Claims, Definition of**  
15.1.1  
Claims, Notice of  
1.6.2, 15.1.3  
**CLAIMS AND DISPUTES**  
3.2.4, 6.1.1, 6.3, 7.3.9, 9.3.3, 9.10.4, 10.3.3, 15, 15.4  
Claims and Timely Assertion of Claims  
15.4.1  
**Claims for Additional Cost**  
3.2.4, 3.3.1, 3.7.4, 7.3.9, 9.5.2, 10.2.5, 10.3.2, 15.1.5  
**Claims for Additional Time**  
3.2.4, 3.3.1, 3.7.4, 6.1.1, 8.3.2, 9.5.2, 10.3.2, 15.1.6  
**Concealed or Unknown Conditions, Claims for**  
3.7.4  
Claims for Damages  
3.2.4, 3.18, 8.3.3, 9.5.1, 9.6.7, 10.2.5, 10.3.3, 11.3,  
11.3.2, 14.2.4, 15.1.7  
Claims Subject to Arbitration  
15.4.1  
**Cleaning Up**  
3.15, 6.3  
Commencement of the Work, Conditions Relating to  
2.2.1, 3.2.2, 3.4.1, 3.7.1, 3.10.1, 3.12.6, 5.2.1, 5.2.3,  
6.2.2, 8.1.2, 8.2.2, 8.3.1, 11.1, 11.2, 15.1.5  
**Commencement of the Work, Definition of**  
8.1.2  
**Communications**  
3.9.1, 4.2.4  
Completion, Conditions Relating to  
3.4.1, 3.11, 3.15, 4.2.2, 4.2.9, 8.2, 9.4.2, 9.8, 9.9.1,  
9.10, 12.2, 14.1.2, 15.1.2  
**COMPLETION, PAYMENTS AND**  
9  
Completion, Substantial  
3.10.1, 4.2.9, 8.1.1, 8.1.3, 8.2.3, 9.4.2, 9.8, 9.9.1,  
9.10.3, 12.2, 15.1.2  
Compliance with Laws  
2.3.2, 3.2.3, 3.6, 3.7, 3.12.10, 3.13, 9.6.4, 10.2.2,  
13.1, 13.3, 13.4.1, 13.4.2, 13.5, 14.1.1, 14.2.1.3,  
15.2.8, 15.4.2, 15.4.3  
Concealed or Unknown Conditions  
3.7.4, 4.2.8, 8.3.1, 10.3

Conditions of the Contract  
1.1.1, 6.1.1, 6.1.4  
Consent, Written  
3.4.2, 3.14.2, 4.1.2, 9.8.5, 9.9.1, 9.10.2, 9.10.3, 13.2,  
15.4.4.2  
**Consolidation or Joinder**  
15.4.4  
**CONSTRUCTION BY OWNER OR BY  
SEPARATE CONTRACTORS**  
1.1.4, 6  
**Construction Change Directive, Definition of**  
7.3.1  
**Construction Change Directives**  
1.1.1, 3.4.2, 3.11, 3.12.8, 4.2.8, 7.1.1, 7.1.2, 7.1.3,  
7.3, 9.3.1.1  
Construction Schedules, Contractor's  
3.10, 3.11, 3.12.1, 3.12.2, 6.1.3, 15.1.6.2  
**Contingent Assignment of Subcontracts**  
5.4, 14.2.2.2  
**Continuing Contract Performance**  
15.1.4  
**Contract, Definition of**  
1.1.2  
**CONTRACT, TERMINATION OR  
SUSPENSION OF THE**  
5.4.1.1, 5.4.2, 11.5, 14  
Contract Administration  
3.1.3, 4, 9.4, 9.5  
Contract Award and Execution, Conditions Relating  
to  
3.7.1, 3.10, 5.2, 6.1  
Contract Documents, Copies Furnished and Use of  
1.5.2, 2.3.6, 5.3  
**Contract Documents, Definition of**  
1.1.1  
**Contract Sum**  
2.2.2, 2.2.4, 3.7.4, 3.7.5, 3.8, 3.10.2, 5.2.3, 7.3, 7.4,  
9.1, 9.2, 9.4.2, 9.5.1.4, 9.6.7, 9.7, 10.3.2, 11.5, 12.1.2,  
12.3, 14.2.4, 14.3.2, 15.1.4.2, 15.1.5, 15.2.5  
**Contract Sum, Definition of**  
9.1  
Contract Time  
1.1.4, 2.2.1, 2.2.2, 3.7.4, 3.7.5, 3.10.2, 5.2.3, 6.1.5,  
7.2.1.3, 7.3.1, 7.3.5, 7.3.6, 7, 7, 7.3.10, 7.4, 8.1.1,  
8.2.1, 8.2.3, 8.3.1, 9.5.1, 9.7, 10.3.2, 12.1.1, 12.1.2,  
14.3.2, 15.1.4.2, 15.1.6.1, 15.2.5  
**Contract Time, Definition of**  
8.1.1  
**CONTRACTOR**  
3  
**Contractor, Definition of**  
3.1, 6.1.2  
**Contractor's Construction and Submittal  
Schedules**  
3.10, 3.12.1, 3.12.2, 4.2.3, 6.1.3, 15.1.6.2  
Contractor's Employees



2.2.4, 3.3.2, 3.4.3, 3.8.1, 3.9, 3.18.2, 4.2.3, 4.2.6,  
10.2, 10.3, 11.3, 14.1, 14.2.1.1  
**Contractor's Liability Insurance**  
**11.1**  
Contractor's Relationship with Separate Contractors  
and Owner's Forces  
3.12.5, 3.14.2, 4.2.4, 6, 11.3, 12.2.4  
Contractor's Relationship with Subcontractors  
1.2.2, 2.2.4, 3.3.2, 3.18.1, 3.18.2, 4.2.4, 5, 9.6.2,  
9.6.7, 9.10.2, 11.2, 11.3, 11.4  
Contractor's Relationship with the Architect  
1.1.2, 1.5, 2.3.3, 3.1.3, 3.2.2, 3.2.3, 3.2.4, 3.3.1, 3.4.2,  
3.5.1, 3.7.4, 3.10, 3.11, 3.12, 3.16, 3.18, 4.2, 5.2,  
6.2.2, 7, 8.3.1, 9.2, 9.3, 9.4, 9.5, 9.7, 9.8, 9.9, 10.2.6,  
10.3, 11.3, 12, 13.4, 15.1.3, 15.2.1  
Contractor's Representations  
3.2.1, 3.2.2, 3.5, 3.12.6, 6.2.2, 8.2.1, 9.3.3, 9.8.2  
Contractor's Responsibility for Those Performing the  
Work  
3.3.2, 3.18, 5.3, 6.1.3, 6.2, 9.5.1, 10.2.8  
Contractor's Review of Contract Documents  
3.2  
Contractor's Right to Stop the Work  
2.2.2, 9.7  
Contractor's Right to Terminate the Contract  
14.1  
Contractor's Submittals  
3.10, 3.11, 3.12, 4.2.7, 5.2.1, 5.2.3, 9.2, 9.3, 9.8.2,  
9.8.3, 9.9.1, 9.10.2, 9.10.3  
Contractor's Superintendent  
3.9, 10.2.6  
Contractor's Supervision and Construction  
Procedures  
1.2.2, 3.3, 3.4, 3.12.10, 4.2.2, 4.2.7, 6.1.3, 6.2.4,  
7.1.3, 7.3.4, 7.3.6, 8.2, 10, 12, 14, 15.1.4  
Coordination and Correlation  
1.2, 3.2.1, 3.3.1, 3.10, 3.12.6, 6.1.3, 6.2.1  
Copies Furnished of Drawings and Specifications  
1.5, 2.3.6, 3.11  
Copyrights  
1.5, 3.17  
Correction of Work  
2.5, 3.7.3, 9.4.2, 9.8.2, 9.8.3, 9.9.1, 12.1.2, 12.2, 12.3,  
15.1.3.1, 15.1.3.2, 15.2.1  
**Correlation and Intent of the Contract Documents**  
**1.2**  
**Cost, Definition of**  
**7.3.4**  
Costs  
2.5, 3.2.4, 3.7.3, 3.8.2, 3.15.2, 5.4.2, 6.1.1, 6.2.3,  
7.3.3.3, 7.3.4, 7.3.8, 7.3.9, 9.10.2, 10.3.2, 10.3.6,  
11.2, 12.1.2, 12.2.1, 12.2.4, 13.4, 14  
**Cutting and Patching**  
**3.14, 6.2.5**  
Damage to Construction of Owner or Separate  
Contractors  
3.14.2, 6.2.4, 10.2.1.2, 10.2.5, 10.4, 12.2.4

**Damage to the Work**  
3.14.2, 9.9.1, 10.2.1.2, 10.2.5, 10.4, 12.2.4  
**Damages, Claims for**  
3.2.4, 3.18, 6.1.1, 8.3.3, 9.5.1, 9.6.7, 10.3.3, 11.3.2,  
11.3, 14.2.4, 15.1.7  
**Damages for Delay**  
6.2.3, 8.3.3, 9.5.1.6, 9.7, 10.3.2, 14.3.2  
**Date of Commencement of the Work, Definition of**  
**8.1.2**  
**Date of Substantial Completion, Definition of**  
**8.1.3**  
**Day, Definition of**  
**8.1.4**  
**Decisions of the Architect**  
3.7.4, 4.2.6, 4.2.7, 4.2.11, 4.2.12, 4.2.13, 6.3, 7.3.4,  
7.3.9, 8.1.3, 8.3.1, 9.2, 9.4, 9.5.1, 9.8.4, 9.9.1, 13.4.2,  
14.2.2, 14.2.4, 15.1, 15.2  
**Decisions to Withhold Certification**  
9.4.1, 9.5, 9.7, 14.1.1.3  
**Defective or Nonconforming Work, Acceptance,**  
**Rejection and Correction of**  
2.5, 3.5, 4.2.6, 6.2.3, 9.5.1, 9.5.3, 9.6.6, 9.8.2, 9.9.3,  
9.10.4, 12.2.1  
**Definitions**  
1.1, 2.1.1, 3.1.1, 3.5, 3.12.1, 3.12.2, 3.12.3, 4.1.1, 5.1,  
6.1.2, 7.2.1, 7.3.1, 8.1, 9.1, 9.8.1, 15.1.1  
**Delays and Extensions of Time**  
**3.2, 3.7.4, 5.2.3, 7.2.1, 7.3.1, 7.4, 8.3, 9.5.1, 9.7,**  
**10.3.2, 10.4, 14.3.2, 15.1.6, 15.2.5**  
**Digital Data Use and Transmission**  
**1.7**  
**Disputes**  
6.3, 7.3.9, 15.1, 15.2  
**Documents and Samples at the Site**  
**3.11**  
**Drawings, Definition of**  
**1.1.5**  
**Drawings and Specifications, Use and Ownership of**  
**3.11**  
**Effective Date of Insurance**  
8.2.2  
**Emergencies**  
**10.4, 14.1.1.2, 15.1.5**  
**Employees, Contractor's**  
3.3.2, 3.4.3, 3.8.1, 3.9, 3.18.2, 4.2.3, 4.2.6, 10.2,  
10.3.3, 11.3, 14.1, 14.2.1.1  
**Equipment, Labor, or Materials**  
1.1.3, 1.1.6, 3.4, 3.5, 3.8.2, 3.8.3, 3.12, 3.13, 3.15.1,  
4.2.6, 4.2.7, 5.2.1, 6.2.1, 7.3.4, 9.3.2, 9.3.3, 9.5.1.3,  
9.10.2, 10.2.1, 10.2.4, 14.2.1.1, 14.2.1.2  
**Execution and Progress of the Work**  
1.1.3, 1.2.1, 1.2.2, 2.3.4, 2.3.6, 3.1, 3.3.1, 3.4.1, 3.7.1,  
3.10.1, 3.12, 3.14, 4.2, 6.2.2, 7.1.3, 7.3.6, 8.2, 9.5.1,  
9.9.1, 10.2, 10.3, 12.1, 12.2, 14.2, 14.3.1, 15.1.4  
**Extensions of Time**  
3.2.4, 3.7.4, 5.2.3, 7.2.1, 7.3, 7.4, 9.5.1, 9.7, 10.3.2,  
10.4, 14.3, 15.1.6, 15.2.5

**Failure of Payment**

9.5.1.3, 9.7, 9.10.2, 13.5, 14.1.1.3, 14.2.1.2

**Faulty Work**

(See Defective or Nonconforming Work)

**Final Completion and Final Payment**

4.2.1, 4.2.9, 9.8.2, 9.10, 12.3, 14.2.4, 14.4.3

**Financial Arrangements, Owner's**

2.2.1, 13.2.2, 14.1.1.4

**GENERAL PROVISIONS**

**1**

**Governing Law**

**13.1**

Guarantees (See Warranty)

**Hazardous Materials and Substances**

10.2.4, 10.3

Identification of Subcontractors and Suppliers

5.2.1

**Indemnification**

3.17, 3.18, 9.6.8, 9.10.2, 10.3.3, 11.3

**Information and Services Required of the Owner**

2.1.2, 2.2, 2.3, 3.2.2, 3.12.10.1, 6.1.3, 6.1.4, 6.2.5,

9.6.1, 9.9.2, 9.10.3, 10.3.3, 11.2, 13.4.1, 13.4.2,

14.1.1.4, 14.1.4, 15.1.4

**Initial Decision**

**15.2**

**Initial Decision Maker, Definition of**

1.1.8

Initial Decision Maker, Decisions

14.2.4, 15.1.4.2, 15.2.1, 15.2.2, 15.2.3, 15.2.4, 15.2.5

Initial Decision Maker, Extent of Authority

14.2.4, 15.1.4.2, 15.2.1, 15.2.2, 15.2.3, 15.2.4, 15.2.5

**Injury or Damage to Person or Property**

10.2.8, 10.4

**Inspections**

3.1.3, 3.3.3, 3.7.1, 4.2.2, 4.2.6, 4.2.9, 9.4.2, 9.8.3,

9.9.2, 9.10.1, 12.2.1, 13.4

**Instructions to Bidders**

1.1.1

Instructions to the Contractor

3.2.4, 3.3.1, 3.8.1, 5.2.1, 7, 8.2.2, 12, 13.4.2

**Instruments of Service, Definition of**

**1.1.7**

**Insurance**

6.1.1, 7.3.4, 8.2.2, 9.3.2, 9.8.4, 9.9.1, 9.10.2, 10.2.5,

**11**

**Insurance, Notice of Cancellation or Expiration**

11.1.4, 11.2.3

**Insurance, Contractor's Liability**

**11.1**

Insurance, Effective Date of

8.2.2, 14.4.2

**Insurance, Owner's Liability**

**11.2**

**Insurance, Property**

10.2.5, 11.2, 11.4, 11.5

Insurance, Stored Materials

9.3.2

**INSURANCE AND BONDS**

**11**

Insurance Companies, Consent to Partial Occupancy

9.9.1

Insured loss, Adjustment and Settlement of

11.5

Intent of the Contract Documents

1.2.1, 4.2.7, 4.2.12, 4.2.13

**Interest**

**13.5**

**Interpretation**

1.1.8, 1.2.3, 1.4, 4.1.1, 5.1, 6.1.2, 15.1.1

Interpretations, Written

4.2.11, 4.2.12

Judgment on Final Award

15.4.2

**Labor and Materials, Equipment**

1.1.3, 1.1.6, 3.4, 3.5, 3.8.2, 3.8.3, 3.12, 3.13, 3.15.1,

5.2.1, 6.2.1, 7.3.4, 9.3.2, 9.3.3, 9.5.1.3, 9.10.2, 10.2.1,

10.2.4, 14.2.1.1, 14.2.1.2

Labor Disputes

8.3.1

Laws and Regulations

1.5, 2.3.2, 3.2.3, 3.2.4, 3.6, 3.7, 3.12.10, 3.13, 9.6.4,

9.9.1, 10.2.2, 13.1, 13.3.1, 13.4.2, 13.5, 14, 15.2.8,

15.4

**Liens**

2.1.2, 9.3.1, 9.3.3, 9.6.8, 9.10.2, 9.10.4, 15.2.8

Limitations, Statutes of

12.2.5, 15.1.2, 15.4.1.1

Limitations of Liability

3.2.2, 3.5, 3.12.10, 3.12.10.1, 3.17, 3.18.1, 4.2.6,

4.2.7, 6.2.2, 9.4.2, 9.6.4, 9.6.7, 9.6.8, 10.2.5, 10.3.3,

11.3, 12.2.5, 13.3.1

Limitations of Time

2.1.2, 2.2, 2.5, 3.2.2, 3.10, 3.11, 3.12.5, 3.15.1, 4.2.7,

5.2, 5.3, 5.4.1, 6.2.4, 7.3, 7.4, 8.2, 9.2, 9.3.1, 9.3.3,

9.4.1, 9.5, 9.6, 9.7, 9.8, 9.9, 9.10, 12.2, 13.4, 14, 15,

15.1.2, 15.1.3, 15.1.5

**Materials, Hazardous**

10.2.4, 10.3

Materials, Labor, Equipment and

1.1.3, 1.1.6, 3.4.1, 3.5, 3.8.2, 3.8.3, 3.12, 3.13, 3.15.1,

5.2.1, 6.2.1, 7.3.4, 9.3.2, 9.3.3, 9.5.1.3, 9.10.2,

10.2.1.2, 10.2.4, 14.2.1.1, 14.2.1.2

Means, Methods, Techniques, Sequences and

Procedures of Construction

3.3.1, 3.12.10, 4.2.2, 4.2.7, 9.4.2

Mechanic's Lien

2.1.2, 9.3.1, 9.3.3, 9.6.8, 9.10.2, 9.10.4, 15.2.8

**Mediation**

8.3.1, 15.1.3.2, 15.2.1, 15.2.5, 15.2.6, 15.3, 15.4.1,

15.4.1.1

**Minor Changes in the Work**

1.1.1, 3.4.2, 3.12.8, 4.2.8, 7.1, 7.4

**MISCELLANEOUS PROVISIONS**

**13**

**Modifications, Definition of**

**1.1.1**

**Modifications to the Contract**

1.1.1, 1.1.2, 2.5, 3.11, 4.1.2, 4.2.1, 5.2.3, 7, 8.3.1, 9.7, 10.3.2

**Mutual Responsibility**

**6.2**

**Nonconforming Work, Acceptance of**

9.6.6, 9.9.3, 12.3

**Nonconforming Work, Rejection and Correction of**

2.4, 2.5, 3.5, 4.2.6, 6.2.4, 9.5.1, 9.8.2, 9.9.3, 9.10.4, 12.2

**Notice**

1.6, 1.6.1, 1.6.2, 2.1.2, 2.2.2., 2.2.3, 2.2.4, 2.5, 3.2.4, 3.3.1, 3.7.4, 3.7.5, 3.9.2, 3.12.9, 3.12.10, 5.2.1, 7.4, 8.2.2, 9.6.8, 9.7, 9.10.1, 10.2.8, 10.3.2, 11.5, 12.2.2.1, 13.4.1, 13.4.2, 14.1, 14.2.2, 14.4.2, 15.1.3, 15.1.5, 15.1.6, 15.4.1

**Notice of Cancellation or Expiration of Insurance**

11.1.4, 11.2.3

**Notice of Claims**

1.6.2, 2.1.2, 3.7.4, 9.6.8, 10.2.8, 15.1.3, 15.1.5, 15.1.6, 15.2.8, 15.3.2, 15.4.1

**Notice of Testing and Inspections**

13.4.1, 13.4.2

**Observations, Contractor's**

3.2, 3.7.4

**Occupancy**

2.3.1, 9.6.6, 9.8

**Orders, Written**

1.1.1, 2.4, 3.9.2, 7, 8.2.2, 11.5, 12.1, 12.2.2.1, 13.4.2, 14.3.1

**OWNER**

**2**

**Owner, Definition of**

**2.1.1**

**Owner, Evidence of Financial Arrangements**

2.2, 13.2.2, 14.1.1.4

**Owner, Information and Services Required of the**

1.1.2, 2.2, 2.3, 3.2.2, 3.12.10, 6.1.3, 6.1.4, 6.2.5, 9.3.2, 9.6.1, 9.6.4, 9.9.2, 9.10.3, 10.3.3, 11.2, 13.4.1, 13.4.2, 14.1.1.4, 14.1.4, 15.1.4

**Owner's Authority**

1.5, 2.1.1, 2.3.2.4, 2.5, 3.4.2, 3.8.1, 3.12.10, 3.14.2, 4.1.2, 4.2.4, 4.2.9, 5.2.1, 5.2.4, 5.4.1, 6.1, 6.3, 7.2.1, 7.3.1, 8.2.2, 8.3.1, 9.3.2, 9.5.1, 9.6.4, 9.9.1, 9.10.2, 10.3.2, 11.4, 11.5, 12.2.2, 12.3, 13.2.2, 14.3, 14.4, 15.2.7

**Owner's Insurance**

**11.2**

**Owner's Relationship with Subcontractors**

1.1.2, 5.2, 5.3, 5.4, 9.6.4, 9.10.2, 14.2.2

**Owner's Right to Carry Out the Work**

2.5, 14.2.2

**Owner's Right to Clean Up**

**6.3**

**Owner's Right to Perform Construction and to**

**Award Separate Contracts**

**6.1**

**Owner's Right to Stop the Work**

**2.4**

**Owner's Right to Suspend the Work**

14.3

**Owner's Right to Terminate the Contract**

14.2, 14.4

**Ownership and Use of Drawings, Specifications and Other Instruments of Service**

1.1.1, 1.1.6, 1.1.7, 1.5, 2.3.6, 3.2.2, 3.11, 3.17, 4.2.12, 5.3

**Partial Occupancy or Use**

9.6.6, 9.9

**Patching, Cutting and**

3.14, 6.2.5

**Patents**

3.17

**Payment, Applications for**

4.2.5, 7.3.9, 9.2, 9.3, 9.4, 9.5, 9.6.3, 9.7, 9.8.5, 9.10.1, 14.2.3, 14.2.4, 14.4.3

**Payment, Certificates for**

4.2.5, 4.2.9, 9.3.3, 9.4, 9.5, 9.6.1, 9.6.6, 9.7, 9.10.1, 9.10.3, 14.1.1.3, 14.2.4

**Payment, Failure of**

9.5.1.3, 9.7, 9.10.2, 13.5, 14.1.1.3, 14.2.1.2

**Payment, Final**

4.2.1, 4.2.9, 9.10, 12.3, 14.2.4, 14.4.3

**Payment Bond, Performance Bond and**

7.3.4.4, 9.6.7, 9.10.3, 11.1.2

**Payments, Progress**

9.3, 9.6, 9.8.5, 9.10.3, 14.2.3, 15.1.4

**PAYMENTS AND COMPLETION**

**9**

**Payments to Subcontractors**

5.4.2, 9.5.1.3, 9.6.2, 9.6.3, 9.6.4, 9.6.7, 14.2.1.2

**PCB**

10.3.1

**Performance Bond and Payment Bond**

7.3.4.4, 9.6.7, 9.10.3, 11.1.2

**Permits, Fees, Notices and Compliance with Laws**

2.3.1, 3.7, 3.13, 7.3.4.4, 10.2.2

**PERSONS AND PROPERTY, PROTECTION OF**

**10**

**Polychlorinated Biphenyl**

10.3.1

**Product Data, Definition of**

3.12.2

**Product Data and Samples, Shop Drawings**

3.11, 3.12, 4.2.7

**Progress and Completion**

4.2.2, 8.2, 9.8, 9.9.1, 14.1.4, 15.1.4

**Progress Payments**

9.3, 9.6, 9.8.5, 9.10.3, 14.2.3, 15.1.4

**Project, Definition of**

1.1.4

Project Representatives  
4.2.10  
**Property Insurance**  
10.2.5, 11.2  
**Proposal Requirements**  
1.1.1  
**PROTECTION OF PERSONS AND PROPERTY**  
**10**  
Regulations and Laws  
1.5, 2.3.2, 3.2.3, 3.6, 3.7, 3.12.10, 3.13, 9.6.4, 9.9.1,  
10.2.2, 13.1, 13.3, 13.4.1, 13.4.2, 13.5, 14, 15.2.8,  
15.4  
Rejection of Work  
4.2.6, 12.2.1  
Releases and Waivers of Liens  
9.3.1, 9.10.2  
Representations  
3.2.1, 3.5, 3.12.6, 8.2.1, 9.3.3, 9.4.2, 9.5.1, 9.10.1  
Representatives  
2.1.1, 3.1.1, 3.9, 4.1.1, 4.2.10, 13.2.1  
Responsibility for Those Performing the Work  
3.3.2, 3.18, 4.2.2, 4.2.3, 5.3, 6.1.3, 6.2, 6.3, 9.5.1, 10  
Retainage  
9.3.1, 9.6.2, 9.8.5, 9.9.1, 9.10.2, 9.10.3  
**Review of Contract Documents and Field**  
**Conditions by Contractor**  
3.2, 3.12.7, 6.1.3  
Review of Contractor's Submittals by Owner and  
Architect  
3.10.1, 3.10.2, 3.11, 3.12, 4.2, 5.2, 6.1.3, 9.2, 9.8.2  
Review of Shop Drawings, Product Data and  
Samples by Contractor  
3.12  
**Rights and Remedies**  
1.1.2, 2.4, 2.5, 3.5, 3.7.4, 3.15.2, 4.2.6, 5.3, 5.4, 6.1,  
6.3, 7.3.1, 8.3, 9.5.1, 9.7, 10.2.5, 10.3, 12.2.1, 12.2.2,  
12.2.4, 13.3, 14, 15.4  
**Royalties, Patents and Copyrights**  
3.17  
Rules and Notices for Arbitration  
15.4.1  
**Safety of Persons and Property**  
10.2, 10.4  
**Safety Precautions and Programs**  
3.3.1, 4.2.2, 4.2.7, 5.3, 10.1, 10.2, 10.4  
**Samples, Definition of**  
3.12.3  
**Samples, Shop Drawings, Product Data and**  
3.11, 3.12, 4.2.7  
**Samples at the Site, Documents and**  
3.11  
**Schedule of Values**  
9.2, 9.3.1  
Schedules, Construction  
3.10, 3.12.1, 3.12.2, 6.1.3, 15.1.6.2  
Separate Contracts and Contractors  
1.1.4, 3.12.5, 3.14.2, 4.2.4, 4.2.7, 6, 8.3.1, 12.1.2

**Separate Contractors, Definition of**  
6.1.1  
**Shop Drawings, Definition of**  
3.12.1  
**Shop Drawings, Product Data and Samples**  
3.11, 3.12, 4.2.7  
**Site, Use of**  
3.13, 6.1.1, 6.2.1  
Site Inspections  
3.2.2, 3.3.3, 3.7.1, 3.7.4, 4.2, 9.9.2, 9.4.2, 9.10.1, 13.4  
Site Visits, Architect's  
3.7.4, 4.2.2, 4.2.9, 9.4.2, 9.5.1, 9.9.2, 9.10.1, 13.4  
Special Inspections and Testing  
4.2.6, 12.2.1, 13.4  
**Specifications, Definition of**  
1.1.6  
**Specifications**  
1.1.1, 1.1.6, 1.2.2, 1.5, 3.12.10, 3.17, 4.2.14  
Statute of Limitations  
15.1.2, 15.4.1.1  
Stopping the Work  
2.2.2, 2.4, 9.7, 10.3, 14.1  
Stored Materials  
6.2.1, 9.3.2, 10.2.1.2, 10.2.4  
**Subcontractor, Definition of**  
5.1.1  
**SUBCONTRACTORS**  
5  
Subcontractors, Work by  
1.2.2, 3.3.2, 3.12.1, 3.18, 4.2.3, 5.2.3, 5.3, 5.4,  
9.3.1.2, 9.6.7  
**Subcontractual Relations**  
5.3, 5.4, 9.3.1.2, 9.6, 9.10, 10.2.1, 14.1, 14.2.1  
Submittals  
3.10, 3.11, 3.12, 4.2.7, 5.2.1, 5.2.3, 7.3.4, 9.2, 9.3,  
9.8, 9.9.1, 9.10.2, 9.10.3  
Submittal Schedule  
3.10.2, 3.12.5, 4.2.7  
**Subrogation, Waivers of**  
6.1.1, 11.3  
**Substances, Hazardous**  
10.3  
**Substantial Completion**  
4.2.9, 8.1.1, 8.1.3, 8.2.3, 9.4.2, 9.8, 9.9.1, 9.10.3,  
12.2, 15.1.2  
**Substantial Completion, Definition of**  
9.8.1  
Substitution of Subcontractors  
5.2.3, 5.2.4  
Substitution of Architect  
2.3.3  
Substitutions of Materials  
3.4.2, 3.5, 7.3.8  
**Sub-subcontractor, Definition of**  
5.1.2  
Subsurface Conditions  
3.7.4



**Successors and Assigns**

**13.2**

**Superintendent**

3.9, 10.2.6

**Supervision and Construction Procedures**

1.2.2, 3.3, 3.4, 3.12.10, 4.2.2, 4.2.7, 6.1.3, 6.2.4,  
7.1.3, 7.3.4, 8.2, 8.3.1, 9.4.2, 10, 12, 14, 15.1.4

**Suppliers**

1.5, 3.12.1, 4.2.4, 4.2.6, 5.2.1, 9.3, 9.4.2, 9.5.4, 9.6,  
9.10.5, 14.2.1

**Surety**

5.4.1.2, 9.6.8, 9.8.5, 9.10.2, 9.10.3, 11.1.2, 14.2.2,  
15.2.7

**Surety, Consent of**

9.8.5, 9.10.2, 9.10.3

**Surveys**

1.1.7, 2.3.4

**Suspension by the Owner for Convenience**

**14.3**

**Suspension of the Work**

3.7.5, 5.4.2, 14.3

**Suspension or Termination of the Contract**

5.4.1.1, 14

**Taxes**

3.6, 3.8.2.1, 7.3.4.4

**Termination by the Contractor**

14.1, 15.1.7

**Termination by the Owner for Cause**

5.4.1.1, 14.2, 15.1.7

**Termination by the Owner for Convenience**

**14.4**

**Termination of the Architect**

2.3.3

**Termination of the Contractor Employment**

14.2.2

**TERMINATION OR SUSPENSION OF THE CONTRACT**

**14**

**Tests and Inspections**

3.1.3, 3.3.3, 3.7.1, 4.2.2, 4.2.6, 4.2.9, 9.4.2, 9.8.3,  
9.9.2, 9.10.1, 10.3.2, 12.2.1, 13.4

**TIME**

**8**

**Time, Delays and Extensions of**

3.2.4, 3.7.4, 5.2.3, 7.2.1, 7.3.1, 7.4, 8.3, 9.5.1, 9.7,  
10.3.2, 10.4, 14.3.2, 15.1.6, 15.2.5

**Time Limits**

2.1.2, 2.2, 2.5, 3.2.2, 3.10, 3.11, 3.12.5, 3.15.1, 4.2,  
5.2, 5.3, 5.4, 6.2.4, 7.3, 7.4, 8.2, 9.2, 9.3.1, 9.3.3,  
9.4.1, 9.5, 9.6, 9.7, 9.8, 9.9, 9.10, 12.2, 13.4, 14,  
15.1.2, 15.1.3, 15.4

**Time Limits on Claims**

3.7.4, 10.2.8, 15.1.2, 15.1.3

**Title to Work**

9.3.2, 9.3.3

**UNCOVERING AND CORRECTION OF WORK**

**12**

**Uncovering of Work**

**12.1**

**Unforeseen Conditions, Concealed or Unknown**

3.7.4, 8.3.1, 10.3

**Unit Prices**

7.3.3.2, 9.1.2

**Use of Documents**

1.1.1, 1.5, 2.3.6, 3.12.6, 5.3

**Use of Site**

3.13, 6.1.1, 6.2.1

**Values, Schedule of**

9.2, 9.3.1

**Waiver of Claims by the Architect**

13.3.2

**Waiver of Claims by the Contractor**

9.10.5, 13.3.2, 15.1.7

**Waiver of Claims by the Owner**

9.9.3, 9.10.3, 9.10.4, 12.2.2.1, 13.3.2, 14.2.4, 15.1.7

**Waiver of Consequential Damages**

14.2.4, 15.1.7

**Waiver of Liens**

9.3, 9.10.2, 9.10.4

**Waivers of Subrogation**

6.1.1, 11.3

**Warranty**

3.5, 4.2.9, 9.3.3, 9.8.4, 9.9.1, 9.10.2, 9.10.4, 12.2.2,  
15.1.2

**Weather Delays**

8.3, 15.1.6.2

**Work, Definition of**

**1.1.3**

**Written Consent**

1.5.2, 3.4.2, 3.7.4, 3.12.8, 3.14.2, 4.1.2, 9.3.2, 9.10.3,  
13.2, 13.3.2, 15.4.4.2

**Written Interpretations**

4.2.11, 4.2.12

**Written Orders**

1.1.1, 2.4, 3.9, 7, 8.2.2, 12.1, 12.2, 13.4.2, 14.3.1

## **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:

- .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.



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

FROM:

TO: City of Orange Beach, Alabama (Owner)

PROJECT: **PROJECT NAME**

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 \_\_\_\_\_, 2017.

\_\_\_\_\_

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.

\_\_\_\_\_



ORANGE BEACH RECREATION COMPLEX NEW GYMNASIUM  
CITY OF ORANGE BEACH  
ORANGE BEACH, ALABAMA

February 18, 2019  
DAI 3891.01

**SECTION 00 7300  
SUPPLEMENTARY CONDITIONS**

## SECTION 00 7300 SUPPLEMENTARY CONDITIONS

### PART 1 GENERAL

#### 1.1 SUMMARY

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

#### 1.2 RELATED SECTIONS

Section 00 5000 - Contracting Forms and Supplements.

#### 1.3 MODIFICATIONS TO GENERAL CONDITIONS

##### ARTICLE 1.1 - BASIC DEFINITIONS

After Section 1.1.8, add the following definitions:

##### 1.1.9 Miscellaneous Definitions

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

#### 1.4 ARTICLE 3 - CONTRACTOR

Delete Paragraph 3.6 and replace with the following;

##### 3.6 TAXES

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

##### ARTICLE 5 - SUBCONTRACTORS

Add the following subparagraph:

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

##### ARTICLE 7 - CHANGES IN THE WORK

Add the following subparagraphs:

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

- .1 For the Contractor, for Work performed by the Contractor's own forces, 20 percent of the cost.
- .2 For the Contractor, for Work performed by the Contractor's Subcontractors, 10 percent of the amount due the Subcontractors.
- .3 For each Subcontractor involved, for Work performed by that Subcontractor's own forces, 15 percent of the cost.
- .4 For each Subcontractor involved, for Work performed by the Subcontractor's Sub-subcontractors, 10 percent of the amount due the Sub-subcontractor.
- .5 Cost to which overhead and profit is to be applied shall be determined in accordance with Section 7.3.7.
- .6 In order to facilitate checking of quotations for extras or credits, all proposals, except those so minor that their propriety can be seen by inspection, shall be accompanied by a complete itemization of costs including labor, materials and Subcontracts. Labor and materials shall be itemized in the manner prescribed above. Where major cost items are Subcontracts, they shall be itemized also. In no case will a change involving over \$5,000.00 be approved without such itemization.

#### **ARTICLE 8 - TIME**

Add the following subparagraph:

8.1.5: Contract Time commences at the time indicated in a written Notice To Proceed. The Work shall be Substantially Complete on or before October 4, 2019 at 5:00 pm CST on that day. See Section 01 1000 - Summary, 1.02 D. for other pertinent dates.

#### **ARTICLE 9 - PAYMENTS AND COMPLETION**

Add the following subparagraph:

- 9.3.1.3 Until Substantial Completion, the Owner shall pay 90 percent of the amount due the Contractor on account of progress payments.
- 9.3.1.4 Until all work is satisfactorily completed in accordance with this agreement and all closeout requirements have been provided, less five percent (5%) of the amount of such estimate which is to be retained by the Owner.

Add the following section:

- 9.11: Liquidated Damages:
  - 9.11 Liquidated Damages shall be \$300 per day.

#### **ARTICLE 11 - INSURANCE AND BONDS**

##### **ARTICLE 11.1 - CONTRACTORS LIABILITY INSURANCE**

Contractors Liability Insurance: Add the following Section 11.1.1.9:

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

Add the following Clause 11.1.2.1 to 11.1.2:

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

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

2. Comprehensive or Commercial General Liability (including Premises-Operations;

Independent Contractors' Protective; Products and Completed Operations; Broad Form Property Damage):

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

Add the following Section 11.1.2.2:

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

Add to Section 11.1.3:

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

Add Section 11.1.3.1:

11.1.3.1 Certificates of insurance shall be in the form of Acord Form 25-S, supplemented by AIA Document G715, "Supplemental Attachment", or otherwise acceptable to the Owner and listing the Owner as the certificate holder. The insurance certificate(s) must be delivered to the Owner with the Construction Contract and Bonds for final approval and execution of the Construction Contract. The insurance certificate must provide the following:

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

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

11.4.3: The bond value requirements are as follows:

Provide bonds on City of Orange Beach Forms.

Provide a 100 percent Performance Bond.

Provide a 100 percent Payment Bond.

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

#### **ARTICLE 15.3 - MEDIATION**

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

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

#### **ARTICLE 15.4 - ARBITRATION**

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

**PART 2 PRODUCTS - NOT USED**  
**PART 3 EXECUTION - NOT USED**

**END OF DOCUMENT**



**SECTION 00 7323.22**

**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)

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.

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

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 Gymnasium, City of Orange Beach, Orange Beach, AL.
  - 1. Alabama Building Commission Project Number: TBD.
- B. Owner's Name: City of Orange Beach.
  - 1. Web Site: [www.orangebeachal.gov](http://www.orangebeachal.gov).  
Telephone: 251-981-6979.
  - 2. City Administrator for the City of Orange beach: Ken Grimes, Jr., City Administrator.
  - 3. Owner's Representative: Ken Grimes, Jr., City Administrator.
    - a. 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.
  - 120 Twenty Third Street South
  - Birmingham, AL 35233
  - Telephone: 205-322-7482
- D. The Project consists of an addition to the existing Orange Beach Recreation Complex for a new children's gymnasium.

**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. 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.
- C. Changes in the Work: All changes in the work shall be in writing. Owner's representative for the purposes of execution of changes in the work will be Ken Grimes, Jr., City Administrator.
- D. Time Allotted for Completion:
  - 1. Bids will be received on the date and hour as described in Section 00 1113 Advertisement for Bids. Unless otherwise indicated bids will be received March 5, 2019 at 2:00 PM.
  - 2. It is anticipated that Notice to Proceed will be issued on or about March 3, 2019.
  - 3. The entire Work shall be Substantially Complete no later than October 4, 2019 at 5:00 PM.
  - 4. See General Conditions and Supplementary Conditions for Liquidated Damage provisions.
- E. 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.
- F. Submittals: All submittals shall be addressed to Davis Architects, Inc., 120 Twenty Third Street South, Birmingham, AL 35233, Attention Jeff Menasco or at e-mail address [jmenasco@dadot.com](mailto:jmenasco@dadot.com).
- G. Sales Tax Exemption: The Owner is a tax-exempt entity and does not pay sales or use tax. See Section 01 2976.13 - Sales and Use Tax Savings for additional information. Obtain Certificate of Exemption from Alabama Department of Revenue (ADOR).

- H. All questions, clarifications, etc. should be addressed to Davis Architects, Inc., 120 Twenty Third Street South, Birmingham AL, 35233, Attention Jeff Menasco or at e-mail address [jmenasco@dadot.com](mailto:jmenasco@dadot.com).

### **1.03 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.
- C. Plumbing: Alter existing system and add new construction, keeping existing in operation.
- D. HVAC: Alter existing system and add new construction, keeping existing in operation.
- E. Electrical Power and Lighting: Alter existing system and add new construction, keeping existing in operation.
- F. Fire Suppression Sprinklers: Alter existing system and add new construction, keeping existing in operation.
- E. Fire Alarm: Alter existing system and add new construction, keeping existing in operation.

### **1.04 WORK BY OWNER**

- A. Items noted NIC (Not in Contract) will be supplied and installed by Owner before Substantial Completion.

### **1.05 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. Owner intends to continue to occupy adjacent portions of the existing building site during the entire construction period
- C. Owner intends to occupy the Project upon Substantial Completion.
- D. Cooperate with Owner to minimize conflict and to facilitate Owner's operations.
- E. Schedule the Work to accommodate Owner occupancy.

### **1.06 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.
  - 3. 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. 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.
  2. No smoking shall be allowed within buildings or within 25 feet of a building entrances, operable windows or outside air intakes.
  3. Shirts and other proper clothing are required on the job.
  4. Clothing, stickers, bumper stickers, license tags and any other device which contains obscene works, symbols or messages which are offensive are expressly prohibited.
  5. Cursing, vulgar, obscene, flirtatious language, gestures manners, etc. will not be tolerated.
  6. Use and presence of alcoholic beverages, illegal substances and firearms are not permitted on site.
  7. It is the responsibility of the General Contractor to provide a drug free work place.
- C. 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.
- D. Provide access to and from site as required by law and by Owner:
  1. Access to the Work: Coordinate access routes, parking, lay-down space and schedule of operation with Owner. Limit construction access to only approved areas. Stay west of the Community Center as much as possible.
  2. Comply with Owners site access requirements including check-in with Owner, identification badges to be obtained through Owner's site access control procedures.
  3. 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.
  4. Do not obstruct roadways, sidewalks, or other public ways without permit.
- E. Contractor's 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 job site. Comply with all regulations and requirements of governmental authorities having jurisdiction. GC parking to use lots west of the Community Center as primary parking.
  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.
- F. Existing building spaces may not be used for storage.
- G. Time Restrictions:
  1. Coordinate execution times of especially noisy exterior work with Owner. Follow City ordinances related to noise.
  2. Restriction of Deliveries.
    - a. Follow City ordinances related to noise. Determine as needed based on safety concerns and site restrictions while existing facility continues to operate daily.
- H. Utility Outages and Shutdown:
  1. Prevent accidental disruption of utility services to other facilities.

**1.07 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.

**1.08 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.
- 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 requirements of authorities having jurisdiction 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.

**1.09 WORK SEQUENCE**

**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. Document 00 7200 - General Conditions and Document 00 7300 - Supplementary Conditions: Additional requirements for progress payments, final payment, changes in the Work.
- C. Document 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. Form to be used: AIA G703, Continuation Sheet (for G702, Application and Certificate for Payment).
- 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. Form to be used: AIA G702, Application and Certificate for Payment with G703, Continuation Sheet.
- 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 three 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 the 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.

**1.02 RELATED REQUIREMENTS**

- A. Section 01 2000 - Price and Payment Procedures: Additional payment and modification procedures.
- B. Section 01 2200 - Unit Prices.

**1.03 CASH ALLOWANCES**

- A. Costs Included in Cash Allowances: Cost to Contractor of product less applicable trade discounts and shall include taxes, freight equipment rental and delivery to project site.
- 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. 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.
- D. Take all measurements and compute quantities. Measurements and quantities will be verified by Architect.
- E. 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.
- F. 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.
- G. Funds will be drawn from each Cash Allowance only by Change Order.
- H. Differences in allowance and actual costs will be adjusted by Change Order.

**1.04 ALLOWANCES SCHEDULE**

- A. Allowance No. One: Contingency Allowance: Include the stipulated sum/price of \$50,000.00 for use upon Owner's instructions.

**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 00 4102 - Attachment A to the Bid Form - Stated Allowances and Unit Prices.
- C. Section 01 2000 - Price and Payment Procedures: Additional payment and modification procedures.
- D. 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 conforming to 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 Wall Panels:
  - 1. Base Bid Item:
  - 2. Alternate Item: Provide Acoustical Wall Panels. Comply with Drawings and Specification Sections.

**PART 2 PRODUCTS - NOT USED**

**PART 3 EXECUTION - NOT USED**

**END OF SECTION**

**SECTION 01 2500**  
**SUBSTITUTION PROCEDURES**

**PART 1 GENERAL**

**1.01 SECTION INCLUDES**

- A. Procedural requirements for proposed substitutions.

**1.02 RELATED REQUIREMENTS**

- A. Section 00 2113 - Instructions to Bidders: Restrictions on timing of substitution requests.
- B. Section 00 4325 - Substitution Request Form: Required form for substitution requests made before end of Bidding/Negotiation Phase (During Procurement).
- C. Section 00 6325 - Substitution Request Form - During Construction: Required form for substitution requests made after the Bidding/Negotiation Phase (During Construction).
- D. Section 01 2300 - Alternates, for product alternatives affecting this section.
- E. Section 01 3000 - Administrative Requirements: Submittal procedures, coordination.
- F. Section 01 6000 - Product Requirements: Fundamental product requirements, product options, delivery, storage, and handling.

**1.03 DEFINITIONS**

- A. Substitutions: Changes from Contract Documents requirements proposed by Contractor to materials, products, assemblies, and equipment.
  - 1. Substitutions for Cause: Proposed due to changed Project circumstances beyond Contractor's control.
    - a. Unavailability.
    - b. Regulatory changes.
  - 2. Substitutions for Convenience: Proposed due to possibility of offering substantial advantage to the Project.
    - a. Substitution requests offering advantages solely to the Contractor will not be considered.

**1.04 REFERENCE STANDARDS**

- A. CSI/CSC Form 1.5C - Substitution Request (During the Bidding/Negotiating Stage); Current Edition.
- B. CSI/CSC Form 13.1A - Substitution Request (After the Bidding/Negotiating Phase); Current Edition.

**PART 2 PRODUCTS - NOT USED**

**PART 3 EXECUTION**

**3.01 GENERAL REQUIREMENTS**

- A. A Substitution Request for products, assemblies, materials, and equipment constitutes a representation that the submitter:
  - 1. Has investigated proposed product and determined that it meets or exceeds the quality level of the specified product, equipment, assembly, or system.
  - 2. Agrees to provide the same warranty for the substitution as for the specified product.
  - 3. Agrees to provide same or equivalent maintenance service and source of replacement parts, as applicable.
  - 4. Agrees to coordinate installation and make changes to other work that may be required for the work to be complete, with no additional cost to Owner.
  - 5. Waives claims for additional costs or time extension that may subsequently become apparent.
  - 6. Agrees to reimburse Owner and Architect for review or redesign services associated with re-approval by authorities.
- B. A Substitution Request for specified installer constitutes a representation that the submitter:

1. Has acted in good faith to obtain services of specified installer, but was unable to come to commercial, or other terms.
- C. Document each request with complete data substantiating compliance of proposed substitution with Contract Documents. Burden of proof is on proposer.
  1. Note explicitly any non-compliant characteristics.
- D. Content: Include information necessary for tracking the status of each Substitution Request, and information necessary to provide an actionable response.
  1. Forms indicated in the Project Manual are adequate for this purpose, and must be used.
    - a. Project Information:
      - 1) Official project name and number, and any additional required identifiers established in Contract Documents.
      - 2) Owner's, Architect's, and Contractor's names.
    - b. Substitution Request Information:
      - 1) Discrete and consecutive Substitution Request number, and descriptive subject/title.
      - 2) Indication of whether the substitution is for cause or convenience.
      - 3) Issue date.
      - 4) Reference to particular Contract Document(s) specification section number, title, and article/paragraph(s).
      - 5) Description of Substitution.
      - 6) Reason why the specified item cannot be provided.
      - 7) Differences between proposed substitution and specified item.
      - 8) Description of how proposed substitution affects other parts of work.
    - c. Attached Comparative Data: Provide point-by-point, side-by-side comparison addressing essential attributes specified, as appropriate and relevant for the item:
      - 1) Physical characteristics.
      - 2) In-service performance.
      - 3) Expected durability.
      - 4) Visual effect.
      - 5) Sustainable design features.
      - 6) Warranties.
      - 7) Other salient features and requirements.
      - 8) Include, as appropriate or requested, the following types of documentation:
        - (a) Product Data:
        - (b) Samples.
        - (c) Certificates, test, reports or similar qualification data.
        - (d) Drawings, when required to show impact on adjacent construction elements.
    - d. Impact of Substitution:
      - 1) Savings to Owner for accepting substitution.
      - 2) Change to Contract Time due to accepting substitution.
- E. Limit each request to a single proposed substitution item.
  1. Submit an electronic document, combining the request form with supporting data into single document.

### **3.02 SUBSTITUTION PROCEDURES DURING BIDDING PHASE**

- A. Instructions to Bidders specifies time restrictions for submitting requests for substitutions during the bidding period, and the documents required.
- B. Submittal Form (before contract award):
  1. Submit substitution requests by completing CSI/CSC Form 1.5C - Substitution Request (During the Bidding/Negotiating Stage). See this form for additional information and instructions. Use only this form; other forms of submission are unacceptable.

### **3.03 SUBSTITUTION PROCEDURES AFTER BIDDING PHASE**

- A. Submittal Form (after contract award):
  - 1. Submit substitution requests by completing CSI/CSC Form 13.1A - Substitution Request. See this form for additional information and instructions. Use only this form; other forms of submission are unacceptable.
- B. Submit request for Substitution for Cause within 14 days of discovery of need for substitution, but not later than 14 days prior to time required for review and approval by Architect, in order to stay on approved project schedule.
- C. Submit request for Substitution for Convenience immediately upon discovery of its potential advantage to the project, but not later than 14 days prior to time required for review and approval by Architect, in order to stay on approved project schedule.
  - 1. In addition to meeting general documentation requirements, document how the requested substitution benefits the Owner through cost savings, time savings, greater energy conservation, or in other specific ways.
  - 2. Document means of coordinating of substitution item with other portions of the work, including work by affected subcontractors.
  - 3. Bear the costs engendered by proposed substitution of:
    - a. Owner's compensation to the Architect for any required redesign, time spent processing and evaluating the request.
    - b. Other construction by Owner.
    - c. Other unanticipated project considerations.
- D. Substitutions will not be considered under one or more of the following circumstances:
  - 1. When they are indicated or implied on shop drawing or product data submittals, without having received prior approval.
  - 2. Without a separate written request.
  - 3. When acceptance will require revisions to the Contract Documents.

### **3.04 RESOLUTION**

- A. Architect may request additional information and documentation prior to rendering a decision. Provide this data in an expeditious manner.
- B. Architect will notify Contractor in writing of decision to accept or reject request.
  - 1. Architect's decision following review of proposed substitution will be noted on the submitted form.

### **3.05 ACCEPTANCE**

- A. Accepted substitutions change the work of the Project. They will be documented and incorporated into work of the project by Change Order, Construction Change Directive, Architectural Supplementary Instructions, or similar instruments provided for in the Conditions of the Contract.

### **3.06 CLOSEOUT ACTIVITIES**

- A. See Section 01 7800 - Closeout Submittals, for closeout submittals.
- B. Include completed Substitution Request Forms as part of the Project record. Include both approved and rejected Requests.

### **3.07 ATTACHMENTS**

- A. A facsimile of the Substitution Request Form (During Construction) required to be used on the Project is included after this section.

**END OF SECTION**

**SECTION 01 2976.13**  
**SALES AND USE TAX SAVINGS**

**PART 1 - GENERAL**

**1.1 GENERAL DESCRIPTION**

- A. **PURPOSE:** The Owner, City of Orange Beach, Florida, 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 4102- Accounting of Sales Tax (Mandatory Attachment to Proposal Form).

**1.2 RELATED REQUIREMENTS**

- A. Section 00 4100 - Proposal Form.
- B. Section 00 4102 - Accounting of Sales Tax
- C. Section 00 6276 - Application and Certificate for Payment C-10ST
- D. Section 00 7323 - Application for Sales and Use Tax Exemption (ADOR ST: EXC-01).

**1.3 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 4102 - 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, construction 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 purchases. ADOR will have the ability to levy fines and may bar the issuance or use of certificates of exemption upon determination of willful misuse by the contractor or a subcontractor.
- 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 FORMATERIALS:**

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.

**1.4 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 01 3216 - Construction Progress Schedule: Form, content, and administration of schedules.
- B. Section 01 7000 - Execution and Closeout Requirements: Additional coordination requirements.
- C. 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 3216**  
**CONSTRUCTION PROGRESS SCHEDULE**

**PART 1 GENERAL**

**1.01 SECTION INCLUDES**

- A. Preliminary schedule with network analysis diagrams.
- B. Construction progress schedule, with network analysis diagrams and reports.
- C. Submittal schedule.

**1.02 RELATED SECTIONS**

- A. Section 01 1000 - Summary: occupancy and owner-furnished items where applicable.

**1.03 REFERENCE STANDARDS**

- A. AGC (CPSM) - Construction Planning and Scheduling Manual; 2004.
- B. M-H (CPM) - CPM in Construction Management - Project Management with CPM; O'Brien; 2006.

**1.04 DEFINITIONS**

- A. Activity: A discrete part of a project that can be identified for planning, scheduling, monitoring, and controlling the construction project. Activities included in a construction schedule consume time and resources.
  - 1. Critical activities are activities on the critical path. They must start and finish on the planned start and finish times.
  - 2. Predecessor activity is an activity that must be completed before a given activity can be started.
- B. CPM: Critical path method, which is a method of planning and scheduling a construction project where activities are arranged based on activity relationships. Network calculations determine when activities can be performed and the critical path of Project.
- C. Critical Path: The longest continuous chain of activities through the network schedule that establishes the minimum overall Project duration and contains no float.
- D. Event: The starting or ending point of an activity.
- E. Fagnel: A partial or fragmentary network that breaks down activities into smaller activities for greater detail.
- F. Major Area: A story of construction, a separate building, or a similar significant construction element.
- G. Milestone: A key or critical point in time for reference or measurement.

**1.05 SUBMITTALS**

- A. Upon receipt of Notice to Proceed, submit credentials and experience of Contractors Scheduler for approval by Architect.
- B. Within 10 days after date of Agreement, submit preliminary schedule .
- C. If preliminary schedule requires revision after review, submit revised schedule within 10 days.
- D. Within 20 days after review of preliminary schedule, submit draft of proposed complete schedule for review.
  - 1. Include written certification that major Subcontractors have reviewed and accepted proposed schedule.
- E. Within 10 days after joint review, submit complete construction progress schedule.
- F. Submit updated schedule with each Application for Payment.
- G. Submit the number of opaque reproductions that Contractor requires, plus two copies that will be retained by Architect.
- H. Submit under transmittal letter form specified in Section 01 3000 - Administrative Requirements.

### 1.06 QUALITY ASSURANCE

- A. Strictly comply with provisions of General Conditions of the Contract, Document 00700.
- B. Scheduler - Projects over 10,000,000.00: Specialist Consultant specializing in CPM scheduling with five years minimum experience in scheduling construction work of a complexity comparable to this Project, and having use of computer facilities capable of delivering a detailed graphic printout within 48 hours of request. Scheduler shall be approved by Architect.
- C. Scheduler - Projects \$10,000,000.00 and under: Contractor's personnel or specialist Consultant specializing in CPM scheduling with five years minimum experience in scheduling construction work of a complexity comparable to this Project, and having use of computer facilities capable of delivering a detailed graphic printout within 48 hours of request.
- D. Data Collection: . Meet with the Owner, the design team, the Contractor, subcontractors, and other appropriate involved parties to collect activity data and to lead logic sessions to develop a detailed Overall Project Schedule (OPS) for the project.
- E. Cooperation: Cooperate with the Scheduling Consultant and participate in any scheduling meetings.
- F. The schedule will support the milestones and time requirements established for the project, and will include identification of key equipment and material delivery dates and procurement processes needed to support project completion requirements. Submittal, fabrication, and delivery of long-lead items will be tracked. A preliminary version will be drafted and distributed for review. After a meeting has been held to incorporate any necessary changes, the OPS will be finalized and distributed to all parties for use and update throughout the duration of the project.

### 1.07 SCHEDULE FORMAT

- A. Listings: In chronological order according to the start date for each activity. Identify each activity with the applicable specification section number.
- B. Diagram Sheet Size: Maximum 30 x 42 inches or width required.
- C. Sheet Size: Multiples of 8-1/2 x 11 inches.
- D. Scale and Spacing: To allow for notations and revisions.

### 1.08 COORDINATION

- A. Coordinate preparation and processing of schedules and reports with performance of construction activities and with scheduling and reporting of separate contractors.
- B. Coordinate Construction Schedule with the Schedule of Values, list of subcontracts, Submittals Schedule, progress reports, payment requests, and other required schedules and reports.
  - 1. Secure time commitments for performing critical elements of the Work from parties involved.
  - 2. Coordinate each construction activity in the network with other activities and schedule them in proper sequence.
- C. Bi-weekly Meetings:
  - 1. Prior to each regularly scheduled bi-weekly Job Coordination Meeting, the Scheduling Consultant will walk the job and note progress achieved. The Scheduling Consultant will then lead a Job Coordination Meeting with the contractor and subcontractors utilizing Near Term Schedules. The Near Term Schedules will be updated and commitments will be obtained for ongoing activities. Emphasis will be placed on identification and resolution of potential problems that, if not addressed, may impede project progress. The Scheduling Consultant will draft and distribute Near Term Schedules to all parties within 48 hours of each meeting.
- D. The Overall Project Schedule may be revised periodically to reflect major changes in project scope or construction logic, or to add detailed information that is unavailable to the team during the initial OPS development.

## **PART 2 PRODUCTS - NOT USED**

## **PART 3 EXECUTION**

### **3.01 PRELIMINARY SCHEDULE**

- A. Prepare preliminary schedule in the form of a preliminary network diagram.
- B. Submit preliminary network diagram within not less than Ten (10) days after receiving Letter of Intent and/or Notice to Proceed.

### **3.02 CONTENT**

- A. Show complete sequence of construction by activity, with dates for beginning and completion of each element of construction.
- B. Identify each item by specification section number.
- C. Identify work of separate stages and other logically grouped activities.
- D. Provide sub-schedules to define critical portions of the entire schedule.
- E. Include conferences and meetings in schedule.
  - 1. Specifically identify dates of pre-installation conferences.
- F. Show accumulated percentage of completion of each item, and total percentage of Work completed, as of the first day of each month.
- G. Provide separate schedule of submittal dates for shop drawings, product data, and samples, owner-furnished products, Products identified under Allowances, and dates reviewed submittals will be required from Architect. Indicate decision dates for selection of finishes.
- H. Indicate delivery dates for owner-furnished products.
- I. Coordinate content with schedule of values specified in Section 01 2000 - Price and Payment Procedures.
- J. Provide legend for symbols and abbreviations used.

### **3.03 NETWORK ANALYSIS**

- A. Prepare computerized network analysis diagrams and supporting mathematical analyses using the Critical Path Method.
  - 1. Software required: Microsoft Project or other approved software package. If Microsoft Project is not used, provide 2 licensed software packages for use of Architect and Owner.
- B. Time Frame: Extend schedule from date established for the Notice to Proceed to date of Substantial Completion.
  - 1. Contract completion date shall not be changed by submission of a schedule that shows an early completion date, unless specifically authorized by Change Order.
- C. Activity Duration: Each activity duration, with the exception of procurement activities, will range from one (1) to fifteen (15) days, with not over ten percent (10%) of all scheduled activities exceeding 10 days.
  - 1. Procurement Activities: The Scheduling Consultant will include procurement process activities for long lead items and major items, requiring a cycle of more than 60 days, as separate activities in schedule. Procurement cycle activities include, but are not limited to, submittals, approvals, purchasing, fabrication, and delivery.
  - 2. Submittal Review Time: Include review and resubmittal times indicated in Division 1 Section "Submittal Procedures" in schedule. Coordinate submittal review times in Contractor's Construction Schedule with Submittals Schedule.
- D. Constraints: Where applicable, the Scheduling Consultant will include constraints and work restrictions indicated in the Contract Documents and as follows in schedule, and show how the sequence of the Work is affected.
  - 1. Phasing: Arrange list of activities on schedule by phase.
  - 2. Work by Owner: Include a separate activity for each portion of the Work performed by Owner.

3. Products Ordered in Advance: Include a separate activity for each product. Include delivery dates. Delivery dates indicated stipulate the "must have" delivery date.
4. Owner-Furnished Products: Include a separate activity for each product. Include delivery dates. Delivery dates indicated stipulate the " delivery date.
5. Work Restrictions: Show the effect of the following items on the schedule:
  - a. Coordination with existing construction.
  - b. Uninterruptible services.
  - c. Partial occupancy before Substantial Completion.
  - d. Use of premises restrictions.
  - e. Provisions for future construction.
  - f. Seasonal variations.
  - g. Environmental control.
6. Work Stages: Indicate important stages of construction for each major portion of the Work, including, but not limited to, the following:
  - a. Shop drawings and coordination documents.
  - b. Subcontract awards.
  - c. Submittals.
  - d. Purchases.
  - e. Mockups.
  - f. Fabrication.
  - g. Sample testing.
  - h. Deliveries.
  - i. Installation.
  - j. Tests and inspections.
  - k. Adjusting.
  - l. Startup and placement into final use and operation.
7. Area Separations: Identify each major area of construction for each major portion of the Work. Indicate where each construction activity within a major area must be sequenced or integrated with other construction activities to provide for the following:
  - a. Structural completion.
  - b. Permanent space enclosure.
  - c. Roof dry-in.
  - d. Skin dry-in.
  - e. Permanent power.
  - f. Conditioned air.
  - g. Completion of mechanical installation.
  - h. Completion of electrical installation.
  - i. Substantial Completion.
- E. D.Milestones: Include milestones indicated in the Contract Documents in schedule, including, but not limited to, the Notice to Proceed, Substantial Completion, and Final Completion.
- F. Illustrate order and interdependence of activities and sequence of work; how start of a given activity depends on completion of preceding activities, and how completion of the activity may restrain start of subsequent activities.
- G. Mathematical Analysis: Tabulate each activity of detailed network diagrams, using calendar dates, and identify for each activity:
  1. Preceding and following event numbers.
  2. Activity description.
  3. Estimated duration of activity, in maximum 15 day intervals.
  4. Earliest start date.
  5. Earliest finish date.
  6. Actual start date.
  7. Actual finish date.
  8. Latest start date.

9. Latest finish date.
  10. Total and free float; float time shall accrue to Owner and to Owner's benefit.
  11. Monetary value of activity, keyed to Schedule of Values.
  12. Percentage of activity completed.
  13. Responsibility.
- H. Analysis Program: Capable of accepting revised completion dates, and recomputation of all dates and float.
- I. Required Reports: List activities in sorts or groups:
- J. Reports that may be Required: List activities in sorts or groups:
1. By preceding work item or event number from lowest to highest.
  2. By amount of float, then in order of early start.
  3. By responsibility in order of earliest possible start date.
  4. In order of latest allowable start dates.
  5. In order of latest allowable finish dates.
  6. Contractor's periodic payment request sorted by Schedule of Values listings.
  7. Listing of basic input data that generates the report.
  8. Listing of activities on the critical path.

### **3.04 SUBMITTALS SCHEDULE**

- A. Preparation: Submit a schedule of submittals, arranged in chronological order by dates required by construction schedule. Include time required for review, resubmittal, ordering, manufacturing, fabrication, and delivery when establishing dates.
1. Coordinate Submittals Schedule with list of subcontracts, the Schedule of Values, and Contractor's Construction Schedule.

### **3.05 REVIEW AND EVALUATION OF SCHEDULE**

- A. Participate in joint review and evaluation of schedule with Architect at each submittal.
- B. Evaluate project status to determine work behind schedule and work ahead of schedule.
- C. After review, revise as necessary as result of review, and resubmit within 10 days.

### **3.06 UPDATING SCHEDULE**

- A. Maintain schedules to record actual start and finish dates of completed activities.
- B. Indicate progress of each activity to date of revision, with projected completion date of each activity.
- C. Annotate diagrams to graphically depict current status of Work.
- D. Identify activities modified since previous submittal, major changes in Work, and other identifiable changes.
- E. Indicate changes required to maintain Date of Substantial Completion.
- F. Submit reports required to support recommended changes.
- G. Provide narrative report to define problem areas, anticipated delays, and impact on the schedule. Report corrective action taken or proposed and its effect including the effects of changes on schedules of separate contractors.

### **3.07 DISTRIBUTION OF SCHEDULE**

- A. Distribute copies of updated schedules to Contractor's project site file, to subcontractors, suppliers, Architect, Owner, and other concerned parties.
- B. Accompanying schedule, issue reports to include the following:
  1. Five (5) progress photos
  2. Summary
  3. Near Term Schedule
  4. Overall Project Schedule
  5. Critical items



6. Project overview summary
- C. Instruct recipients to promptly report, in writing, problems anticipated by projections shown in schedules.

**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 4000**  
**QUALITY REQUIREMENTS**

**PART 1 GENERAL**

**1.01 SECTION INCLUDES**

- A. Submittals.
- B. Quality assurance.
- C. Testing and inspection agencies and services.
- D. Control of installation.
- E. Mock-ups.
- F. Tolerances.
- G. Special inspections required by code.
- H. Manufacturers' field services.
- I. 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 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 Laboratories Testing Concrete and Concrete Aggregates for Use in Construction and Criteria for Laboratory Evaluation; 2014.
- C. ASTM C1093 - Standard Practice for Accreditation of Testing Agencies for Masonry; 2013.
- 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 and/or Testing; 2014a.
- F. ASTM E543 - Standard Specification for Agencies Performing Nondestructive Testing; 2013.
- G. IAS AC89 - Accreditation Criteria for Testing Laboratories; 2010.

**1.04 SUBMITTALS**

- A. See Section 01 3000 - Administrative Requirements, for submittal procedures.
- B. Design Data: Submit for Architect's knowledge as contract administrator for the limited purpose of assessing conformance with information given and the design concept expressed in the contract documents, or for Owner's information.
- C. 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. Conformance 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 conformance with information given and the design concept expressed in the contract documents, or for Owner's information.
- D. Certificates: When specified in individual specification sections, submit certification by the manufacturer and Contractor or installation/application subcontractor to Architect, in quantities specified for Product Data.
1. Indicate material or product conforms to or exceeds specified requirements. Submit supporting reference data, affidavits, and certifications as appropriate.
  2. Certificates may be recent or previous test results on material or product, but must be acceptable to Architect.
- E. 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.
- F. Manufacturer's Field Reports: Submit reports for Architect's benefit as contract administrator or for Owner.
1. Submit for information for the limited purpose of assessing conformance with information given and the design concept expressed in the contract documents.
- G. Erection Drawings: Submit drawings for Architect's benefit as contract administrator or for Owner.
1. Submit for information for the limited purpose of assessing conformance with information given and the design concept expressed in the contract documents.
  2. Data indicating inappropriate or unacceptable Work may be subject to action by Architect or Owner.

#### **1.05 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.

#### **1.06 REFERENCES AND STANDARDS**

- A. For products and workmanship specified by reference to a document or documents not included in the Project Manual, also referred to as reference standards, comply with requirements of the standard, except when more rigid requirements are specified or are required by applicable codes.
- B. Conform to reference standard of date of issue current on date of Contract Documents, except where a specific date is established by applicable code.
- C. Obtain copies of standards where required by product specification sections.
- D. Maintain copy at project site during submittals, planning, and progress of the specific work, until Substantial Completion.
- E. Neither the contractual relationships, duties, or responsibilities of the parties in Contract nor those of Architect shall be altered from the Contract Documents by mention or inference otherwise in any reference document.

### 1.07 TESTING AND INSPECTION AGENCIES AND SERVICES

- A. 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.
- B. Employment of agency in no way relieves Contractor of obligation to perform Work in accordance with requirements of Contract Documents.
- C. Contractor Employed Agency:
  - 1. Testing agency: Comply with requirements of ASTM E329, ASTM E543, ASTM C1021, ASTM C1077, ASTM C1093, ASTM D3740, and \_\_\_\_\_.
  - 2. Inspection agency: Comply with requirements of ASTM D3740, ASTM E329, and \_\_\_\_\_.
  - 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.
- D. 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 manufacturers' instructions, including each step in sequence.
- C. Should manufacturers' instructions conflict with Contract Documents, request clarification from Architect before proceeding.
- D. 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.
- E. Have Work performed by persons qualified to produce required and specified quality.
- F. Verify that field measurements are as indicated on shop drawings or as instructed by the manufacturer.
- G. Secure products in place with positive anchorage devices designed and sized to withstand stresses, vibration, physical distortion, and disfigurement.

#### 3.02 MOCK-UPS

- A. Before installing portions of the Work where mock-ups are required, construct mock-ups in location and size indicated for each form of construction and finish required to comply with the following requirements, using materials indicated for the completed Work. The purpose of mock-up is to demonstrate the proposed range of aesthetic effects and workmanship.
- B. Accepted mock-ups establish the standard of quality the Architect will use to judge the Work.
- C. Integrated Exterior Mock-ups: construct integrated exterior mock-up as indicated on Drawings. Coordinate installation of exterior envelope materials and products as required in individual Specification Sections. Provide adequate supporting structure for mock-up materials as necessary.
- D. Room Mock-ups: Construct room mock-ups as indicated on Drawings. Coordinate installation of materials, products, and assemblies as required in Specification Sections; finish according to requirements. Provide required lighting and any supplemental lighting where required to enable Architect to evaluate quality of the mock-up.



- E. Notify Architect and appropriate Consultant fifteen (15) working days in advance of dates and times when mockups will be constructed.
- F. Provide supervisory personnel who will oversee mock-up construction. Provide workers that will be employed during the construction at Project.
- G. Assemble and erect specified items with specified attachment and anchorage devices, flashings, seals, and finishes.
- H. Obtain Architect's approval of mock-ups before starting work, fabrication, or construction.
  - 1. Architect will issue written comments within seven (7) working days of initial review and each subsequent follow up review of each mock-up.
  - 2. Make corrections as necessary until Architect's approval is issued.
- I. Accepted mock-ups shall be a comparison standard for the remaining Work.
- J. Where mock-up has been accepted by Architect and is specified in product specification sections to be removed, protect mock-up throughout construction, remove mock-up and clear area when directed to do so by Architect.
- K. Where possible salvage and recycle the demolished mock-up materials.

### **3.03 TOLERANCES**

- A. Monitor fabrication and installation tolerance control of products to produce acceptable Work. Do not permit tolerances to accumulate.
- B. Comply with manufacturers' tolerances. Should manufacturers' tolerances conflict with Contract Documents, request clarification from Architect before proceeding.
- C. Adjust products to appropriate dimensions; position before securing products in place.

### **3.04 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-conformance 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-conformance to specified requirements shall be performed by the same agency on instructions by Architect.
- F. Re-testing required because of non-conformance to specified requirements shall be paid for by Contractor.

### **3.05 MANUFACTURERS' FIELD SERVICES**

- A. When specified in individual specification sections, require material or product suppliers or manufacturers to provide qualified staff personnel to observe site conditions, conditions of surfaces and installation, quality of workmanship, start-up of equipment, test, adjust and balance of equipment as applicable, and to initiate instructions when necessary.
- B. Submit qualifications of observer to Architect 30 days in advance of required observations.
  - 1. Observer subject to approval of Architect.
- C. Report observations and site decisions or instructions given to applicators or installers that are supplemental or contrary to manufacturers' written instructions.

### **3.06 SPECIAL INSPECTIONS**

- A. Provide special inspections required by 2003 Edition of International Building Code, Chapter 17 and as otherwise required by the authority having jurisdiction.
- B. Inspections required may include, but are not limited to the following:
  - 1. Earthwork.
  - 2. Inspection of fabricators unless pre-approved in accordance with Section 1704.2.2 of Code.
  - 3. Steel construction: Table 1704.3.
  - 4. Welding.
  - 5. High-strength bolts.
  - 6. Concrete construction: Table 1704.4.
  - 7. Masonry construction: Table 1704.5.1 (Level 1 Special Inspection) and Table 1704.5.2 (Level 2 Special Inspection).
  - 8. Masonry veneers for buildings in Seismic Design Category E and F.
  - 9. Sprayed fire resistant materials.
  - 10. Exterior Insulation and Finish Systems (EIFS).

### **3.07 DEFECT ASSESSMENT**

- A. Replace Work or portions of the Work not conforming to 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 5000**  
**TEMPORARY FACILITIES AND CONTROLS**

**PART 1 GENERAL**

**1.01 SECTION INCLUDES**

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

**1.02 RELATED REQUIREMENTS**

- A. Section 01 5813 - Temporary Project Signage.

**1.03 REFERENCE STANDARDS**

- A. ASTM E84 - Standard Test Method for Surface Burning Characteristics of Building Materials; 2015a.
- B. ASTM E90 - Standard Test Method for Laboratory Measurement of Airborne Sound Transmission Loss of Building Partitions and Elements; 2009.

**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 TELECOMMUNICATIONS SERVICES**

- A. Provide, maintain, and pay for telecommunications services to field office at time of project mobilization.
- B. Telecommunications services shall include:
  - 1. Windows-based personal computer dedicated to project telecommunications, with necessary software and laser printer.
  - 2. Telephone Land Lines: One line, minimum; one handset per line.
  - 3. Internet Connections: Minimum of one; DSL modem or faster.
  - 4. Email: Account/address reserved for project use.
- C. Architect will pay for own telecommunications services.

**1.06 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.

**1.07 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. Provide protection for plants designated to remain. Replace damaged plants.
- D. Protect non-owned vehicular traffic, stored materials, site, and structures from damage.

#### **1.08 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.

#### **1.09 EXTERIOR ENCLOSURES**

- A. Provide temporary insulated weather tight closure of exterior openings to accommodate acceptable working conditions and protection for Products, to allow for temporary heating and maintenance of required ambient temperatures identified in individual specification sections, and to prevent entry of unauthorized persons. Provide access doors with self-closing hardware and locks.

#### **1.10 INTERIOR ENCLOSURES**

- A. Provide temporary partitions and ceilings as indicated to separate work areas from Owner-occupied areas, to prevent penetration of dust and moisture into Owner-occupied areas, and to prevent damage to existing materials and equipment.
- B. Construction: Framing and reinforced polyethylene sheet materials with closed joints and sealed edges at intersections with existing surfaces:
  - 1. STC rating of 35 in accordance with ASTM E90.
  - 2. Maximum flame spread rating of 75 in accordance with ASTM E84.
- C. Paint surfaces exposed to view from Owner-occupied areas.

#### **1.11 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.

#### **1.12 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.

#### **1.13 WASTE REMOVAL**

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

**1.14 FIELD OFFICES**

- A. Office: Weathertight, with lighting, electrical outlets, heating, cooling equipment, and equipped with sturdy furniture, drawing rack and drawing display table.
- B. Provide space for Project meetings, with table and chairs to accommodate 8 persons.
- C. Locate offices a minimum distance of 30 feet from existing and new structures.

**1.15 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.
- B. Project informational signs.

**1.02 RELATED REQUIREMENTS**

- A. Section 01 1000 - Summary: Responsibility to provide signs.

**1.03 REFERENCE STANDARDS**

**1.04 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.

**1.05 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, contrasting colors.

**2.02 PROJECT IDENTIFICATION SIGN**

- A. One painted sign of construction, design, and content shown on Drawings, location designated.

**2.03 PROJECT INFORMATIONAL SIGNS**

- A. Painted informational signs of same colors and lettering as Project Identification sign, or standard products; size lettering to provide legibility at 100 foot distance.
- B. Provide at each field office, storage shed, and directional signs to direct traffic into and within site. Relocate as Work progress requires.

**2.04 SIGNS, SIGNALS, AND DEVICES**

- A. Stock Post Mounted and Wall Mounted Traffic Control and Informational Signs:

**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. Transportation, handling, storage and protection.
- C. Product option requirements.
- D. Substitution limitations and procedures.
- E. Maintenance materials, including extra materials, spare parts, tools, and software.

**1.02 RELATED REQUIREMENTS**

- A. Document 00 4325 - Substitution Request Form.
- B. Document 00 2113 - Instructions to Bidders: Product options and substitution procedures prior to bid date.
- C. Section 01 4000 - Quality Requirements: Product quality monitoring.
- D. Section 22 0513 - Common Motor Requirements for Plumbing Equipment: Motors for plumbing equipment.
- E. Section 23 0513 - Common Motor Requirements for HVAC Equipment: Motors for HVAC equipment.

**1.03 REFERENCE STANDARDS**

- A. NEMA MG 1 - Motors and Generators; 2014.
- 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 Notice to Proceed.
  - 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.
- E. Indicate utility and electrical characteristics, utility connection requirements, and location of utility outlets for service for functional equipment and appliances.

**PART 2 PRODUCTS**

**2.01 EXISTING PRODUCTS**

- A. Do not use materials and equipment removed from existing premises unless specifically required or permitted by the Contract Documents.
- 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 the Contract Documents.
- B. DO NOT USE products having any of the following characteristics:
  - 1. Made using or containing CFC's or HCFC's.
  - 2. Containing lead, cadmium, asbestos.
- C. Provide interchangeable components of the same manufacture for components being replaced.
- D. Motors: Refer to Section 21 0513 - Common Motor Requirements for Fire Suppression Equipment, NEMA MG 1 Type. Specific motor type is specified in individual specification sections.
- 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 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 4325; see this section for additional information and instructions. Use only this form; other forms of submission are unacceptable.
- C. Architect will consider requests for substitutions only within 15 days after date of Agreement.
- D. Substitutions will be considered when a product, through no fault of the Contractor, becomes unavailable or unsuitable due to regulatory change.
  - 1. Submit request for Substitution for Cause within 14 days of discovery of need for substitution, but not later than 14 days prior to time required for review and approval by Architect.
- E. Basis of Design and Approved Manufacturers:
  - 1. Consider Basis of Design product the standard of quality required.

2. Where approved manufacturers and specific products are named, contractor may provide any of the named products without further substitution approval.
  3. Where approved manufacturers are listed, submit data on such manufacturer's product which is equal or better in quality to the Basis of Design product for approval by Architect. Comply with requirements indicated in individual specifications.
- F. Document each request with complete data substantiating compliance of proposed substitution with Contract Documents.
- G. A request for substitution constitutes a representation that the submitter:
1. Has investigated proposed product and determined that it meets or exceeds the quality level of the specified product.
  2. Agrees to provide the same warranty for the substitution as for the specified product.
  3. Agrees to coordinate installation and make changes to other Work that may be required for the Work to be complete with no additional cost to Owner.
  4. Waives claims for additional costs or time extension that may subsequently become apparent.
  5. Agrees to reimburse Owner and Architect for review or redesign services associated with re-approval by authorities.
- H. Substitutions will not be considered when they are indicated or implied on shop drawing or product data submittals, without separate written request, or when acceptance will require revision to the Contract Documents.
- I. Substitution Submittal Procedure (after contract award):
1. Submit seven copies of request for substitution for consideration. Limit each request to one proposed substitution.
  2. Submit shop drawings, product data, and certified test results attesting to the proposed product equivalence. Burden of proof is on proposer.
  3. Architect will notify Contractor in writing of decision to accept or reject request.

### **3.02 TRANSPORTATION AND HANDLING**

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

### **3.03 STORAGE AND PROTECTION**

- A. Designate receiving/storage areas for incoming products so that they are delivered according to installation schedule and placed convenient to work area in order to minimize waste due to excessive materials handling and misapplication.
- B. Store and protect products in accordance with manufacturers' instructions.
- C. Store with seals and labels intact and legible.
- D. Store sensitive products in weather tight, 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. Cover products subject to deterioration with impervious sheet covering. Provide ventilation to prevent condensation and degradation of products.
- J. Store loose granular materials on solid flat surfaces in a well-drained area. Prevent mixing with foreign matter.
- K. Prevent contact with material that may cause corrosion, discoloration, or staining.
- L. Provide equipment and personnel to store products by methods to prevent soiling, disfigurement, or damage.
- M. Arrange storage of products to permit access for inspection. Periodically inspect to verify products are undamaged and are maintained in acceptable condition.

**END OF SECTION**

**SECTION 01 7000**  
**EXECUTION AND CLOSEOUT REQUIREMENTS**

**PART 1 GENERAL**

**1.01 SECTION INCLUDES**

- A. Examination, preparation, and general installation procedures.
- B. Requirements for alterations work, including selective demolition, except removal, disposal, and/or remediation of hazardous materials and toxic substances.
- C. Pre-installation meetings.
- D. Cutting and patching.
- E. Surveying for laying out the work.
- F. Cleaning and protection.
- G. Starting of systems and equipment.
- H. Demonstration and instruction of Owner personnel.
- I. Closeout procedures, including Contractor's Correction Punch List, except payment procedures.
- J. General requirements for maintenance service.

**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 4000 - Quality Requirements: Testing and inspection procedures.
- D. Section 01 5000 - Temporary Facilities and Controls: Temporary exterior enclosures.
- E. Section 01 5000 - Temporary Facilities and Controls: Temporary interior partitions.
- F. Section 01 5100 - Temporary Utilities: Temporary heating, cooling, and ventilating facilities.
- G. Section 01 7800 - Closeout Submittals: Project record documents, operation and maintenance data, warranties and bonds.
- H. Section 01 7900 - Demonstration and Training: Demonstration of products and systems to be commissioned and where indicated in specific specification sections
- I. Section 02 4100 - Demolition: Demolition of whole structures and parts thereof; site utility demolition.
- J. Section 07 8400 - Firestopping.
- K. Individual Product Specification Sections:
  - 1. Advance notification to other sections of openings required in work of those sections.
  - 2. Limitations on cutting structural members.

**1.03 REFERENCE STANDARDS**

- A. NFPA 241 - Standard for Safeguarding Construction, Alteration, and Demolition Operations; 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 survey 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.
- 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.
- 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. See Section 01 1000 for occupancy-related requirements.
- B. Coordinate scheduling, submittals, and work of the various sections of the Project Manual to ensure efficient and orderly sequence of installation of interdependent construction elements, with provisions for accommodating items installed later.
- C. Notify affected utility companies and comply with their requirements.
- D. Verify that utility requirements and characteristics of new operating equipment are compatible with building utilities. Coordinate work of various sections having interdependent responsibilities for installing, connecting to, and placing in service, such equipment.
- E. Coordinate space requirements, supports, and installation of mechanical and electrical work that are indicated diagrammatically on Drawings. Follow routing shown for pipes, ducts, and conduit, as closely as practicable; place runs parallel with lines of building. Utilize spaces efficiently to maximize accessibility for other installations, for maintenance, and for repairs.
- F. In finished areas except as otherwise indicated, conceal pipes, ducts, and wiring within the construction. Coordinate locations of fixtures and outlets with finish elements.
- G. Coordinate completion and clean-up of work of separate sections.
- H. After Owner occupancy of premises, coordinate access to site for correction of defective work and work not in accordance with Contract Documents, to minimize disruption of Owner's activities.

## **PART 2 PRODUCTS**

### **2.01 PATCHING MATERIALS**

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

## **PART 3 EXECUTION**

### **3.01 EXAMINATION**

- A. 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. Options.
  - 5. Related Change Orders.
  - 6. Purchases.
  - 7. Deliveries.
  - 8. Submittals.
  - 9. Review of mockups.
  - 10. Possible conflicts.
  - 11. Compatibility problems.
  - 12. Time schedules.
  - 13. Weather limitations.
  - 14. Manufacturer's written recommendations.
  - 15. Warranty requirements.
  - 16. Compatibility of materials.
  - 17. Acceptability of substrates.
  - 18. Temporary facilities and controls.
  - 19. Space and access limitations.
  - 20. Regulations of authorities having jurisdiction.
  - 21. Testing and inspecting requirements.
  - 22. Required performance results.
  - 23. 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. Control datum for survey is that indicated on Drawings.
- E. Protect survey control points prior to starting site work; preserve permanent reference points during construction.
- F. Promptly report to Architect the loss or destruction of any reference point or relocation required because of changes in grades or other reasons.
- G. Replace dislocated survey control points based on original survey control. Make no changes without prior written notice to Architect.
- H. Utilize recognized engineering survey practices.
- I. Establish a minimum of two permanent bench marks on site, referenced to established control points. Record locations, with horizontal and vertical data, on project record documents.
- J. Establish elevations, lines and levels. Locate and lay out by instrumentation and similar appropriate means:
  - 1. Site improvements including pavements; stakes for grading, fill and topsoil placement; utility locations, slopes, and invert elevations.
  - 2. Grid or axis for structures.
  - 3. Building foundation, column locations, ground floor elevations.
- K. Periodically verify layouts by same means.
- L. Maintain a complete and accurate log of control and survey work as it progresses.
- M. On completion of foundation walls and major site improvements, prepare a certified survey illustrating dimensions, locations, angles, and elevations of construction and site work.

### **3.05 GENERAL INSTALLATION REQUIREMENTS**

- A. In addition to compliance with regulatory requirements, conduct construction operations in compliance with NFPA 241, including applicable recommendations in Appendix A.
- B. Install products as specified in individual sections, in accordance with manufacturer's instructions and recommendations, and so as to avoid waste due to necessity for replacement.
- C. Make vertical elements plumb and horizontal elements level, unless otherwise indicated.
- D. Install equipment and fittings plumb and level, neatly aligned with adjacent vertical and horizontal lines, unless otherwise indicated.
- E. Make consistent texture on surfaces, with seamless transitions, unless otherwise indicated.
- F. Make neat transitions between different surfaces, maintaining texture and appearance.

### **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 shown.
  - 2. Report discrepancies to Architect before disturbing existing installation.
  - 3. Beginning of alterations work constitutes acceptance of existing conditions.
- B. Keep areas in which alterations are being conducted separated from other areas that are still occupied.
  - 1. Provide, erect, and maintain temporary dustproof partitions of construction specified in Section 01 5000 in locations indicated on drawings.
- C. Maintain weatherproof exterior building enclosure except for interruptions required for replacement or modifications; take care to prevent water and humidity damage.

1. Where openings in exterior enclosure exist, provide construction to make exterior enclosure weatherproof.
  2. Insulate existing ducts or pipes that are exposed to outdoor ambient temperatures by alterations work.
- D. Remove existing work as indicated and as required to accomplish new work.
1. Remove rotted wood, corroded metals, and deteriorated masonry and concrete; replace with new construction specified.
  2. Remove items indicated on drawings.
  3. Relocate items indicated on drawings.
  4. Where new surface finishes are to be applied to existing work, perform removals, patch, and prepare existing surfaces as required to receive new finish; remove existing finish if necessary for successful application of new finish.
  5. Where new surface finishes are not specified or indicated, patch holes and damaged surfaces to match adjacent finished surfaces as closely as possible.
- E. Services (Including but not limited to HVAC, Plumbing, Fire Protection, Electrical, and Telecommunications): Remove, relocate, and extend existing systems to accommodate new construction.
1. Maintain existing active systems that are to remain in operation; maintain access to equipment and operational components; if necessary, modify installation to allow access or provide access panel.
  2. Where existing systems or equipment are not active and Contract Documents require reactivation, put back into operational condition; repair supply, distribution, and equipment as required.
  3. 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.
    - a. Disable existing systems only to make switchovers and connections; minimize duration of outages.
    - b. See Section 01 1000 for other limitations on outages and required notifications.
    - c. Provide temporary connections as required to maintain existing systems in service.
  4. Verify that abandoned services serve only abandoned facilities.
  5. Remove abandoned pipe, ducts, conduits, and equipment, including those above accessible ceilings; remove back to source of supply where possible, otherwise cap stub and tag with identification; patch holes left by removal using materials specified for new construction.
- F. 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.
- G. Adapt existing work to fit new work: Make as neat and smooth transition as possible.
1. When existing finished surfaces are cut so that a smooth transition with new work is not possible, terminate existing surface along a straight line at a natural line of division and make recommendation to Architect.
  2. Where removal of partitions or walls results in adjacent spaces becoming one, rework floors, walls, and ceilings to a smooth plane without breaks, steps, or bulkheads.
  3. Where a change of plane of 1/4 inch or more occurs in existing work, submit recommendation for providing a smooth transition for Architect review and request instructions.
  4. Trim existing wood doors as necessary to clear new floor finish. Refinish trim as required.
- H. Patching: Where the existing surface is not indicated to be refinished, patch to match the surface finish that existed prior to cutting. Where the surface is indicated to be refinished, patch so that the substrate is ready for the new finish.
- I. Refinish existing surfaces as indicated:

1. Where rooms or spaces are indicated to be refinished, refinish all visible existing surfaces to remain to the specified condition for each material, with a neat transition to adjacent finishes.
  2. If mechanical or electrical work is exposed accidentally during the work, re-cover and refinish to match.
- J. Clean existing systems and equipment.
- K. 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.
- L. Do not begin new construction in alterations areas before demolition is complete.
- M. Comply with all other applicable requirements of this section.

### **3.07 CUTTING AND PATCHING**

- A. Whenever possible, execute the work by methods that avoid cutting or patching.
- B. See Alterations article above for additional requirements.
- C. Perform whatever cutting and patching is necessary to:
1. Complete the work.
  2. Fit products together to integrate with other work.
  3. Provide openings for penetration of mechanical, electrical, and other services.
  4. Match work that has been cut to adjacent work.
  5. Repair areas adjacent to cuts to required condition.
  6. Repair new work damaged by subsequent work.
  7. Remove samples of installed work for testing when requested.
  8. Remove and replace defective and non-conforming work.
- D. Execute work by methods that avoid damage to other work and that will provide appropriate surfaces to receive patching and finishing. In existing work, minimize damage and restore to original condition.
- E. Employ original installer to perform cutting for weather exposed and moisture resistant elements, and sight exposed surfaces.
- F. Cut rigid materials using masonry saw or core drill. Pneumatic tools not allowed without prior approval.
- G. Restore work with new products in accordance with requirements of Contract Documents.
- H. Fit work air tight to pipes, sleeves, ducts, conduit, and other penetrations through surfaces.
- I. At penetrations of fire rated walls, partitions, ceiling, or floor construction, completely seal voids with fire rated material in accordance with Section 07 8400, to full thickness of the penetrated element.
- J. Patching:
1. Finish patched surfaces to match finish that existed prior to patching. On continuous surfaces, refinish to nearest intersection or natural break. For an assembly, refinish entire unit.
  2. Match color, texture, and appearance.
  3. Repair patched surfaces that are damaged, lifted, discolored, or showing other imperfections due to patching work. If defects are due to condition of substrate, repair substrate prior to repairing finish.

### **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. Provide temporary and removable protection for installed products. Control activity in immediate work area to prevent damage.
- D. Provide protective coverings at walls, projections, jambs, sills, and soffits of openings.
- E. Protect finished floors, stairs, and other surfaces from traffic, dirt, wear, damage, or movement of heavy objects, by protecting with durable sheet materials.
- F. Prohibit traffic or storage upon waterproofed or roofed surfaces. If traffic or activity is necessary, obtain recommendations for protection from waterproofing or roofing material manufacturer.
- G. Remove protective coverings when no longer needed; reuse or recycle coverings if possible.

### **3.10 SYSTEM STARTUP**

- A. Coordinate schedule for start-up of various equipment and systems.
- B. Notify Architect and owner seven days prior to start-up of each item.
- C. Verify that each piece of equipment or system has been checked for proper lubrication, drive rotation, belt tension, control sequence, and for conditions that may cause damage.
- D. Verify tests, meter readings, and specified electrical characteristics agree with those required by the equipment or system manufacturer.
- E. Verify that wiring and support components for equipment are complete and tested.
- F. Execute start-up under supervision of applicable Contractor personnel and manufacturer's representative in accordance with manufacturers' instructions.
- G. When specified in individual specification Sections, require manufacturer to provide authorized representative to be present at site to inspect, check, and approve equipment or system installation prior to start-up, and to supervise placing equipment or system in operation.
- H. Submit a written report that equipment or system has been properly installed and is functioning correctly.

### **3.11 DEMONSTRATION AND INSTRUCTION**

- A. See Section 01 7900 - Demonstration and Training.

### **3.12 ADJUSTING**

- A. Adjust operating products and equipment to ensure smooth and unhindered operation.

### **3.13 FINAL CLEANING**

- A. Use cleaning materials that are nonhazardous.
- B. Clean interior and exterior glass, surfaces exposed to view; remove temporary labels, stains and foreign substances, polish transparent and glossy surfaces, vacuum carpeted and soft surfaces.
- C. Remove all labels that are not permanent. Do not paint or otherwise cover fire test labels or nameplates on mechanical and electrical equipment.
- D. Clean equipment and fixtures to a sanitary condition with cleaning materials appropriate to the surface and material being cleaned.
- E. Clean filters of operating equipment.
- F. Clean site; sweep paved areas, rake clean landscaped surfaces.

- G. Remove waste, surplus materials, trash/rubbish, and construction facilities from the site; dispose of in legal manner; do not burn or bury.

### **3.14 CLOSEOUT PROCEDURES**

- A. Make submittals that are required by governing or other authorities.
  - 1. Provide copies to Architect and Owner.
- B. Accompany Project Coordinator on preliminary inspection to determine items to be listed for completion or correction in the Contractor's Correction Punch List for Contractor's Notice of Substantial Completion.
- C. Notify Architect when work is considered ready for Architect's Substantial Completion inspection.
- D. Submit written certification containing Contractor's Correction Punch List, that Contract Documents have been reviewed, work has been inspected, and that work is complete in accordance with Contract Documents and ready for Architect's Substantial Completion inspection.
- E. Conduct Substantial Completion inspection and create Final Correction Punch List containing Architect's and Contractor's comprehensive list of items identified to be completed or corrected and submit to Architect.
- F. Architect will prepare a Certificate of Substantial Completion for each specific portion of the Work to be occupied before Owner occupancy.
- G. Obtain a Certificate of Occupancy from authorities having jurisdiction before Owner occupancy.
- H. Before partial Owner occupancy, mechanical and electrical systems shall be fully operational, and required tests and inspections shall be successfully completed. On occupancy, Owner will provide, operate, and maintain mechanical and electrical systems serving occupied portions of building.
- I. On occupancy, Owner will assume responsibility for maintenance and custodial service for occupied portions of building.
- J. Correct items of work listed in Final Correction Punch List and comply with requirements for access to Owner-occupied areas.
- K. Notify Architect when work is considered finally complete and ready for Architect's Substantial Completion final inspection.
- L. Complete items of work determined by Architect listed in executed Certificate of Substantial Completion.

### **3.15 MAINTENANCE**

- A. Provide service and maintenance of components indicated in specification sections.
- B. Maintenance Period: As indicated in specification sections or, if not indicated, not less than one year from the Date of Substantial Completion or the length of the specified warranty, whichever is longer.
- C. Examine system components at a frequency consistent with reliable operation. Clean, adjust, and lubricate as required.
- D. Include systematic examination, adjustment, and lubrication of components. Repair or replace parts whenever required. Use parts produced by the manufacturer of the original component.
- E. Maintenance service shall not be assigned or transferred to any agent or subcontractor without prior written consent of the Owner.

**END OF SECTION**

**SECTION 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 and Construction Manager 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 and Construction Manager 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. Submit 2 sets record documents. Include specifications, product data, addenda, change orders, and shop drawings.
  - 2. Submit 1 set marked up record prints and 1 set mylar transparencies. Include each drawing, whether or not changes or additional information was recorded.
- B. Operation and Maintenance Data:
  - 1. Submit two copies of preliminary draft or proposed formats and outlines of contents before start of O&M binder. 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**

- 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. Product substitutions or alternates utilized.
  2. 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 main 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.

### **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.
- 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.
- B. Instructions for Care and Maintenance: Manufacturer's recommendations for cleaning agents and methods, precautions against detrimental cleaning agents and methods, and recommended schedule for cleaning and maintenance.
- C. Moisture protection and weather-exposed products: Include product data listing applicable reference standards, chemical composition, and details of installation. Provide recommendations for inspections, maintenance, and repair.
- D. Additional information as specified in individual product specification sections.
- E. Where additional instructions are required, beyond the manufacturer's standard printed instructions, have instructions prepared by personnel experienced in the operation and maintenance of the specific products.
- F. Provide a listing in Table of Contents for design data, with tabbed fly sheet and space for insertion of data.

### **3.04 OPERATION AND MAINTENANCE DATA FOR EQUIPMENT AND SYSTEMS**

- A. For Each Item of Equipment and Each System:
  1. Description of unit or system, and component parts.
  2. Identify function, normal operating characteristics, and limiting conditions.
  3. Include performance curves, with engineering data and tests.
  4. Complete nomenclature and model number of replaceable parts.



- 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 minimum 20 pound paper.

- K. Drawings: Provide with reinforced punched binder tab. Bind in with text; fold larger drawings to size of text pages.
- L. Arrangement of Contents: Organize each volume in parts as follows:
  - 1. Project Directory.
  - 2. Table of Contents, of all volumes, and of this volume.
  - 3. Operation and Maintenance Data: Arranged by system, then by product category.
    - a. Source data.
    - b. Product data, shop drawings, and other submittals.
    - c. Operation and maintenance data.
    - d. Field quality control data.
    - e. Photocopies of warranties and bonds.
- M. Arrange content by systems under section numbers and sequence of Table of Contents of this Project Manual.
- N. 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.
- 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**

**1.1 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.

**1.2 RELATED REQUIREMENTS**

- A. Section 01 7800 - Closeout Submittals: Operation and maintenance manuals.
- B. Other Specification Sections: Additional requirements for demonstration and training.

**1.3 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.

#### **1.4 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**

#### **3.1 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.

#### **3.2 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 024119 - SELECTIVE DEMOLITION

### PART 1 - GENERAL

#### 1.1 SUMMARY

##### A. Section Includes:

1. Demolition and removal of selected site elements.
2. Salvage of existing items to be reused or recycled.

##### B. Related Requirements:

1. Section 011000 "Summary" for restrictions on use of the premises and Owner-occupancy requirements.
2. Section 01 1000 - Summary: Limitations on Contractor's use of site and premises.
3. Section 01 1000 - Summary: Sequencing and staging requirements.
4. Section 01 3233 - Photographic Documentation: Preconstruction photographs.
5. Section 01 5000 - Temporary Facilities and Controls: Site fences, security, protective barriers, and waste removal; Temporary Erosion and Sediment Control.
6. Section 01 6000 - Product Requirements: Handling and storage of items removed for salvage and relocation.
7. 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.
8. Section 311000 "Site Clearing" for site clearing and removal of above- and below-grade improvements not part of selective demolition.

#### 1.2 MATERIALS OWNERSHIP

- ##### A. Unless otherwise indicated, demolition waste becomes property of Contractor.

#### 1.3 PRE-DEMOLITION MEETINGS

##### A. Pre-demolition Conference: Conduct conference at Project site.

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.

1.5 INFORMATIONAL SUBMITTALS

- A. Proposed Protection Measures: Discuss as part of preconstruction meeting the 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.
- 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.

1.6 SUBMITTALS

- A. See Section 01 3000 - Administrative Requirements, for submittal procedures.
- B. 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.
- 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.
  - 2. Identify demolition firm and submit qualifications.
  - 3. Include a summary of safety procedures.
- D. Pre-demolition Photographs: Show existing conditions of adjoining construction and site improvements, including finish surfaces that might be misconstrued as damage caused by demolition operations. Comply with Section 013233 "Photographic Documentation." Submit before the Work begins.
- E. 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.
- F. Project Record Documents: Accurately record actual locations of capped and active utilities and subsurface construction.

1.8 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. Pre-demolition Conference: Conduct conference at Project site.
  - 1. Inspect and discuss condition of construction to be demolished.
  - 2. Review structural load limitations of existing structures.
  - 3. Review and finalize building demolition schedule and verify availability of demolition personnel, equipment, and facilities needed to make progress and avoid delays.
  - 4. Review and finalize protection requirements.
  - 5. Review procedures for noise control and dust control.
  - 6. Review procedures for protection of adjacent buildings.
  - 7. Review items to be salvaged and returned to Owner.

1.02 PROJECT CONDITIONS

- A. Portion of the existing building to be demolished will be vacated and their use discontinued before start of the Work.
- B. Buildings immediately adjacent to demolition area may be occupied. Conduct building demolition so operations of occupied buildings will not be disrupted.
  - 1. Provide not less than 72 hours' notice of activities that will affect operations of adjacent occupied buildings.
  - 2. Maintain access to existing walkways, exits, and other facilities used by occupants of adjacent buildings.
    - a. Do not close or obstruct walkways, exits, or other facilities used by occupants of adjacent buildings without written permission from authorities having jurisdiction.
- C. Owner assumes no responsibility for buildings and structures to be demolished.
  - 1. Conditions existing at time of inspection for bidding purpose will be maintained by Owner as far as practical.
- D. On-site storage or on site sale of removed items or materials is not permitted.

1.9 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.

PART 2 - PRODUCTS

2.1 PERFORMANCE REQUIREMENTS

- A. Regulatory Requirements: Comply with governing EPA notification regulations before beginning selective demolition. Comply with hauling and disposal regulations of authorities having jurisdiction.
- B. Standards: Comply with ASSE A10.6 and NFPA 241.

PART 3 - EXECUTION

**204** EXAMINATION

- A. Review Project Record Documents of existing construction or other existing conditions provided by Owner. Owner does not guarantee that existing conditions are same as those indicated in Project Record Documents.

**205** 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 and as follows:
- 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.

**206** 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.

**207** 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.

**208** CLEANING

- A. Clean adjacent structures and improvements of dust, dirt, and debris caused by selective demolition operations. Return adjacent areas to condition existing before selective demolition operations began.

## **2.09 SELECTIVE DEMOLITION SCHEDULE**

- A. Identify the location of the existing landscape irrigation lines, controllers and valves existing in the area of work to occur. Terminate any lines in the area of demolition and cap. Any valves or controllers that are in the area of demolition must be salvage and given to the Owner.
- B. Demolition of the entire storage room building including, but not limited to the existing storage room footings, slab, walls, doors, windows, utilities, roof structure, roof paneling, etc...
  - 1. GC to leave the single dividing wall and opening between the existing gym and storage building. GC to leave all wall structure and utilities serving the gym intact, unless noted otherwise.
  - 2. GC to protect and cover the existing gym wall that will become exposed once demolition is complete. GC will be responsible for protecting and covering the exposed face throughout construction.
- C. GC to Cap all utilities feeding into the existing facility.
- D. GC to see the Architectural Site Demolition Drawings and Civil Site plan for additional demolition direction and notes.

## **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. Within area of athletic competition areas defined at the minimum as the outside edge of running track, remove all existing construction and utilities regardless of depth except that existing active utilities shall remain. Take care not to damage active utilities during construction.
- E. Within area of new construction, remove foundation walls and footings to a minimum of 2 feet below bottom.
- F. Remove concrete slabs on grade within construction limits indicated on drawings.

### **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. Do not begin removal until built elements to be salvaged or relocated have been removed.
- E. Do not begin removal until vegetation to be relocated has been removed and specified measures have been taken to protect vegetation to remain.
- F. Protect existing structures and other elements that are not to be removed.
  1. Provide bracing and shoring.
  2. Prevent movement or settlement of adjacent structures.
  3. Stop work immediately if adjacent structures appear to be in danger.
- G. 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.
- H. 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.
- I. 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.
- J. Partial Removal of Paving and Curbs: Neatly saw cut at right angle to surface.

### **3.03 EXISTING UTILITIES**

- A. Coordinate work with utility companies; notify before starting work and comply with their requirements; obtain required permits.
- B. Protect existing utilities to remain from damage.
- C. Do not disrupt public utilities without permit from authority having jurisdiction.
- D. Do not close, shut off, or disrupt existing life safety systems that are in use without at least 7 days prior written notification to Owner.
- 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.

### **3.04 SELECTIVE DEMOLITION FOR ALTERATIONS**

- A. Drawings showing existing construction and utilities are based on casual field observation and existing record documents only.
  - 1. Verify 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.

### **3.05 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 03 3000**  
**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 toppings in metal deck.
  - 4. Concrete in masonry.
  - 5. 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.

#### **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 QUALITY ASSURANCE**

- A. Protection: Protect 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. All hydraulic powered equipment shall be diapered to avoid staining of the concrete.
  - 2. 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.
  - 3. No pipe cutting machine shall be used on the finished floor slab.
  - 4. Steel shall not be placed on the finish slab to avoid rusting.
  - 5. Acids and acidic detergents will not come in contact with slab.
  - 6. All painters will use drop cloths on the concrete. If paint gets on the concrete, it must be immediately removed.
  - 7. All trades will be informed that the slab must be protected at all times. Enforce compliance.

#### **1.07 DELIVERY, STORAGE, AND HANDLING**

- A. Deliver materials in manufacturer's sealed packaging, including application instructions.

#### **1.08 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**

### **201 CONCRETE FLOOR FINISH APPLICATIONS**

- A. Liquid Densifier/Hardener:
  - 1. Use at following locations: Finish Schedule - Type SCF.

### **202 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. W. R. Meadows, Inc; Liqui-Hard: [www.wrmeadows.com/sle](http://www.wrmeadows.com/sle).
    - b. Dayton Superior Corporation; Pentra-Hard® Guard: [www.daytonsuperior.com](http://www.daytonsuperior.com).
    - 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](http://www.kaufmanproducts.net).
    - e. L&M Construction Chemicals, Inc, a subsidiary of Laticrete International, Inc; LiON HARD: [www.lmcc.com](http://www.lmcc.com).
    - f. L.M. Scofield Company; SCOFIELDae Formula One99 Lithium Densifier MP: [www.scofield.com](http://www.scofield.com).
    - g. Nox-Crete Products Group; Duro-Nox LS: [www.nox-crete.com](http://www.nox-crete.com).
    - h. PROSOCO, Inc; Consolideck LS: [www.prosoco.com/consolideck/sle](http://www.prosoco.com/consolideck/sle).
    - i. SpecChem, LLC; LithSeal SC: [www.specchemllc.com/sle](http://www.specchemllc.com/sle).
    - j. Substitutions: See Section 01 6000 - Product Requirements.

### **203 COATINGS**

## **PART 3 EXECUTION**

### **301 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.

### **302 GENERAL**

- A. Apply materials in accordance with manufacturer's instructions.

### **303 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 04 2000**  
**UNIT MASONRY**

**PART 1 GENERAL**

**1.01 SECTION INCLUDES**

- A. Concrete Block.
- B. Concrete Brick.
- C. Mortar and Grout.
- D. Reinforcement and Anchorage.
- E. Flashings.
- F. Lintels.
- G. Water Repellent Surface Prep.
- H. Application of Colorless, liquid-applied, concrete and masonry water repellent.
- I. Accessories.

**1.02 RELATED REQUIREMENTS**

- A. Section 05 5000 - Metal Fabrications: Loose steel lintels.
- B. Section 06 1000 - Rough Carpentry: Nailing strips built into masonry.
- C. Section 07 2100 - THERMAL INSULATION: Insulation for cavity spaces.
- D. Section 07 2500 - Weather Barriers: Air barriers
- E. Section 07 8400 - Firestopping: Firestopping at penetrations of fire-rated masonry and at top of fire-rated walls.
- F. Section 07 9200 - Joint Sealants: Sealing control and expansion joints.

**1.03 REFERENCE STANDARDS**

- A. TMS 402/602 - Building Code Requirements and Specification for Masonry Structures; 2016.
- B. ASTM A153/A153M - Standard Specification for Zinc Coating (Hot-Dip) on Iron and Steel Hardware; 2016a.
- C. ASTM A615/A615M - Standard Specification for Deformed and Plain Carbon-Steel Bars for Concrete Reinforcement; 2016.
- D. ASTM A641/A641M - Standard Specification for Zinc-Coated (Galvanized) Carbon Steel Wire; 2009a (Reapproved 2014).
- E. ASTM A666 - Standard Specification for Annealed or Cold-Worked Austenitic Stainless Steel Sheet, Strip, Plate, and Flat Bar; 2015.
- F. ASTM A1064/A1064M - Standard Specification for Carbon-Steel Wire and Welded Wire Reinforcement, Plain and Deformed, for Concrete; 2017.
- G. ASTM C55 - Standard Specification for Concrete Building Brick; 2017.
- H. ASTM C67 - Standard Test Methods for Sampling and Testing Brick and Structural Clay Tile; 2017.
- I. ASTM C90 - Standard Specification for Loadbearing Concrete Masonry Units; 2016a.
- J. ASTM C140/C140M - Standard Test Methods of Sampling and Testing Concrete Masonry Units and Related Units; 2017a.
- K. ASTM C144 - Standard Specification for Aggregate for Masonry Mortar; 2011.
- L. ASTM C150/C150M - Standard Specification for Portland Cement; 2017.
- M. ASTM C207 - Standard Specification for Hydrated Lime for Masonry Purposes; 2006 (Reapproved 2011).
- N. ASTM C270 - Standard Specification for Mortar for Unit Masonry; 2014a.

- O. ASTM C387/C387M - Standard Specification for Packaged, Dry, Combined Materials for Concrete and High Strength Mortar; 2015.
- P. ASTM C404 - Standard Specification for Aggregates for Masonry Grout; 2011.
- Q. ASTM C476 - Standard Specification for Grout for Masonry; 2016.
- R. ASTM C780 - Standard Test Method for Preconstruction and Construction Evaluation of Mortars for Plain and Reinforced Unit Masonry; 2017.
- S. ASTM C1072 - Standard Test Method for Measurement of Masonry Flexural Bond Strength; 2013, with Editorial Revision (2014).
- T. ASTM C1148 - Standard Test Method for Measuring the Drying Shrinkage of Masonry Mortar; 1992a (Reapproved 2014).
- U. ASTM C1314 - Standard Test Method for Compressive Strength of Masonry Prisms; 2016.
- V. ASTM C1634 - Standard Specification for Concrete Facing Brick; 2017.
- W. ASTM D226/D226M - Standard Specification for Asphalt-Saturated Organic Felt Used in Roofing and Waterproofing; 2017.
- X. ASTM E514/E514M - Standard Test Method for Water Penetration and Leakage Through Masonry; 2014a.
- Y. BIA Technical Notes No. 7 - Water Penetration Resistance – Design and Detailing; 2005.
- Z. BIA Technical Notes No. 28B - Brick Veneer/Steel Stud Walls; 2005.
- AA. BIA Technical Notes No. 46 - Maintenance of Brick Masonry; 2005.
- AB. 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, and masonry accessories.
- C. Samples: Submit four samples of facing brick 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.

#### **1.06 QUALITY ASSURANCE**

- A. Comply with provisions of TMS 402/602, except where exceeded by requirements of the contract documents.
- B. Fire Rated Assemblies: Conform to applicable 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. Cementitious materials, aggregates and color admixtures are to be blended and packaged under factory controlled conditions, requiring only the addition of water on site.

1. Use approved mix designs and single-source all aggregates, cement, lime and color admixtures to assure maximum consistency.
2. Colored Mortar: Maintain consistent color and appearance throughout project.

#### **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. Locate where directed.
- C. Mock-up may remain as part of the Work.
- D. Verify mock-up requirements with Architect and Project Manager prior to proceeding.

#### **1.08 DELIVERY, STORAGE, AND HANDLING**

- A. Store Mixing and Liquid materials in clean dry area in accordance with manufacturer's instructions.
- B. Keep Mixing and Liquid materials away from head and open flame.
- C. Deliver, handle, and store masonry units by means that will prevent mechanical damage and contamination by other materials.

### **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 the drawings for specific locations.
  2. Special Shapes: Provide non-standard blocks configured for corners, lintels, headers, control joint edges, single and double bullnose corners, and other detailed conditions.
  3. Load-Bearing Units: ASTM C90, normal weight.
    - a. Hollow block, as indicated.
    - b. Exposed Faces: Manufacturer's standard color and texture.
  4. Split-Faced CMU Units:
    - a. Load-Bearing Units: ASTM C 90, normal weight.
    - b. Size: Nomial face dimensions of 16 x 8 inches (400 x 200 mm) and nominal depths as indicated on Drawings for specific locations.
    - c. Pattern: Split face.
    - d. Colors: 3 color as selected by Architect from manufacturer's standard colors.
    - e. Special Shapes: Provide non-standard blocks configured for corners, lintels, headers, control joint edges, and other detailed conditions.
    - f. Provide integral water repellent at exterior exposed masonry assemblies.
    - g. Manufacturer: Decra-Stone Split Face as manufactured by Div 2-4: [www.div2-4.com](http://www.div2-4.com).
    - h. Other acceptable manufacturers:
      - 1) Block USA, Birmingham, Alabama: [www.specblockusa.com](http://www.specblockusa.com).
      - 2) Superock Block Company, Birmingham, Alabama.
      - 3) Substitutions: See Section 01600 - Product Requirements.
  5. Ground-Faced CMU Units
    - a. Load-Bearing Units: ASTM C 90, normal weight.
    - b. Size: Nomial face dimensions of 16 x 8 inches (400 x 200 mm) and nominal depths as indicated on Drawings for specific locations.
    - c. Pattern: Ground face.
    - d. Colors: 2 color as selected by Architect from manufacturer's standard colors.
    - e. Special Shapes: Provide non-standard blocks configured for corners, lintels, headers, control joint edges, and other detailed conditions.
    - f. Provide integral water repellent at exterior exposed masonry assemblies.
    - g. Manufacturer: [Decra-Stone Ground Face as manufactured by Div 2-4].
    - h. Other acceptable manufacturers:
      - 1) Block USA, Birmingham, Alabama: [www.specblockusa.com](http://www.specblockusa.com).
      - 2) Superock Block Company, Birmingham, Alabama.



- 3) Substitutions: See Section 01600 - Product Requirements.
6. 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.
  - a. Performance of Units with Integral Water Repellent:
    - 1) Water Permeance: When tested per ASTM E514/E514M and for a minimum of 72 hours.
      - (a) No water visible on back of wall above flashing at the end of 24 hours.
      - (b) No flow of water from flashing equal to or greater than 0.032 gallons per hour at the end of 24 hours.
      - (c) No more than 25 percent of wall area above flashing visibly damp at end of test.
    - 2) Flexural Bond Strength: ASTM C1072; minimum 10 percent increase.
    - 3) Compressive Strength: ASTM C1314; maximum 5 percent decrease.
    - 4) Drying Shrinkage: ASTM C1148; maximum 5 percent increase in shrinkage.
  - b. Use only in combination with mortar that also has integral water repellent admixture.
  - c. Use water repellent admixtures for masonry units and mortar by a single manufacturer.
  - d. Manufacturers:
    - 1) Amerimix, an Oldcastle brand; CMU with Rainbloc GP: [www.amerimix.com](http://www.amerimix.com).
    - 2) GCP Construction Products; Dry-Block Block Admixture; [www.gcpat.com](http://www.gcpat.com).
    - 3) Master Builders Solutions - BASF Construction Chemicals; Masterpel 240 Admixture: [www.master-builders-solutions.basf.us](http://www.master-builders-solutions.basf.us).
    - 4) Substitutions: See Section 01 6000 - Product Requirements.
- B. Concrete Brick:
  1. For below grade use, ASTM C1634 (or ASTM C55, Grade N), normal weight.
  2. For other uses, ASTM C55, normal weight.
  3. Size: As indicated on drawings.

## 202 MORTAR AND GROUT MATERIALS

- A. Provide factory-blended premixed masonry mortars and colored masonry mortars. Field blended mortars will not be allowed.
- B. Provide either factory blended premixed or field mixed masonry grouts at Contractor's option.
- C. 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.
- D. Masonry Cement: ASTM C91/C91M, Type N.
- E. Portland Cement: ASTM C150/C150M, Type I; color as required to produce approved color sample.
  1. Not more than 0.60 percent alkali.
  2. Hydrated Lime: ASTM C207, Type S.
  3. Mortar Aggregate: ASTM C 144 except for joints less than 1/4 inch (6.5 mm) thick, use aggregate graded with 100 percent passing the No. 16 (1.18-mm) sieve.
  4. Grout Aggregate: ASTM C404.
- F. Water: Clean and potable.
- G. Accelerating Admixture: Nonchloride type for use in cold weather.
  1. Acceptable product:
    - a. Accelguard 80; Euclid Chemical Co.
    - b. Morseled; W. R. Grace & Co., Construction Products Division.
    - c. Trimix-NCA; Sonneborn, Div. of ChemRex, Inc.
  2. Substitutions: See Section 01 6000 - Product Requirements.
- H. 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.
- I. Packaged Dry Material for Mortar for Unit Masonry: Premixed Portland cement, hydrated lime, and sand; complying with ASTM C387/C387M and capable of producing mortar of the specified strength in accordance with ASTM C270 with the addition of water only.
  1. Type: Type N.
  2. Color: Mineral pigments added as required to produce approved color sample. Architect to choose from manufacturers full color selection. Grout to color to be similar to split face selected colors.
  3. Water-repellent mortar for use with water repellent masonry units.
  4. Manufacturers:
    - a. Amerimix, an Oldcastle brand; AMX 405C; AMX 410: [www.amerimix.com](http://www.amerimix.com).
    - b. SpecMix; Portland Lime and Sand Masonry Mortar; IWR Mortar: [www.specmix.com](http://www.specmix.com).
    - c. Holcim; Rainbow Mortamix Custom Color Cement/Lime Masonry Mortar: [www.holcim.us](http://www.holcim.us).
    - d. Substitutions: See Section 01 6000 - Product Requirements.

## **203 REINFORCEMENT AND ANCHORAGE**

- A. Manufacturers:
  1. Hohmann & Barnard, Inc: [www.h-b.com/sle](http://www.h-b.com/sle).
  2. WIRE-BOND: [www.wirebond.com](http://www.wirebond.com).
  3. Substitutions: See Section 01 6000 - Product Requirements.
- B. Reinforcing Steel: ASTM A615/A615M, Grade 60 (60,000 psi), deformed billet bars; uncoated.
- C. Single Wythe Joint Reinforcement: Truss or ladder type; ASTM A1064/A1064M steel wire, mill galvanized to ASTM A641/A641M, Class 3; 0.1483 inch side rods with 0.1483 inch cross rods; width as required to provide not more than 1 inch and not less than 1/2 inch of mortar coverage on each exposure.
- D. Adjustable Multiple Wythe Joint Reinforcement: Truss type with adjustable ties or tabs spaced at 16 in on center and fabricated with moisture drip; ASTM A1064/A1064M steel wire, hot dip galvanized after fabrication to ASTM A153/153M, Class B; 0.1875 inch side rods with 0.1483 inch cross rods and adjustable components of 0.1875 inch wire; width of components as required to provide not more than 1 inch and not less than 1/2 inch of mortar coverage from each masonry face.
  1. Vertical adjustment: Not less than 2 inches.
  2. 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 configured as required for specific situations, 1-1/4 in width, 0.105 in thick, lengths as required to provide not more than 1 inch and not less than 1/2 inch of mortar coverage from masonry face, corrugated for embedment in masonry joint, hot dip galvanized to ASTM A 153/A 153M, Class B.
- F. Flexible Anchors: 2-piece anchors that permit differential movement between masonry and building frame, sized to provide not more than 1 inch and not less than 1/2 inch of mortar coverage from masonry face.
  1. Concrete frame: Dovetail anchors of bent steel strap, nominal 1 inch width x 0.024 in 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 more than 1 inch and not less than 1/2 inch of mortar coverage from masonry face and to allow vertical adjustment of up to 1-1/4 in.

- H. 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.
  - 4. Seismic Feature: Provide lip, hook, or clip on end of wire ties to engage or enclose not less than one continuous horizontal joint reinforcement wire of 0.1483 inch diameter.

#### 204 FLASHINGS

- A. Copper/Polymer Fabric Flashing: 3 oz/sq ft copper sheet laminated between two sheets of polymer or fiberglass fabric.
  - 1. Manufacturers:
    - a. Advanced Building Products, Inc.; Copper Sealtite 2000: [www.advancedbuildingproducts.com/sle](http://www.advancedbuildingproducts.com/sle).
    - b. York Manufacturing, Inc; Multi-Flash 500 Series: [www.yorkmfg.com](http://www.yorkmfg.com).
    - c. Substitutions: See Section 01 6000 - Product Requirements.
- B. Stainless Steel Flashing: ASTM A666, Type 304, soft temper; 26 gage, 0.0187 inch thick; finish 2B to 2D.
- C. Flashing Sealant/Adhesive: Butyl type as specified in Section 07 9005.

#### 205 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; RS Series: [www.h-b.com](http://www.h-b.com).
    - d. WIRE-BOND; Rubber Control Joint: [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: [www.h-b.com](http://www.h-b.com).
    - c. WIRE-BOND: [www.wirebond.com](http://www.wirebond.com).
    - 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](http://www.advancedflashing.com).
      - 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. Type: Molded PVC grilles, insect resistant.
  - 1. 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; Quadrovent: [www.h-b.com](http://www.h-b.com).

- d. Mortar Net USA, Ltd; Product Cellvent: [www.mortarnet.com](http://www.mortarnet.com).
  - e. Substitutions: See Section 01 6000 - Product Requirements.
- G. 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.
  - 3. Proprietary Acidic Cleaner: Manufacturer's standard strength cleaner designed for removing mortar/grout stains, efflorescence, and other new construction stains from new masonry without discoloring or damaging masonry surfaces. Use product expressly approved for intended use by cleaner manufacturer and manufacturer of masonry units being cleaned.
  - 4. Products: Subject to compliance with requirements, provide one of the following:
    - a. Cleaners for Red and Light-Colored Brick Not Subject to Metallic Staining with Mortar Not Subject to Bleaching:
      - 1) 202 New Masonry Detergent; Diedrich Technologies, Inc.
      - 2) Sure Klean No. 600 Detergent; ProSoCo, Inc.
    - b. Cleaners for Red and Dark Colored Brick not Subject to Metallic Staining:
      - 1) 200 Lime Solv; Diedrich Technologies, Inc.
      - 2) Sure Klean No. 101 Lime Solvent; ProSoCo, Inc.
    - c. Cleaners for Brick Subject to Metallic Staining:
      - 1) 202 Vana-Stop; Diedrich Technologies, Inc.
      - 2) Sure Klean No. Vana Trol; ProSoCo, Inc.

## **206 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. Do not splice reinforcing bars.
  - 3. Support and secure reinforcing bars from displacement. Maintain position within 1/2 inch of dimensioned position.
  - 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.

## **207 MORTAR AND GROUT MIXES**

- A. Mortar for Unit Masonry: ASTM C270, using the Property Specification.
  - 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.
- B. 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.
- C. Admixtures: Add to mixture at manufacturer's recommended rate and in accordance with manufacturer's instructions; mix uniformly.
- D. Mixing: Use mechanical batch mixer and comply with referenced standards.

## **208 Water Repellent**

- A. Water Repellent Coating: a water-based, penetrating sealing compound consisting of a blend of silane and siloxane.

1. Performance Based Specification: Water repellent coating shall have the following properties:
  - a. Dry Time: 1 – 2 hours @ 70 degrees (20 degrees C)
  - b. VOC: 55 g/L
2. Bases of design manufacture:
  - a. INTRAGUARD by W. R. Meadows or acceptable equals.
  - b. Substitutions: See Section 01 6000 - Product Requirements.

### **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 masonrywork. Maintain in place until building structure provides permanent bracing.

#### **3.03 COLD AND HOT WEATHER REQUIREMENTS**

- A. Comply with requirements of TMS 402/602 or applicable building code, whichever is more stringent.

#### **3.04 COURSING**

- A. Establish lines, levels, and coursing indicated. Protect from displacement. Verify pattern alignment with architect at locations where coursing is not able to be achieved.
- B. Maintain masonry courses to uniform dimension. Form vertical and horizontal joints of uniform thickness.
- C. Concrete Masonry Units:
  1. Bond: Running.
  2. Coursing: One unit and one mortar joint to equal 8 inches.
  3. Mortar Joints: Concave.
- D. Brick Units:
  1. Bond: Running.
  2. Coursing: Three units and three mortar joints to equal 8 inches.
  3. Mortar Joints: Concave.

#### **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 masonry partitions from horizontal structural framing members and slabs or decks with compressible joint filler.

**3.06 WEEPS/CAVITY VENTS**

- A. Install 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.
- B. Install cavity vents in veneer and cavity walls at 32 inches on center horizontally below shelf angles and lintels and near top 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**

- 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 24 inches horizontally and 16 inches vertically.

**3.09 REINFORCEMENT AND ANCHORAGE - SINGLE WYTHE MASONRY**

- A. Install horizontal joint reinforcement 8 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.

**3.10 REINFORCEMENT AND ANCHORAGE - MASONRY VENEER**

- A. Install horizontal joint reinforcement 16 inches on center.
- B. Place masonry joint reinforcement in first and second horizontal joints above and below openings. Extend minimum 16 inches each side of opening.
- C. Place continuous joint reinforcement in first and second joint below top of walls.
- D. Lap joint reinforcement ends minimum 6 inches.
- E. Masonry Back-Up: Embed anchors in masonry back-up to bond veneer at maximum 1.77 sq ft of wall surface per anchor. Place additional anchors at perimeter of openings and ends of panels, so maximum spacing of anchors is 8 inches on center.
- F. Stud Back-Up: Secure veneer anchors to stud framed back-up and embed into masonry veneer at maximum 1.77 sq ft of wall surface per anchor. Place additional anchors at perimeter of openings and ends of panels, so maximum spacing of anchors is 8 inches on center.
- G. Reinforce stack bonded unit joint corners and intersections with strap anchors 16 inches on center.

**3.11 REINFORCEMENT AND ANCHORAGES - CAVITY WALL MASONRY**

- A. Install horizontal joint reinforcement 16 inches on center.
- B. Place masonry joint reinforcement in first and second horizontal joints above and below openings. Extend minimum 16 inches each side of openings.
- C. Place continuous joint reinforcement in first and second joint below top of walls.
- D. Lap joint reinforcement ends minimum 6 inches.
- E. Fasten anchors to structural framing and embed in masonry joints as masonry is laid. Space anchors at maximum of 24 inches horizontally and 16 inches vertically.
- F. Reinforce stack bonded unit joint corners and intersections with strap anchors 16 inches on center.

### **3.12 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. Fasten anchors to structural framing and embed in masonry joints as masonry is laid. Space anchors at maximum of 24 inches horizontally and 16 inches vertically.
- G. Reinforce stack bonded unit joint corners and intersections with strap anchors 16 inches on center.

### **3.13 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 8 inches, 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. Extend metal flashings through exterior face of masonry and turn down to form drip. Install joint sealer below drip edge to prevent moisture migration under flashing.
- C. Extend laminated flashings to within 1/4 inch of exterior face of masonry.
- D. Lap end joints of flashings at least 6 inches, minimum, and seal watertight with flashing sealant/adhesive.

### **3.14 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. Do not splice reinforcing bars.
  - 3. Support and secure reinforcing bars from displacement. Maintain position within 1/2 inch of dimensioned position.
  - 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.

### **3.15 GROUTED COMPONENTS**

- A. See Structural Drawings for reinforcing and other 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.

### 3.16 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. Fit bond-breaker strips into hollow contour in ends of concrete masonry units on one side of control joint. Fill resultant core with grout and rake out joints in exposed faces for application of sealant.
  - 2. Install preformed control-joint gaskets designed to fit standard sash block.
  - 3. Provide fully grouted cells with one #4 vertical bar on both sides of the control joint.
  - 4. Install interlocking units designed for control joints. Install bond-breaker strips at joint. Keep head joints free and clear of mortar or rake out joint for application of sealant.
  - 5. 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.
  - 6. Install temporary foam-plastic filler in head joints and remove filler when unit masonry is complete for application of sealant.
- C. Form expansion joints in brick made from clay or shale as follows:
  - 1. Build flanges of metal expansion strips into masonry. Lap each joint 4 inches (100 mm) in direction of water flow. Seal joints below grade and at junctures with horizontal expansion joints if any.
  - 2. Build flanges of factory-fabricated, expansion-joint units into masonry.
  - 3. Build in compressible joint fillers where indicated.
  - 4. Form open joint full depth of brick wythe and of width indicated, but not less than 3/8 inch (10 mm) for installation of sealant and backer rod specified in Section 07900 - Joint Sealants.
    - a. Provide horizontal, pressure-relieving joints by either leaving an air space or inserting a compressible filler of width required for installing sealant and backer rod specified in Division 7 Section "Joint Sealants," but not less than 3/8 inch (10 mm).
      - 1) Locate horizontal, pressure-relieving joints beneath shelf angles supporting masonry.

### 3.17 WATER REPELLENT

- A. Surface Preparation
  - 1. Protect adjacent surfaces not designated to receive water repellent.
  - 2. Clean and prepare surfaces to receive water repellent in accordance with manufacturer's instructions.

3. Do not apply water repellent to surfaces unacceptable to manufacturer.
4. Ensure surfaces are structurally sound, clean and free from dirt, bitumen, efflorescence oil, curing compounds, from oil, and other foreign matter.
5. Apply water repellent in a test area to observe product characteristics, as temporary darkening of some substrate surfaces may occur.
6. Check masonry joints and repoint where necessary.
7. Ensure all wall and roof flashings, caulking, and sealants are in good condition.
8. Do not apply water repellent to surfaces that are to receive caulks, sealants, or any later treatment.
9. Concrete surfaces must be fully cured and thoroughly dry prior to application.
10. Ensure new concrete and precast panels employing type 10 cement have dried for minimum of seven days before application of water repellent.

**B. Application**

1. Agitate material thoroughly prior to application.
2. Apply water repellent using a low pressure sprayer with a 0.1 GPM (0.379 LPM) spray nozzle.
  - a. Horizontal Application Instructions
    - I. Saturate in a single application at a coverage rate of 50 -250 ft. 2 / gal. (1.2 – 6.1 m<sup>2</sup>/L).
    - II. Use enough to completely wet the surface without producing puddles.
    - III. Remove excess water repellent from the surface after 10 – 15 minutes.
3. Vertical Applications Instructions
  - a. Apply to a visibly dry and absorbent surface at a coverage rate of 50 -250 ft. 2 / gal (1.2 – 6.1 m<sup>2</sup> /L).
  - b. Saturate from the bottom up, creating a 10” – 12” (254 mm -305 mm) rundown below the spray contact point.
  - c. Let the first application penetrate for 3 -5 minutes.
  - d. Re-saturate while surface is still wet.

**3.18 BUILT-IN WORK**

- A. As work progresses, install built-in metal door 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.

**3.19 TOLERANCES**

- A. Maximum Variation from Alignment of Columns: 1/4 inch.
- B. Maximum Variation From Unit to Adjacent Unit: 1/16 inch.
- C. Maximum Variation from Plane of Wall: 1/4 inch in 10 ft and 1/2 inch in 20 ft or more.

- D. Maximum Variation from Plumb: 1/4 inch per story non-cumulative; 1/2 inch in two stories or more.
- E. Maximum Variation from Level Coursing: 1/8 inch in 3 ft and 1/4 inch in 10 ft; 1/2 inch in 30 ft.
- F. Maximum Variation of Mortar Joint Thickness: Head joint, minus 1/4 inch, plus 3/8 inch.
- G. Maximum Variation from Cross Sectional Thickness of Walls: 1/4 inch.

**320 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.

**321 FIELD QUALITY CONTROL**

- A. An independent testing agency will perform field quality control tests, as specified in Section 01 4000 - Quality Requirements.
- B. Clay Masonry Unit Tests: Test each variety of clay masonry in accordance with ASTM C67 requirements, sampling 5 randomly chosen units for each 50,000 installed.
- C. Concrete Masonry Unit Tests: Test each variety of concrete unit masonry in accordance with ASTM C140/C140M for conformance to requirements of this specification.
- D. Mortar Tests: Test each type of mortar in accordance with ASTM C780, testing with same frequency as masonry samples.

**322 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.
- G. Clean equipment used for water repellent with mineral spirits after use.
- H. Remove water repellent overspray from glass or metal surfaces as soon as possible with mineral spirits.

**323 PROTECTION**

- A. At the end of working day, and during rainy weather, cover masonry work exposed to weather with non-staining waterproof coverings, securely anchored. Do not allow water to enter wall cavities or wet surfaces that are not fully cured.
- B. Without damaging completed work, provide protective boards at exposed external corners that are subject to damage by construction activities.

**END OF SECTION**

## SECTION 05 3100

### STEEL DECKING

#### PART 1 GENERAL

##### 1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

##### 1.2 SUMMARY

- A. This Section includes the following:
  - 1. Roof deck.
- B. Related Sections include the following:
  - 1. Division 05 Section "Metal Fabrications" for framing deck openings with miscellaneous steel shapes.

##### 1.3 SUBMITTALS

- A. Product Data: For each type of deck, accessory, and product indicated.
- B. Shop Drawings: Show layout and types of deck panels, anchorage details, reinforcing channels, pans, cut deck openings, special jointing, accessories, and attachments to other construction.
- C. Product Certificates: For each type of steel deck, signed by product manufacturer.
- D. Welding certificates.
- E. Field quality-control test and inspection reports.
- F. Research/Evaluation Reports: For steel deck.

##### 1.4 QUALITY ASSURANCE

- A. Testing Agency Qualifications: An independent agency qualified according to ASTM E 329 for testing indicated.
- B. Welding: Qualify procedures and personnel according to AWS D1.3, "Structural Welding Code -Sheet Steel."

- C. AISI Specifications: Comply with calculated structural characteristics of steel deck according to AISI's "North American Specification for the Design of Cold-Formed Steel Structural Members."
- D. FMG Listing: Provide steel roof deck evaluated by FMG and listed in its "Approval Guide, Building Materials" for Class 1 fire rating and Class 1-90 windstorm ratings.

## 1.5 DELIVERY, STORAGE, AND HANDLING

- A. Protect steel deck from corrosion, deformation, and other damage during delivery, storage, and handling.
- B. Stack steel deck on platforms or pallets and slope to provide drainage. Protect with a waterproof covering and ventilate to avoid condensation.
  - 1. Protect and ventilate acoustical cellular roof deck with factory-installed insulation to maintain insulation free of moisture.

## PART 2 PRODUCTS

### 2.1 MANUFACTURERS

- A. Available Manufacturers: Subject to compliance with requirements, manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following:
- B. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
  - 1. Steel Deck:
    - a. Consolidated Systems, Inc.
    - b. Epic Metals Corporation.
    - c. Nucor Corp.; Vulcraft Division.
    - d. Roof Deck, Inc.
    - e. United Steel Deck, Inc.
    - f. Valley Joist; Division of EBSCO Industries, Inc.
    - g. Wheeling Corrugating Company; Div. of Wheeling-Pittsburgh Steel Corporation.
- C. Low-Emitting Materials: Paints and coatings shall comply with the testing and product requirements of the California Department of Health Services' "Standard Practice for the Testing of Volatile Organic Emissions from Various Sources Using Small-Scale Environmental Chambers."

### 2.2 ROOF DECK

- A. Steel Roof Deck: Fabricate panels, without top-flange stiffening grooves, to comply with "SDI Specifications and Commentary for Steel Roof Deck," in SDI Publication No. 30, and with the following:

1. Galvanized Steel Sheet: ASTM A 653/A 653M, Structural Steel (SS), Grade 33 (230), G60 (Z180) zinc coating.
2. Galvanized and Shop-Primed Steel Sheet: ASTM A 653/A 653M, Structural Steel (SS), Grade 33 (230), G60 (Z180) zinc coating; cleaned, pretreated, and primed with manufacturer's standard baked-on, rust-inhibitive primer.
  - a. Color: Manufacturer's standard
3. Deck Profile: As indicated.
4. Profile Depth: As indicated.
5. Design Uncoated-Steel Thickness: As indicated.
6. Span Condition: Triple span or more.
7. Side Laps: Overlapped.

## 2.3 ACCESSORIES

- A. General: Provide manufacturer's standard accessory materials for deck that comply with requirements indicated.
- B. Mechanical Fasteners: Corrosion-resistant, low-velocity, power-actuated or pneumatically driven carbon-steel fasteners; or self-drilling, self-threading screws.
- C. Side-Lap Fasteners: Corrosion-resistant, hexagonal washer head; self-drilling, carbon-steel screws, No. 10 (4.8-mm) minimum diameter.
- D. Flexible Closure Strips: Vulcanized, closed-cell, synthetic rubber.
- E. Miscellaneous Sheet Metal Deck Accessories: Steel sheet, minimum yield strength of 33,000 psi (230 MPa), not less than 0.0359-inch (0.91-mm) design uncoated thickness, of same material and finish as deck; of profile indicated or required for application.
- F. Pour-stop thickness and profile guidelines are presented in SDI Publication No. 30. Revise first paragraph below to suit Project.
- G. Column Closures, End Closures, Z-Closures, and Cover Plates: Steel sheet, of same material, finish, and thickness as deck, unless otherwise indicated.
- H. Piercing hanger tabs in paragraph below are designed for embedment in deck slab; delete if not permitted or required. See Evaluations for discussion. Rolled-in hanger tabs are available for floor deck but improper use could result in overstressing the tabs or overloading the deck slab. If allowed, insert rolled-in hanger tabs here; verify load limits, availability, limitations, and recommendations with deck manufacturers.
- I. Piercing Hanger Tabs: Piercing steel sheet hanger attachment devices for use with floor deck.
- J. Usually retain weld washers in first paragraph below if weld-fastening deck with an uncoated minimum steel thickness of less than 0.028 inch (0.71 mm). Select weld washer thickness.
- K. Retain paragraph above or first paragraph below if required. Select level or sloped sump pans. Recessed sump pans are seldom used. Coordinate with choice of roof drain if

recessed sump pans are required. Delete above and retain below if flat sump plates are required.

- L. Galvanizing Repair Paint: ASTM A 780.
- M. Repair Paint: Manufacturer's standard rust-inhibitive primer of same color as primer.

### PART 3 EXECUTION

#### 3.1 EXAMINATION

- A. Examine supporting frame and field conditions for compliance with requirements for installation tolerances and other conditions affecting performance.

#### 3.2 INSTALLATION, GENERAL

- A. Install deck panels and accessories according to applicable specifications and commentary in SDI Publication No. 30, manufacturer's written instructions, and requirements in this Section.
- B. Install temporary shoring before placing deck panels, if required to meet deflection limitations.
- C. Locate deck bundles to prevent overloading of supporting members.
- D. Place deck panels on supporting frame and adjust to final position with ends accurately aligned and bearing on supporting frame before being permanently fastened. Do not stretch or contract side-lap interlocks.
- E. Place deck panels flat and square and fasten to supporting frame without warp or deflection.
- F. Cut and neatly fit deck panels and accessories around openings and other work projecting through or adjacent to deck.
- G. Provide additional reinforcement and closure pieces at openings as required for strength, continuity of deck, and support of other work.
- H. Comply with AWS requirements and procedures for manual shielded metal arc welding, appearance and quality of welds, and methods used for correcting welding work.
- I. Mechanical fasteners may be used in lieu of welding to fasten deck. Locate mechanical fasteners and install according to deck manufacturer's written instructions.

#### 3.3 ROOF-DECK INSTALLATION

- A. Weld Diameter: 5/8 inch (16 mm), nominal.



1. Weld Spacing: Weld edge and interior ribs of deck units with a minimum of two welds per deck unit at each support. Space welds 18 inches (450 mm) apart, maximum, as indicated.
- B. SDI requires side-lap and perimeter edge fastening if deck spans exceed 60 inches (1524 mm). Revise fastener spacing if required.
- C. Side-Lap and Perimeter Edge Fastening: Fasten side laps and perimeter edges of panels between supports, at intervals not exceeding the lesser of 1/2 of the span or 18 inches (450 mm), and as follows:
  1. Mechanically fasten with self-drilling, No. 10 (4.8-mm-) diameter or larger, carbon-steel screws.
  2. Mechanically clinch or button punch.
  3. Fasten with a minimum of 1-1/2-inch- (38-mm-) long welds.
- D. End Bearing: Install deck ends over supporting frame with a minimum end bearing of 1-1/2 inches (38 mm), with end joints as follows:
  1. End Joints: Lapped 2 inches (51 mm) minimum.
- E. Miscellaneous Roof-Deck Accessories: Install ridge and valley plates, finish strips, end closures, and reinforcing channels according to deck manufacturer's written instructions. Weld or mechanically fasten to substrate to provide a complete deck installation.
  1. Weld cover plates at changes in direction of roof-deck panels, unless otherwise indicated.
- F. Flexible Closure Strips: Install flexible closure strips over partitions, walls, and where indicated. Install with adhesive according to manufacturer's written instructions to ensure complete closure.
- G. Sound-Absorbing Insulation: Installation into topside ribs of deck as specified in in Division 07 Section.

#### 3.4 FIELD QUALITY CONTROL

- A. Testing Agency: Owner will engage a qualified independent testing and inspecting agency to perform field tests and inspections and prepare test reports.
- B. Field welds will be subject to inspection.
- C. Testing agency will report inspection results promptly and in writing to Contractor and Architect.
- D. Remove and replace work that does not comply with specified requirements.
- E. Additional inspecting, at Contractor's expense, will be performed to determine compliance of corrected work with specified requirements.

3.5 REPAIRS AND PROTECTION

- A. Galvanizing Repairs: Prepare and repair damaged galvanized coatings on both surfaces of deck with galvanized repair paint according to ASTM A 780 and manufacturer's written instructions.
- B. Provide final protection and maintain conditions to ensure that steel deck is without damage or deterioration at time of Substantial Completion.

END OF SECTION 053100

**SECTION 05 4000**  
**COLD-FORMED METAL FRAMING**

**PART 1 GENERAL**

**1.01 SECTION INCLUDES**

- A. Formed steel stud interior wall framing.

**1.02 RELATED REQUIREMENTS**

**1.03 REFERENCE STANDARDS**

- A. AISI S100-12 - North American Specification for the Design of Cold-Formed Steel Structural Members; American Iron and Steel Institute; 2012.
- B. ASTM A153/A153M - Standard Specification for Zinc Coating (Hot-Dip) on Iron and Steel Hardware; 2016a.
- C. ASTM A653/A653M - Standard Specification for Steel Sheet, Zinc-Coated (Galvanized) or Zinc-Iron Alloy-Coated (Galvannealed) by the Hot-Dip Process; 2015, with Editorial Revision (2016).
- D. ASTM C955 - Standard Specification for Load-Bearing (Transverse and Axial) Steel Studs, Runners (Tracks), and Bracing or Bridging for Screw Application of Gypsum Panel Products and Metal Plaster Bases; 2017.
- E. ASTM C1007 - Standard Specification for Installation of Load Bearing (Transverse and Axial) Steel Studs and Related Accessories; 2011a (Reapproved 2015).
- F. AWS D1.1/D1.1M - Structural Welding Code - Steel; 2015 (with March 2016 Errata).
- G. PS 1 - Structural Plywood; 2009.
- H. 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.

**1.05 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, and type and location of fasteners, and accessories or items required of related work.
  - 1. Indicate stud and ceiling joist layout.
  - 2. Describe method for securing studs to tracks and for bolted framing connections.
  - 3. Provide design engineer's stamp on shop drawings.
- E. Manufacturer's Installation Instructions: Indicate special procedures, conditions requiring special attention.

**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.

## **PART 2 PRODUCTS**

### **201 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.

### **202 FRAMING SYSTEM**

- A. Provide primary and secondary framing members, bridging, bracing, plates, gussets, clips, fittings, reinforcement, and fastenings as required to provide a complete framing system.
- B. Design Criteria: 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. Exterior Walls: Maximum horizontal deflection under wind load of 1/180 of span.
    - c. Brick and thin brick veneer backup: Maximum horizontal deflection under wind load of 1/360 of span.
  - 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.

### **203 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 indicated on the drawings.
  - 2. Galvanized in accordance with ASTM A653/A653M, G90/Z275 coating.
- B. 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 continuous studs bypass elevated floor slab, connect stud to slab in manner allowing vertical and horizontal movement of slab without affecting studs; allow for minimum movement of 1/2 inch.
  - b. 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.
  - c. Provide top track preassembled with connection devices spaced to fit stud spacing indicated on drawings; 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.

### **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 clip and tie 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.

**END OF SECTION**

## SECTION 055113 - METAL PAN STAIRS

### PART 1 - GENERAL

#### 1.1 SUMMARY

##### A. Section Includes:

1. Preassembled steel stairs with concrete-filled treads.
2. Steel tube railings attached to metal stairs.
3. Steel tube handrails attached to walls adjacent to metal stairs.
4. Steel tube columns to be designed as primary support of metal stairs.

#### 1.2 COORDINATION

- A. Coordinate selection of shop primers with topcoats to be applied over them. Comply with paint and coating manufacturers' written recommendations to ensure that shop primers and topcoats are compatible with one another.
- B. Coordinate installation of anchorages for metal stairs.
  1. Furnish setting drawings, templates, and directions for installing anchorages, including sleeves, concrete inserts, anchor bolts, and items with integral anchors, that are to be embedded in concrete or masonry.
  2. Deliver such items to Project site in time for installation.

#### 1.3 ACTION SUBMITTALS

- A. Product Data: For metal pan stairs and the following:
  1. Shop primer products.
- B. Shop Drawings: Include plans, elevations, sections, details, and attachments to other work.
- C. Delegated-Design Submittal: For stairs and railings, including analysis data signed and sealed by the qualified professional engineer responsible for their preparation.

#### 1.4 INFORMATIONAL SUBMITTALS

- A. Welding certificates.
- B. Paint Compatibility Certificates: From manufacturers of topcoats applied over shop primers certifying that shop primers are compatible with topcoats.

#### 1.5 QUALITY ASSURANCE

- A. Installer Qualifications: Fabricator of products.

- B. Welding Qualifications: Qualify procedures and personnel according to the following:
1. AWS D1.1/D1.1M, "Structural Welding Code - Steel."
  2. AWS D1.3/D1.3M, "Structural Welding Code - Sheet Steel."

## PART 2 - PRODUCTS

### 2.1 PERFORMANCE REQUIREMENTS

- A. Delegated Design: Engage a qualified professional engineer, as defined in Section 014000 "Quality Requirements," to design stairs and railings.
- B. Structural Performance of Stairs: Metal stairs shall withstand the effects of gravity loads and the following loads and stresses within limits and under conditions indicated:
1. Uniform Load: 100 lbf/sq. ft..
  2. Concentrated Load: 300 lbf applied on an area of 4 sq. in..
  3. Uniform and concentrated loads need not be assumed to act concurrently.
  4. Stair Framing: Capable of withstanding stresses resulting from railing loads in addition to loads specified above.
  5. Limit deflection of treads, platforms, and framing members to L/360 or 1/4 inch, whichever is less.
- C. Structural Performance of Railings: Railings shall withstand the effects of gravity loads and the following loads and stresses within limits and under conditions indicated:
1. Handrails and Top Rails of Guards:
    - a. Uniform load of 50 lbf/ft. applied in any direction.
    - b. Concentrated load of 200 lbf applied in any direction.
    - c. Uniform and concentrated loads need not be assumed to act concurrently.
  2. Infill of Guards:
    - a. Concentrated load of 50 lbf applied horizontally on an area of 1 sq. ft..
    - b. Infill load and other loads need not be assumed to act concurrently.
- D. Seismic Performance of Stairs: Metal stairs shall withstand the effects of earthquake motions determined according to ASCE/SEI 7.
1. Component Importance Factor: 1.5.

### 2.2 METALS

- A. Metal Surfaces, General: Provide materials with smooth, flat surfaces unless otherwise indicated. For components exposed to view in the completed Work, provide materials without seam marks, roller marks, rolled trade names, or blemishes.
- B. Steel Plates, Shapes, and Bars: ASTM A 36/A 36M.
- C. Steel Tubing for railings: ASTM A 500 (cold formed) or ASTM A 513.



- D. Uncoated, Cold-Rolled Steel Sheet: ASTM A 1008/A 1008M, either commercial steel, Type B, or structural steel, Grade 25, unless another grade is required by design loads; exposed.

### 2.3 FASTENERS

- A. General: Provide zinc-plated fasteners with coating complying with ASTM B 633 or ASTM F 1941, Class Fe/Zn 12 for exterior use, and Class Fe/Zn 5 where built into exterior walls.
  - 1. Select fasteners for type, grade, and class required.
- B. Bolts and Nuts: Regular hexagon-head bolts, ASTM A 307, Grade A; with hex nuts, ASTM A 563; and, where indicated, flat washers.
- C. Anchor Bolts: ASTM F 1554, Grade 36, of dimensions indicated; with nuts, ASTM A 563; and, where indicated, flat washers.
- D. Post-Installed Anchors: Torque-controlled expansion anchors or chemical anchors capable of sustaining, without failure, a load equal to six times the load imposed when installed in unit masonry and four times the load imposed when installed in concrete, as determined by testing according to ASTM E 488/E 488M, conducted by a qualified independent testing agency.
  - 1. Material for Interior Locations: Carbon-steel components zinc plated to comply with ASTM B 633 or ASTM F 1941, Class Fe/Zn 5, unless otherwise indicated.

### 2.4 MISCELLANEOUS MATERIALS

- A. Shop Primers: Provide primers that comply with Section 099123 "Interior Painting."
- B. Bituminous Paint: Cold-applied asphalt emulsion complying with ASTM D 1187/D 1187M.

### 2.5 FABRICATION, GENERAL

- A. Provide complete stair assemblies, including metal framing, hangers, struts, railings, clips, brackets, bearing plates, and other components necessary to support and anchor stairs and platforms on supporting structure.
  - 1. Join components by welding unless otherwise indicated.
  - 2. Use connections that maintain structural value of joined pieces.
- B. Assemble stairs and railings in shop to greatest extent possible.
  - 1. Disassemble units only as necessary for shipping and handling limitations.
  - 2. Clearly mark units for reassembly and coordinated installation.
- C. Cut, drill, and punch metals cleanly and accurately.
  - 1. Remove burrs and ease edges to a radius of approximately 1/32 inch unless otherwise indicated.
  - 2. Remove sharp or rough areas on exposed surfaces.

- D. Form bent-metal corners to smallest radius possible without causing grain separation or otherwise impairing work.
- E. Form exposed work with accurate angles and surfaces and straight edges.
- F. Weld connections to comply with the following:
  - 1. Use materials and methods that minimize distortion and develop strength and corrosion resistance of base metals.
  - 2. Obtain fusion without undercut or overlap.
  - 3. Remove welding flux immediately.
  - 4. Weld exposed corners and seams continuously unless otherwise indicated.
  - 5. At exposed connections, finish exposed welds to comply with NOMMA's "Voluntary Joint Finish Standards" for Type 3 welds: partially dressed weld with spatter removed.
- G. Form exposed connections with hairline joints, flush and smooth, using concealed fasteners where possible.
  - 1. Where exposed fasteners are required, use Phillips flat-head (countersunk) screws or bolts unless otherwise indicated.
  - 2. Locate joints where least conspicuous.

## 2.6 FABRICATION OF STEEL-FRAMED STAIRS

- A. NAAMM Stair Standard: Comply with NAAMM AMP 510, "Metal Stairs Manual," for Commercial Class, unless more stringent requirements are indicated.
- B. Stair Framing:
  - 1. Fabricate stringers of steel channels.
    - a. Stringer Size: As required to comply with "Performance Requirements" Article.
    - b. Provide closures for exposed ends of channel stringers.
    - c. Finish: Shop primed.
  - 2. Construct platforms of steel channel headers and miscellaneous framing members as needed to comply with performance requirements.
  - 3. Weld or bolt stringers to headers; weld or bolt framing members to stringers and headers. If using bolts, fabricate and join so bolts are not exposed on finished surfaces.
  - 4. Where masonry walls support metal stairs, provide temporary supporting struts designed for erecting steel stair components before installing masonry.
- C. Metal Pan Stairs: Form risers, subtread pans, and subplatforms to configurations shown from steel sheet of thickness needed to comply with performance requirements, but not less than 0.067 inch.
  - 1. Steel Sheet: Uncoated cold-rolled steel sheet unless otherwise indicated.
  - 2. Directly weld metal pans to stringers; locate welds on top of subtreads where they are concealed by concrete fill. Do not weld risers to stringers.
  - 3. Attach risers and subtreads to stringers with brackets made of steel angles or bars. Weld brackets to stringers and attach metal pans to brackets by welding, riveting, or bolting.
  - 4. Shape metal pans to include nosing integral with riser.

5. Provide subplatforms of configuration indicated or, if not indicated, the same as subreads. Weld subplatforms to platform framing.
  - a. Smooth Soffit Construction: Construct subplatforms with flat metal under surfaces to produce smooth soffits.
- D. Metal Pan Stair framing to tie into floor structure at top of stringers and base of stringer. However, the primary bearing support of the metal pan stair will be by 2 floor plate mounted steel tube columns designed and installed by the pan stair manufacturer/designer.
  1. Structural plans should provide thickened slab at approximate locations where columns and stringer attaches to the building slab.
  2. Coordinate design of Metal Pan Stair framing and supports with Structural drawings and the PEMB manufacturer prior to submittal of shop drawings.

## 2.7 FABRICATION OF STAIR RAILINGS

- A. Fabricate railings to comply with requirements indicated for design, dimensions, details, finish, and member sizes, including wall thickness of tube, post spacings, and anchorage, but not less than that needed to withstand indicated loads.
  1. Rails and Posts: 1-5/8-inch- diameter top and bottom rails and posts.
  2. Intermediate Rails Infill: 3/4-inch- diameter intermediate rails spaced less than 4 inches clear.
- B. Welded Connections: Fabricate railings with welded connections.
  1. Cope components at connections to provide close fit, or use fittings designed for this purpose.
  2. Weld all around at connections, including at fittings.
  3. Finish welds to comply with NOMMA's "Voluntary Joint Finish Standards" for Type 1 welds: no evidence of a welded joint as shown in NAAMM AMP 521.
- C. Form changes in direction of railings as follows:
  1. By bending or by inserting prefabricated elbow fittings.
- D. For changes in direction made by bending, use jigs to produce uniform curvature for each repetitive configuration required. Maintain cross section of member throughout entire bend without buckling, twisting, cracking, or otherwise deforming exposed surfaces of components.
- E. Close exposed ends of railing members with prefabricated end fittings.
- F. Provide wall returns at ends of wall-mounted handrails unless otherwise indicated.
  1. Close ends of returns unless clearance between end of rail and wall is 1/4 inch or less.
- G. Connect posts to stair framing by direct welding unless otherwise indicated.
- H. Brackets, Flanges, Fittings, and Anchors: Provide wall brackets, end closures, flanges, miscellaneous fittings, and anchors for interconnecting components and for attaching to other work. Furnish inserts and other anchorage devices for connecting to concrete or masonry work.
  1. For nongalvanized railings, provide nongalvanized ferrous-metal fittings, brackets, fasteners, and sleeves, except galvanize anchors embedded in exterior masonry and

- concrete construction.
2. Provide type of bracket with predrilled hole for exposed bolt anchorage and that provides 1-1/2-inch clearance from inside face of handrail to finished wall surface.
- I. Fillers: Provide fillers made from steel plate, or other suitably crush-resistant material, where needed to transfer wall bracket loads through wall finishes to structural supports.

1. Size fillers to suit wall finish thicknesses and to produce adequate bearing area to prevent bracket rotation and overstressing of substrate.

## 2.8 FINISHES

- A. Finish metal stairs after assembly.
- B. Preparation for Shop Priming: Prepare uncoated ferrous-metal surfaces to comply with SSPC-SP 3, "Power Tool Cleaning."
- C. Apply shop primer to uncoated surfaces of metal stair components, except those with galvanized finishes and those to be embedded in concrete or masonry unless otherwise indicated. Comply with SSPC-PA 1, "Paint Application Specification No. 1: Shop, Field, and Maintenance Painting of Steel," for shop painting.

## PART 3 - EXECUTION

### 3.1 INSTALLING METAL PAN STAIRS

- A. Fastening to In-Place Construction: Provide anchorage devices and fasteners where necessary for securing metal stairs to in-place construction.
  1. Include threaded fasteners for concrete and masonry inserts, through-bolts, lag bolts, and other connectors.
- B. Cutting, Fitting, and Placement: Perform cutting, drilling, and fitting required for installing metal stairs. Set units accurately in location, alignment, and elevation, measured from established lines and levels and free of rack.
- C. Install metal stairs by welding stair framing to steel structure and columns supports and weld plates cast into concrete.
- D. Provide temporary bracing or anchors in formwork for items that are to be built into concrete, masonry, or similar construction.
- E. Fit exposed connections accurately together to form hairline joints.
  1. Weld connections that are not to be left as exposed joints but cannot be shop welded because of shipping size limitations.
  2. Do not weld, cut, or abrade surfaces of exterior units that have been hot-dip galvanized after fabrication and are for bolted or screwed field connections.
  3. Comply with requirements for welding in "Fabrication, General" Article.
- F. Place and finish concrete fill for treads and platforms to comply with Section 033000 "Cast-in-Place Concrete."

### 3.2 INSTALLING RAILINGS

- A. Adjust railing systems before anchoring to ensure matching alignment at abutting joints.

1. Space posts at spacing indicated or, if not indicated, as required by design loads.
2. Plumb posts in each direction.
3. Secure posts and rail ends to building construction as follows:
  - a. Anchor posts to steel by welding to steel supporting members.
  - b. Anchor handrail ends to concrete and masonry with steel round flanges welded to rail ends and anchored with post installed anchors and bolts.

B. Attach handrails to metal stair post/guardrails.

### 3.3 REPAIR

A. Touchup Painting: Immediately after erection, clean field welds, bolted connections, and abraded areas of shop paint, and paint exposed areas with same material as used for shop painting to comply with SSPC-PA 1 for touching up shop-painted surfaces.

1. Apply by brush or spray to provide a minimum 2.0-mil dry film thickness.

END OF SECTION 055113

**SECTION 05 5213**  
**PIPE AND TUBE RAILINGS**

**PART 1 GENERAL**

**1.01 SECTION INCLUDES**

- A. 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 05 5100 - Metal Pan Stairs: Handrails other than those specified in this section.
- D. Section 09 2116 - Gypsum Board Assemblies: Placement of backing plates in stud wall construction.
- E. Section 09 9113 - Exterior Painting: Paint finish.

**1.03 REFERENCE STANDARDS**

- A. ASTM A53/A53M - Standard Specification for Pipe, Steel, Black and Hot-Dipped, Zinc-Coated, Welded and Seamless; 2012.
- B. ASTM A123/A123M - Standard Specification for Zinc (Hot-Dip Galvanized) Coatings on Iron and Steel Products; 2017.
- C. ASTM A500/A500M - Standard Specification for Cold-Formed Welded and Seamless Carbon Steel Structural Tubing in Rounds and Shapes; 2013.
- D. ASTM A501/A501M - Standard Specification for Hot-Formed Welded and Seamless Carbon Steel Structural Tubing; 2014.
- E. ASTM E935 - Standard Test Methods for Performance of Permanent Metal Railing Systems and Rails for Buildings; 2013, with Editorial Revision.
- F. ASTM E985 - Standard Specification for Permanent Metal Railing Systems and Rails for Buildings; 2000 (Reapproved 2006).
- G. SSPC-Paint 15 - Steel Joist Shop Primer/Metal Building Primer; 1999 (Ed. 2004).
- H. 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.
- C. Samples: Submit two samples of elbow, wall bracket, floor bracket, and end stop.

**PART 2 PRODUCTS**

**201 RAILINGS - GENERAL REQUIREMENTS**

- A. Design, fabricate, and test railing assemblies in accordance with the most stringent requirements of ASTM E985 and applicable local code.
- B. Design railing assembly, wall rails, and attachments to resist lateral force of 75 lbs at any point without damage or permanent set. Test in accordance with ASTM E 935.
- C. Allow for expansion and contraction of members and building movement without damage to connections or members.
- D. 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.
- E. 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.
- F. 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.

## **202 ALUMINUM MATERIALS**

- A. Extruded Bars, Shapes, and Mouldings : Alloy 6063-T52 meeting ASTM B221.

## **203 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. or direct attach by plate to face of concrete surface - See Drawings for which is used.
  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.

## **204 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.

## **205 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 surfaces that will be in contact with cementitious or dissimilar materials.

#### **3.03 INSTALLATION**

- A. Install in accordance with manufacturer's instructions.
- B. Install components plumb and level, accurately fitted, free from distortion or defects, with tight joints.
- C. Anchor railings securely to structure.
  - 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. Structural dimension lumber framing.
- B. Non-structural dimension lumber framing.
- C. Preservative treated wood materials.
- D. Fire retardant treated wood materials.
- E. Miscellaneous framing and sheathing.
- F. Communications, data and electrical room mounting boards.
- G. Concealed wood blocking, nailers, and supports including blocking for Owner-furnished items.
- H. Miscellaneous wood nailers, furring, and grounds.

**1.02 RELATED REQUIREMENTS**

- A. Section 07 6200 - Sheet Metal Flashing and Trim: Sill flashings.
- B. Section 13121 - Pre-Engineered Buildings.

**1.03 REFERENCE STANDARDS**

- A. AFPA (WFCM) - Wood Frame Construction Manual for One- and Two-Family Dwellings; 2012.
- B. AWC (WFCM) - Wood Frame Construction Manual for One- and Two-Family Dwellings; 2015.
- 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; 2015, with Editorial Revision (2016).
- E. ASTM D2898 - Standard Test Methods for Accelerated Weathering of Fire-Retardant-Treated Wood for Fire Testing; 2010.
- F. ASTM E84 - Standard Test Method for Surface Burning Characteristics of Building Materials; 2015a.
- G. ASTM E96/E96M - Standard Test Methods for Water Vapor Transmission of Materials; 2016.
- H. AWPA C2 - Lumber, Timber, Bridge Ties and Mine Ties -- Preservative Treatment by Pressure Processes; American Wood Protection Association; 2003.
- I. AWPA C9 - Plywood -- Preservative Treatment by Pressure Processes; American Wood Protection Association; 2003.
- J. AWPA C27 - Plywood -- Fire-Retardant Treatment by Pressure Processes; American Wood-Protection Association; 2002.
- K. AWPA U1 - Use Category System: User Specification for Treated Wood; 2017.
- L. ICC-ES AC308 - Acceptance Criteria for Termite Physical Barrier Systems; 2014 (editorially revised 2017).
- M. PS 1 - Structural Plywood; 2009.
- N. PS 20 - American Softwood Lumber Standard; 2015.
- O. SPIB (GR) - Grading Rules; 2014.
- P. WCLIB (GR) - Standard Grading Rules for West Coast Lumber No. 17; 2004, and supplements.
- Q. WWPA G-5 - Western Lumber Grading Rules; 2011.

#### **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 wood treatments.
- C. Manufacturer's Certificate: Certify that wood products supplied for rough carpentry meet or exceed specified requirements.

#### **1.05 QUALITY ASSURANCE**

- A. Lumber: Comply with PS 20 and approved grading rules and inspection agencies.
  - 1. Lumber of other species or grades, or graded by other agencies, is acceptable provided structural and appearance characteristics are equivalent to or better than products specified.
- B. Exposed-to-View Rough Carpentry: Submit manufacturer's certificate that products meet or exceed specified requirements, in lieu of grade stamping.
- C. Fire-Retardant Treated Wood: Mark each piece of wood with producer's stamp indicating compliance with specified requirements.
- D. 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 AWWA standards.
- E. Comply with applicable provisions of AFPA (WFCM) - Wood Frame Construction Manual.

#### **1.06 DELIVERY, STORAGE, AND HANDLING**

- A. General: Cover wood products to protect against moisture. Support stacked products to prevent deformation and to allow air circulation.
- B. Fire Retardant Treated Wood: Prevent exposure to precipitation during shipping, storage, or installation.

### **PART 2 PRODUCTS**

#### **201 GENERAL REQUIREMENTS**

- A. Dimension Lumber: Comply with PS 20 and requirements of specified grading agencies.
  - 1. If no species is specified, provide any species graded by the agency specified; if no grading agency is specified, provide lumber graded by any grading agency meeting the specified requirements.
  - 2. Grading Agency: Any grading agency whose rules are approved by the Board of Review, American Lumber Standard Committee ([www.alsc.org](http://www.alsc.org)) and who provides grading service for the species and grade specified; provide lumber stamped with grade mark unless otherwise indicated.
- B. Lumber fabricated from old growth timber is not permitted.

#### **202 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. Stud Framing (2 by 2 through 2 by 6):
  - 1. Species: Any allowed under referenced grading rules.
  - 2. Grade: No. 2.
- E. Joist and Small Beam Framing (2 by 6 through 4 by 16):
  - 1. Machine stress-rated (MSR) as follows:
    - a. Fb-single (minimum extreme fiber stress in bending): 1350 psi.
    - b. E (minimum modulus of elasticity): 1,300,000 psi.
  - 2. Species: Any allowed under grading rules.

- F. Miscellaneous Framing, Blocking, Nailers, Grounds, and Furring:
  - 1. Lumber: S4S, No. 2 or Standard Grade.
  - 2. Boards: Standard or No. 3.
- G. Miscellaneous Blocking, Furring, and Nailers:
  - 1. Lumber: S4S, No. 2 or Standard Grade.
  - 2. Boards: Standard or No. 3.

### **203 EXPOSED DIMENSION LUMBER**

- A. Submit manufacturer's certificate that products meet or exceed specified requirements, in lieu of grade stamping.
- B. Grading Agency: Southern Pine Inspection Bureau, Inc; SPIB (GR).
- C. Sizes: Nominal sizes as indicated on drawings.
- D. Surfacing: S4S.
- E. Sizes: Nominal sizes as indicated on drawings, S4S.
- F. Moisture Content: Kiln-dry or MC15.
- G. Stud Framing (2 by 2 through 2 by 6):
  - 1. Species: Southern Pine.
  - 2. Grade: Select Structural.
- H. Miscellaneous Framing (2 by 6 through 4 by 16):
  - 1. Species: Southern Pine.
  - 2. Grade: No. 1.

### **204 EXPOSED BOARDS**

- A. Submit manufacturer's certificate that products meet or exceed specified requirements, in lieu of grade stamping.
- B. Moisture Content: Kiln-dry (15 percent maximum).
- C. Surfacing: S4S.
- D. Species: Southern Pine.
- E. Grade: No. 1, 1 Common, or Select.

### **205 CONSTRUCTION PANELS**

- A. Underlayment: APA Underlayment; plywood, Exposure 1, 3/4 inch thick.
- B. Roof Sheathing: APA PRP-108, Structural I Rated Sheathing, Exterior Exposure Class, and as follows:
  - 1. Span Rating: 24/0.
  - 2. Thickness: 19/32 inch, nominal.
- C. Wall Sheathing: Plywood, PS 1, Grade C-C, Exterior Exposure.
- D. 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 E 84. Provide fire retardant coating both sides and all edges. See Section 09900.
- E. 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.
  - 4. Electrical Component Mounting: APA rated sheathing, fire retardant treated.

## **206 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 threetimes thickness of sheathing.
  - 3. Anchors: Toggle bolt type for anchorage to hollow masonry.
- 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 Masonry Wall: 1/4 inch thick, plate width, closed cell plastic foam from continuous rolls.
- E. Termite-Resistant Sill Flashing: Self-adhesive membrane; polyethylene film bonded to sealant.
  - 1. Thickness: 40 mils (0.040 inch).
  - 2. Termite Resistance: 100 percent when tested in accordance with ICC-ESAC380.
  - 3. Water Vapor Permeance: 0.035 perm, maximum, when tested in accordance with ASTM E96/E96M.
  - 4. Manufacturers:
    - a. Polyguard Barrier Systems, Inc, a division of Polyguard Products, Inc; TERM Flashing Barrier: [www.polyguardbarriers.com/#sle](http://www.polyguardbarriers.com/#sle).
    - b. Substitutions: See Section 01 6000 - Product Requirements.
- F. Water-Resistive Barrier: No. 30 asphalt felt.

## **207 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. Manufacturers:
    - a. Arch Wood Protection, Inc: [www.wolmanizedwood.com](http://www.wolmanizedwood.com).
    - b. Hoover Treated Wood Products, Inc: [www.frtw.com](http://www.frtw.com).
    - c. Osmose, Inc: [www.osmose.com](http://www.osmose.com).
    - d. Substitutions: See Section 01 6000 - Product Requirements.
  2. Exterior Type: AWPA U1, Category UCFB, Commodity Specification H, chemically treated and pressure impregnated; capable of providing a maximum flame spread index of 25 when tested in accordance with ASTM E84, with no evidence of significant combustion when test is extended for an additional 20 minutes both before and after accelerated weathering test performed in accordance with ASTM D2898.
    - a. Kiln dry wood after treatment to a maximum moisture content of 19 percent for lumber and 15 percent for plywood.
    - b. Do not use treated wood in direct contact with the ground.
  3. 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. Treat rough carpentry items as indicated.
    - c. Do not use treated wood in applications exposed to weather or where the wood may become wet.
- C. Preservative Treatment:
1. Manufacturers:
    - a. Arch Wood Protection, Inc: [www.wolmanizedwood.com](http://www.wolmanizedwood.com).
    - b. Viance, LLC: [www.treatedwood.com](http://www.treatedwood.com).
    - c. Osmose, Inc: [www.osmose.com](http://www.osmose.com).
    - d. Substitutions: See Section 01 6000 - Product Requirements.
- D. Preservative Pressure Treatment of Lumber Above Grade: AWPA U1, Use Category UC3B, Commodity Specification A using waterborne preservative to 0.25 lb/cu ft retention.
1. Kiln dry lumber after treatment to maximum moisture content of 19 percent.
    - a. Treat lumber exposed to weather.
  2. Treat lumber in contact with roofing, flashing, or waterproofing.
  3. Treat lumber in contact with masonry or concrete.
  4. Treat lumber less than 18 inches above grade.
- E. Preservative Pressure Treatment of Plywood Above Grade: AWPA U1, Use Category UC2 and UC3B, Commodity Specification F using waterborne preservative to 0.25 lb/cu ft retention.
1. Kiln dry plywood after treatment to maximum moisture content of 19 percent.
  2. Treat plywood in contact with roofing, flashing, or waterproofing.
  3. Treat plywood in contact with masonry or concrete.
  4. Treat plywood less than 18 inches above grade.
- F. Preservative Pressure Treatment of Lumber in Contact with Soil: AWPA U1, Use Category UC4A, Commodity Specification A using waterborne preservative to 0.4 lb/cu ft retention.
1. Preservative for Field Application to Cut Surfaces: As recommended by manufacturer of factory treatment chemicals for brush-application in the field.
  2. Restrictions: Do not use lumber or plywood treated with chromated copper arsenate (CCA) in exposed exterior applications subject to leaching.

### **PART 3 EXECUTION**

#### **3.01 PREPARATION**

- A. Install sill gasket under sill plate of framed walls bearing on foundations; puncture gasket cleanly to fit tightly around protruding anchor bolts.

#### **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 FRAMING INSTALLATION**

- 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. Set structural members level, plumb, and true to line. Discard pieces with defects that would lower required strength or result in unacceptable appearance of exposed members.
- D. Make provisions for temporary construction loads, and provide temporary bracing sufficient to maintain structure in true alignment and safe condition until completion of erection and installation of permanent bracing.
- E. Install structural members full length without splices unless otherwise specifically detailed.
- F. Comply with member sizes, spacing, and configurations indicated, and fastener size and spacing indicated, but not less than required by applicable codes and AWC (WFCM) Wood Frame Construction Manual.
- G. Install horizontal spanning members with crown edge up and not less than 1-1/2 inches of bearing at each end.
- H. Provide bridging at joists in excess of 8 feet span as detailed. Fit solid blocking at ends of members.
- I. Frame wall openings with two or more studs at each jamb; support headers on cripple studs.

#### **3.04 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 metal stud walls, provide continuous blocking around door and window openings for anchorage of frames, securely attached to stud framing.
- D. 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.
- E. Where ceiling-mounting is indicated, provide blocking and supplementary supports above ceiling, unless other method of support is explicitly indicated.



- F. Provide the following specific non-structural framing and blocking:
1. Cabinets and shelf supports.
  2. Wall brackets.
  3. Handrails.
  4. Grab bars.
  5. Towel and bath accessories.
  6. Wall-mounted door stops.
  7. Chalkboards and marker boards.
  8. Wall paneling and trim.
  9. Joints of rigid wall coverings that occur between studs.
  10. Toilet partitions and accessories.

### **3.05 ROOF-RELATED CARPENTRY**

- A. Coordinate installation of roofing carpentry with deck construction, framing of roof openings, and roofing assembly installation.

### **3.06 INSTALLATION OF ACCESSORIES AND MISCELLANEOUS WOOD**

- A. Place full width continuous sill flashings under framed walls on cementitious foundations. Lap flashing joints 4 inches and seal.
- B. Place sill gasket directly on sill flashing. Puncture gasket cleanly and fit tightly to protruding foundation anchor bolts.

### **3.07 INSTALLATION OF CONSTRUCTION PANELS**

- A. Communications and Electrical Room Mounting Boards: Secure with screws to studs with edges over firm bearing; space fasteners at maximum 24 inches on center on all edges and into studs in field of board.
1. At fire-rated walls, install board over wall board indicated as part of the fire-rated assembly.
  2. Where boards are indicated as full floor-to-ceiling height, install with long edge of board parallel to studs.
  3. Install adjacent boards without gaps.
- B. Equipment backboards: Screw-attach using appropriate hardware recommended by manufacturer of fire retardant treatment.

### **3.08 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.

### **3.09 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.

### **3.10 CLEANING**

- A. Waste Disposal: Comply with the requirements of Section 01700.
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 061600 - SHEATHING

### PART 1 - GENERAL

#### 1.1 SUMMARY

A. Section Includes:

1. Exterior Wall sheathing.
2. Sheathing joint and penetration treatment.

B. Related Requirements:

1. Section 061600 "Sheathing" for gypsum sheathing for exterior walls.
2. Section 092216 "Non-Structural Metal Framing" for non-structural framing and suspension systems that support gypsum board panels.

#### 1.2 ACTION SUBMITTALS

A. Product Data: For each type of process and factory-fabricated product. Indicate component materials and dimensions and include construction and application details.

B. Sustainable Design Submittals:

1. Product Data: For recycled content, indicating postconsumer and preconsumer recycled content and cost.
2. Product Certificates: For regional materials, indicating location of material manufacturer and point of extraction, harvest, or recovery for each raw material. Include distance to Project and cost for each regional material.

### PART 2 - PRODUCTS

#### 2.1 WALL SHEATHING

A. Recycled Content: Provide gypsum panel products with recycled content such that postconsumer recycled content plus one-half of preconsumer recycled content constitutes the maximum percent by weight available from the selected manufacturers for each product type specified.

B. Regional Materials: Gypsum panel products shall be manufactured within 500 miles of Project site from materials that have been extracted, harvested, or recovered, as well as manufactured, within 500 miles of Project site.

- D. Glass-Mat Gypsum Wall Sheathing: ASTM C 1177/C 1177M; ASTM D 3273.
  - 1. Products: Subject to compliance with requirements, provide one of the following:
    - a. CertainTeed Corporation; GlasRoc.
    - b. Georgia-Pacific Building Products; Dens-Glass Gold.
    - c. National Gypsum Company; Gold Bond eXP Extended Exposure Sheathing.
    - d. United States Gypsum Company; Securock.
  - 2. Type and Thickness: Type X, 5/8 inch thick.

## 2.2 FASTENERS

- A. General: Provide fasteners of size and type indicated that comply with requirements specified in this article for material and manufacture.
  - 1. For roof, parapet, and wall sheathing, provide fasteners with organic-polymer or other corrosion-protective coating having a salt-spray resistance of more than 800 hours according to ASTM B 117.
- B. Screws for Fastening Gypsum Sheathing to Cold-Formed Metal Framing: Steel drill screws, in length recommended by sheathing manufacturer for thickness of sheathing to be attached.
  - 1. For steel framing less than 0.0329 inch thick, use screws that comply with ASTM C 1002.
  - 2. For steel framing from 0.033 to 0.112 inch thick, use screws that comply with ASTM C 954.

## 2.3 SHEATHING JOINT-AND-PENETRATION TREATMENT MATERIALS

- A. Sealant for Glass-Mat Gypsum Sheathing: Silicone emulsion sealant complying with ASTM C 834, compatible with sheathing tape and sheathing and recommended by tape and sheathing manufacturers for use with glass-fiber sheathing tape and for covering exposed fasteners.
  - 1. Sheathing Tape: Self-adhering glass-fiber tape, minimum 2 inches wide, 10 by 10 or 10 by 20 threads/inch, of type recommended by sheathing and tape manufacturers for use with silicone emulsion sealant in sealing joints in glass-mat gypsum sheathing and with a history of successful in-service use.

## PART 3 - EXECUTION

### 3.1 INSTALLATION, GENERAL

- A. Do not use materials with defects that impair quality of sheathing or pieces that are too small to use with minimum number of joints or optimum joint arrangement. Arrange joints so that pieces do not span between fewer than three support members.
- B. Cut panels at penetrations, edges, and other obstructions of work; fit tightly against abutting construction unless otherwise indicated.
- C. Securely attach to substrate by fastening as indicated, complying with the following:
  - 1. Table 2304.9.1, "Fastening Schedule," in ICC's "International Building Code."

### 3.2 GYPSUM SHEATHING INSTALLATION

- A. Comply with GA-253 and with manufacturer's written instructions.
  - 1. Fasten gypsum sheathing to cold-formed metal framing with screws.
  - 2. Install panels with a 3/8-inch gap where non-load-bearing construction abuts structural elements.
- B. Apply fasteners so heads bear tightly against face of sheathing, but do not cut into facing.
- C. Seal sheathing joints according to sheathing manufacturer's written instructions.
  - 1. Apply glass-fiber sheathing tape to glass-mat gypsum sheathing joints and apply and trowel silicone emulsion sealant to embed entire face of tape in sealant. Apply sealant to exposed fasteners with a trowel so fasteners are completely covered. Seal other penetrations and openings.

END OF SECTION 061600

**SECTION 06 2000**  
**FINISH CARPENTRY**

**PART 1 GENERAL**

**1.01 SECTION INCLUDES**

- A. Finish carpentry items.
- B. Plywood wall finish.
- C. Hardware and attachment accessories.

**1.02 RELATED REQUIREMENTS**

- A. Section 06 1000 - Rough Carpentry: Support framing, grounds, and concealed blocking.
- B. Section 06 4100 - Architectural Wood Casework: Shop fabricated custom cabinet work.
- C. Section 09 9113 - Exterior Painting: Painting and finishing of finish carpentry items.
- D. Section 09 9123 - Interior Painting: Painting and finishing of finish carpentry items.
- E. Section 09 9600 - High Performance Coatings: Painting and finishing of plywood wall panels.

**1.03 REFERENCE STANDARDS**

- A. ASTM E84 - Standard Test Method for Surface Burning Characteristics of Building Materials; 2015a.
- B. AWI/AWMAC/WI (AWS) - Architectural Woodwork Standards; 2014.
- C. AWMAC/WI (NAAWS) - North American Architectural Woodwork Standards, U.S. Version 3.0; 2016.
- D. AWPA M4 - Standard for the Care of Preservative-Treated Wood Products; 2011.
- E. AWPA U1 - Use Category System: User Specification for Treated Wood; 2017.
- F. PS 1 - Structural Plywood; 2009.

**1.04 ADMINISTRATIVE REQUIREMENTS**

- A. Coordinate the work with plumbing rough-in, electrical rough-in, installation of associated and adjacent components, and insulation and vapor barrier systems.
- B. Sequence installation to ensure utility connections are achieved in an orderly and expeditious manner.

**1.05 SUBMITTALS**

- A. See Section 01 3000 - Administrative Requirements for submittal procedures.
- B. Product Data:
  - 1. Provide data on fire retardant treatment materials and application instructions.
  - 2. Provide instructions for attachment hardware and finish hardware.
- C. Shop Drawings: Indicate materials, component profiles, fastening methods, jointing details, and accessories.
  - 1. Scale of Drawings: 1-1/2 inch to 1 foot, minimum.
  - 2. Provide the information required by AWI/AWMAC/WI (AWS) or AWMAC/WI (NAAWS).
- D. Samples: Submit two samples of finish plywood, 12 by 12 inch in size illustrating wood grain and specified finish.
- E. Samples: Submit two samples of wood trim 12 inch long.
- F. Certificate: Submit labels and certificates required by quality assurance and quality control programs.

**1.06 QUALITY ASSURANCE**

- A. Fabricator Qualifications: Company specializing in fabricating the products specified in this section with minimum five years of documented experience.

## **1.07 DELIVERY, STORAGE, AND HANDLING**

- A. Protect work from moisture damage.

## **PART 2 PRODUCTS**

### **2.01 FINISH CARPENTRY ITEMS**

- A. Quality Standard: Custom Grade, in accordance with AWI/AWMAC/WI (AWS) or AWMAC/WI (NAAWS), unless noted otherwise.
- B. Surface Burning Characteristics: Provide materials having fire and smoke properties as required by applicable code.
- C. Interior Woodwork Items:
  - 1. Moldings, Bases, Casings, and Miscellaneous Trim: Clear white pine; prepare for paint finish.
  - 2. Loose Shelving: Birch plywood; prepare for paint finish.
  - 3. Plywood wall finish at interior face of exterior (metal building) walls: Group 1 plywood, Fire retardant treated.

### **2.02 LUMBER MATERIALS**

- A. Softwood Lumber: fir species, plain sawn, maximum moisture content of 6 percent; with vertical grain, suitable for opaque finish.

### **2.03 SHEET MATERIALS**

- A. Softwood Plywood, exposed to view, for high performance paint application: Group 1 species, veneer core; PS 1 Grade A-C, exterior glue type.

### **2.04 FASTENINGS**

- A. Fasteners: Of size and type to suit application; galvanized finish in concealed locations and zinc plated finish in exposed locations.
- B. Concealed Joint Fasteners: Threaded steel.

### **2.05 WOOD TREATMENT**

- A. Factory-Treated Lumber: Comply with requirements of AWPA U1 - Use Category System for pressure impregnated wood treatments determined by use categories, expected service conditions, and specific applications.
- B. Fire Retardant Treatment (FR-S Type): Chemically treated and pressure impregnated; capable of providing flame spread index of 25, maximum, and smoke developed index of 450, maximum, when tested in accordance with ASTM E84.
- C. Wood Preservative by Pressure Treatment (PT Type): Provide AWPA U1 treatment using waterborne preservative with 0.25 percent retainage.
- D. Wood Preservative (Surface Application): Clear, copper naphthenate or oxine copper type complying with AWPA M4 standard, Tenino manufactured by Copper Care Wood Preservatives.
- E. Provide identification on fire retardant treated material.
- F. Redry wood after pressure treatment to maximum 19 percent moisture content.
- G. Redry plywood after pressure treatment to maximum 15 percent moisture content.

### **2.06 FABRICATION**

- A. Shop assemble work for delivery to site, permitting passage through building openings.
- B. When necessary to cut and fit on site, provide materials with ample allowance for cutting. Provide trim for scribing and site cutting.

## **PART 3 EXECUTION**

### **3.01 EXAMINATION**

- A. Verify adequacy of backing and support framing.

- B. Verify mechanical, electrical, and building items affecting work of this section are placed and ready to receive this work.
- C. See Section 06 1000 for installation of recessed wood blocking.

### **3.02 INSTALLATION**

- A. Install work in accordance with AWI/AWMAC/WI (AWS) or AWMAC/WI (NAAWS) requirements for grade indicated.
- B. Set and secure materials and components in place, plumb and level.
- C. Carefully scribe work abutting other components, with maximum gaps of 1/32 inch. Do not use additional overlay trim to conceal larger gaps.
- D. See Section 06 6100 for installation requirements for attachment accessories.
- E. Install components with nails at 8 inch on center.

### **3.03 SITE APPLIED WOOD TREATMENT**

- A. Apply preservative treatment in accordance with manufacturer's instructions.
- B. Brush apply one coats of preservative treatment on wood in contact with cementitious materials. Treat site-sawn cuts.
- C. Allow preservative to dry prior to erecting members.

### **3.04 PREPARATION FOR SITE FINISHING**

- A. Set exposed fasteners. Apply wood filler in exposed fastener indentations. Sand work smooth.
- B. Site Finishing: See Section 09 9600 and 09 9123
- C. Before installation, prime paint surfaces of items or assemblies to be in contact with cementitious materials.

### **3.05 TOLERANCES**

- A. Maximum Variation from True Position: 1/16 inch.
- B. Maximum Offset from True Alignment with Abutting Materials: 1/32 inch.

**END OF SECTION**



**SECTION 07 0533**  
**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.

**1.04 SUBMITTALS**

- A. See Section 01 3000 - Administrative Requirements, for submittal procedures.
- B. Schedule: Completely define scope of proposed marking. 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**

**201 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**

**301 EXAMINATION**

- A. Verify that substrate surfaces are ready to receive work.

**302 PREPARATION**

- A. See Section 09 9123 for substrate preparation for painted markings.

**303 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 Substantial Completion; repair or replace damaged markings.

**END OF SECTION**

## SECTION 071326 - SELF-ADHERING SHEET WATERPROOFING

### PART 1 - GENERAL

#### 1.1 SUMMARY

- A. Section includes self-adhering modified bituminous sheet waterproofing.

#### 1.2 PREINSTALLATION MEETINGS

- A. Preinstallation Conference: Conduct conference at Project site.
  - 1. Review waterproofing requirements including surface preparation, substrate condition and pretreatment, minimum curing period, forecasted weather conditions, special details and sheet flashings, installation procedures, testing and inspection procedures, and protection and repairs.

#### 1.3 ACTION SUBMITTALS

- A. Product Data: For each type of product.
- B. Shop Drawings: Show locations and extent of waterproofing and details of substrate joints and cracks, sheet flashings, penetrations, inside and outside corners, tie-ins with adjoining waterproofing, and other termination conditions.

#### 1.4 INFORMATIONAL SUBMITTALS

- A. Sample warranties.

#### 1.5 QUALITY ASSURANCE

- A. Installer Qualifications: An entity that employs installers and supervisors who are trained and approved by waterproofing manufacturer.

#### 1.6 WARRANTY

- A. Manufacturer's Warranty: Manufacturer's standard materials-only warranty in which manufacturer agrees to furnish replacement waterproofing material for waterproofing that does not comply with requirements or that fails to remain watertight within specified warranty period.
  - 1. Warranty Period: Five years from date of Substantial Completion.
- B. Installer's Special Warranty: Signed by Installer, covering Work of this Section, for warranty period of five years.

## PART 2 - PRODUCTS

### 2.1 MODIFIED BITUMINOUS SHEET WATERPROOFING

- A. Modified Bituminous Sheet: Minimum 60-mil nominal thickness, self-adhering sheet consisting of 56 mils of rubberized asphalt laminated on one side to a 4-mil- thick, polyethylene-film reinforcement, and with release liner on adhesive side.
1. Products: Subject to compliance with requirements, provide one of the following:
    - a. American Hydrotech, Inc.; VM60.
    - b. Carlisle Coatings & Waterproofing Inc; CCW MiraDRI 860/861.
    - c. Grace Construction Products; W.R. Grace & Co. -- Conn.; Bituthene 3000.
    - d. Henry Company; Blueskin WP 100.
  2. Physical Properties:
    - a. Tensile Strength, Membrane: 250 psi minimum; ASTM D 412, Die C, modified.
    - b. Ultimate Elongation: 300 percent minimum; ASTM D 412, Die C, modified.
    - c. Low-Temperature Flexibility: Pass at minus 20 deg F; ASTM D 1970.
    - d. Crack Cycling: Unaffected after 100 cycles of 1/8-inch movement; ASTM C 836.
    - e. Puncture Resistance: 40 lbf minimum; ASTM E 154.
    - f. Water Absorption: 0.2 percent weight-gain maximum after 48-hour immersion at 70 deg F; ASTM D 570.
    - g. Water Vapor Permeance: 0.05 perms maximum; ASTM E 96/E 96M, Water Method.
    - h. Hydrostatic-Head Resistance: 200 feet minimum; ASTM D 5385.
  3. Sheet Strips: Self-adhering, rubberized-asphalt strips of same material and thickness as sheet waterproofing.

### 2.2 AUXILIARY MATERIALS

- A. General: Furnish auxiliary materials recommended by waterproofing manufacturer for intended use and compatible with sheet waterproofing.
- B. Primer: Liquid solvent-borne primer recommended for substrate by sheet-waterproofing material manufacturer.
- C. Liquid Membrane: Elastomeric, two-component liquid, cold fluid applied, of trowel grade or low viscosity.
- D. Substrate Patching Membrane: Low-viscosity, two-component, modified asphalt coating.
- E. Metal Termination Bars: Aluminum bars, approximately 1 by 1/8 inch thick, with sealant trays, predrilled at 8-inch centers.

### 2.3 MOLDED-SHEET DRAINAGE PANELS

- A. Nonwoven-Geotextile-Faced, Molded-Sheet Drainage Panel: Composite subsurface drainage panel consisting of a studded, nonbiodegradable, molded-plastic-sheet drainage core; with a

nonwoven, needle-punched geotextile facing with an apparent opening size not exceeding No. 70 sieve laminated to one side of the core and a polymeric film bonded to the other side; and with a vertical flow rate of 9 to 15 gpm per ft..

### PART 3 - EXECUTION

#### 3.1 MODIFIED BITUMINOUS SHEET-WATERPROOFING APPLICATION

- A. Prepare surfaces and install modified bituminous sheets according to waterproofing manufacturer's written instructions and recommendations in ASTM D 6135.
- B. Apply primer to substrates at required rate and allow it to dry. Limit priming to areas that will be covered by sheet waterproofing in same day. Reprime areas exposed for more than 24 hours.
- C. Apply and firmly adhere sheets over area to receive waterproofing. Accurately align sheets and maintain uniform 2-1/2-inch- minimum lap widths and end laps. Overlap and seal seams, and stagger end laps to ensure watertight installation.
  - 1. When ambient and substrate temperatures range between 25 and 40 deg F, install self-adhering, modified bituminous sheets produced for low-temperature application. Do not use low-temperature sheets if ambient or substrate temperature is higher than 60 deg F.
- D. Apply continuous sheets over already-installed sheet strips, bridging substrate cracks, construction, and contraction joints.
- E. Seal edges of sheet-waterproofing terminations with mastic.
- F. Install sheet-waterproofing and auxiliary materials to tie into adjacent waterproofing.
- G. Repair tears, voids, and lapped seams in waterproofing not complying with requirements. Slit and flatten fishmouths and blisters. Patch with sheet waterproofing extending 6 inches beyond repaired areas in all directions.

#### 3.2 MOLDED-SHEET DRAINAGE-PANEL INSTALLATION

- A. Place and secure molded-sheet drainage panels, with geotextile facing away from wall or deck substrate, according to manufacturer's written instructions. Use adhesives or other methods that do not penetrate waterproofing. Lap edges and ends of geotextile to maintain continuity. Protect installed molded-sheet drainage panels during subsequent construction.

#### 3.3 FIELD QUALITY CONTROL

- A. Submit written certification that installation has been done in accordance with manufacturer's requirements.

#### 3.4 PROTECTION, REPAIR, AND CLEANING

- A. Protect waterproofing from damage and wear during remainder of construction period.

- B. Correct deficiencies in or remove waterproofing that does not comply with requirements; repair substrates, reapply waterproofing, and repair sheet flashings.
- C. Clean spillage and soiling from adjacent construction using cleaning agents and procedures recommended by manufacturer of affected construction.

END OF SECTION 071326

**SECTION 07 1400**  
**FLUID-APPLIED WATERPROOFING**

**PART 1 GENERAL**

**1.01 SECTION INCLUDES**

- A. Fluid-Applied Waterproofing:
  - 1. Cold-applied rubberized asphalt waterproofing.
  - 2. Polyurethane waterproofing.

**1.02 RELATED REQUIREMENTS**

- A. Section 04 2000 - Unit Masonry: Masonry joints prepared to receive flashings.

**1.03 ABBREVIATIONS**

- A. CSPE - Chlorosulfonated Polyethylene.
- B. HDPE - High-Density Polyethylene.
- C. NRCA - National Roofing Contractors Association.
- D. SBS - Styrene-Butadiene-Styrene.

**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; 2015.
- B. ASTM C1306 - Standard Test Method for Hydrostatic Pressure Resistance of a Liquid-Applied Waterproofing Membrane; 2008.
- C. ASTM D412 - Standard Test Methods for Vulcanized Rubber and Thermoplastic Elastomers--Tension; 2016.
- D. ASTM D746 - Standard Test Method for Brittleness Temperature of Plastics and Elastomers by Impact; 2014.
- 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 D6506 - Standard Specification for Asphalt Based Protection for Below-Grade Waterproofing; 2001 (Reapproved 2009).
- H. ASTM E96/E96M - Standard Test Methods for Water Vapor Transmission of Materials; 2016.
- I. ASTM E154/E154M - Standard Test Methods for Water Vapor Retarders Used in Contact with Earth Under Concrete Slabs, on Walls, or as Ground Cover; 2008a, with Editorial Revision (2013).
- J. ICC-ES AC29 - Acceptance Criteria for Cold, Liquid-Applied, Below-Grade, Exterior Dampproofing and Waterproofing Materials; 2011.
- K. 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, and joint and crack sealants.
- C. Certificate: Certify that products meet or exceed specified requirements.
- D. Manufacturer's Installation Instructions: Indicate special procedures, perimeter conditions requiring special attention, and acceptable installation temperatures.
- E. 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 three years of documented experience.

### **1.07 FIELD CONDITIONS**

- A. Maintain ambient temperatures above 40 degrees F for 24 hours before and during application and until cured.

### **1.08 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. Cold-Applied Rubberized Asphalt Waterproofing:
- B. Polyurethane Waterproofing:

### **2.02 WATERPROOFING APPLICATIONS**

- A. Cold-Applied Rubberized Asphalt Waterproofing:
  - 1. Location: Gym Connector CMU walls & Concrete Curb at gym slab perimeter.
- B. Polyurethane Waterproofing:

### 2.03 MEMBRANE AND FLASHING MATERIALS

- A. Cold-Applied Rubberized Asphalt Waterproofing: Rubberized asphaltic compound, suitable for installation on concrete and concrete masonry.
1. Cured Thickness: 60 mils, 0.060 inch, minimum.
  2. Complying with ICC-ES AC29; evidence of compliance includes current ICC-ES evaluation report citing ICC-ES AC29.
  3. Hydrostatic Pressure Resistance: When tested in accordance with ASTM C1306, at least 50 pounds per square inch by the rapid test and at least 35 pounds per square inch by the long term test.
  4. Low Temperature Resistance: No cracking, loss of adhesion, splitting or pinholes when tested at minus 15 degrees F in accordance with ASTM C836/C836M.
  5. Adhesion: No separation when tested in accordance with ASTM C836/C836M.
  6. Decay Resistance: No decay when tested in accordance with ASTM E154/E154M.
  7. Wet Film Sag Resistance: No sag or sag within plus/minus 5 mils when tested in accordance with ASTM C836/C836M.
  8. Water Vapor Permeance: Less than one perm, when tested in accordance with ASTM E96/E96M.
  9. Heat Aging Resistance: No cracking, splitting, or pinholes when tested in accordance with ASTM C836/C836M.
  10. Elongation at Break: 1000 percent, minimum, when tested in accordance with ASTM D412.
- B. 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 and masonry 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. Hardness: 30, measured in accordance with ASTM D2240, using Type A durometer.
  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.
  10. Products:
    - a. Carlisle Coatings & Waterproofing, Inc; CCW 703 Liqueal: [www.carlisleccw.com/#sle](http://www.carlisleccw.com/#sle).
    - b. Gaco Western; GacoFlex LM-60: [www.gaco.com/#sle](http://www.gaco.com/#sle).
    - c. Tremco Commercial Sealants & Waterproofing; TREMproof 250GC: [www.tremcosealants.com/#sle](http://www.tremcosealants.com/#sle).
    - d. Substitutions: See Section 01 6000 - Product Requirements.



## **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. Hardboard, 1/8 inch thick.
  - 2. Polystyrene foam board, 1 inch thick.
  - 3. Multi-layer internally-reinforced asphaltic panels, 1/8 inch thick, nominal, complying with ASTM D6506.
  - 4. Recycled or reclaimed closed-cell foam plastic with non-woven filter fabric cover; 1 inch thick.
- C. Cant Strips: Premolded composition material.
- D. 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. 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. Apply extra thickness of waterproofing material at corners, intersections, and angles.
- E. Seal membrane and flashings to adjoining surfaces.

**3.04 INSTALLATION - DRAINAGE PANEL AND PROTECTION BOARD**

- A. Place protection board directly against drainage panel; butt joints, and scribe and cut boards around projections, penetrations, and interruptions.

**3.05 PROTECTION**

- A. Do not permit traffic over unprotected or uncovered membrane.

**END OF SECTION**

**SECTION 07 2100**  
**THERMAL INSULATION**

**PART 1 GENERAL**

**1.01 SECTION INCLUDES**

- A. Board insulation at cavity wall construction and underside of floor slabs.
- B. Board insulation at over roof deck.
- C. Batt insulation in exterior wall construction.
- D. 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 5423 - Thermoplastic Polyolefin (TPO) Membrane Roofing: Insulation specified as part of roofing system.
- D. Section 07 8400 - Firestopping: Insulation as part of fire-rated through-penetration assemblies.
- E. Section 13 3419 - Metal Building Systems: Thermal metal building insulation and vapor barrier membrane.

**1.03 REFERENCE STANDARDS**

- A. ASTM C578 - Standard Specification for Rigid, Cellular Polystyrene Thermal Insulation.
- B. ASTM C1289 - Standard Specification for Faced Rigid Cellular Polyisocyanurate Thermal Insulation Board; 2017.
- C. ASTM E84 - Standard Test Method for Surface Burning Characteristics of Building Materials; 2017.
- D. NFPA 285 - Standard Fire Test Method for Evaluation of Fire Propagation Characteristics of Exterior Non-Load-Bearing Wall Assemblies Containing Combustible Components

**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 Certificate: Certify that products meet or exceed specified requirements.
- D. Manufacturer's Installation Instructions: Include information on special environmental conditions required for installation and installation techniques.

**1.05 FIELD CONDITIONS**

- A. Do not install insulation adhesives when temperature or weather conditions are detrimental to successful installation.

**1.06 SEQUENCING**

- A. Sequence work to ensure fireproofing and firestop materials are in place before beginning work of this section.

**1.07 COORDINATION**

- A. Coordinate the work with Section 07 2500 for installation of vapor retarder.

## **PART 2 PRODUCTS**

### **201 APPLICATIONS**

- A. Insulation Under Concrete Slabs: Extruded polystyrene (XPS) board.
- B. Insulation Inside Masonry Cavity Walls: Polyisocyanurate board.
- C. Insulation Over Roof Deck: Polyisocyanurate board.
- D. Acoustical Insulation: Rock wool batt insulation.
- E. Insulation where indicated on Drawings.

### **202 FOAM BOARD INSULATION MATERIALS**

- A. Extruded Polystyrene (XPS) Board Insulation: Complies with ASTM C578 with natural skin surfaces.
  - 1. Type and Compressive Resistance: Type VI, 40 psi (276 kPa), minimum.
  - 2. Flame Spread Index (FSI): Class B - 26 to 75, when tested in accordance with ASTM E84.
  - 3. Smoke Developed Index (SDI): 450 or less, when tested in accordance with ASTM E84.
  - 4. Type and Thermal Resistance, R-value: Type IV, 5.0 (0.88) per 1 inch thickness at 75 degrees F mean temperature.
  - 5. Board Size: 48 x 96 inch.
  - 6. Board Edges: Square.
  - 7. Type and Water Absorption: Type IV, 0.3 percent by volume, maximum, by total immersion.
  - 8. Basis of Design Product: Styrofoam Brand Square Edge or Tongue and Groove Insulation manufactured by Dow Chemical Company.
  - 9. Manufacturers:
    - a. Dow Chemical Company; STYROFOAM HIGHLOAD 40: [www.dow.com/#sle](http://www.dow.com/#sle).
    - b. Kingspan Insulation LLC; GreenGuard XPS TYPE VI 40 PSI: [www.trustgreenguard.com/#sle](http://www.trustgreenguard.com/#sle).
    - c. Owens Corning Corporation; FOAMULAR Extruded Polystyrene (XPS) Insulation: [www.ocbuildingspec.com/#sle](http://www.ocbuildingspec.com/#sle).
  - 10. Substitutions: See Section 01 6000 - Product Requirements.
- B. Polyisocyanurate Board Insulation with Facers Both Sides: Rigid cellular foam, complying with ASTM C1289; Type II, Class 2, polymer bonded glass fiber mat both faces.
  - 1. Flame Spread Index (FSI): Class A - 0 to 25, when tested in accordance with ASTM E84.
  - 2. Flame Spread Index: 75 or less, when tested in accordance with ASTM E84.
  - 3. Smoke Developed Index (SDI): 450 or less, when tested in accordance with ASTM E84.
  - 4. Compressive Strength: 25 psi
  - 5. Board Size: 48 x 96 inch.
  - 6. Board Thickness: 3 inches.
  - 7. Board Size: As required to meet masonry tie spacing.
  - 8. Board Edges: Square.
  - 9. Manufacturers:
    - a. Basis of Design: Atlas Roofing Corporation; AC Foam-III Polyiso Roof Insulation: [www.atlasroofing.com/#sle](http://www.atlasroofing.com/#sle).
    - b. Carlisle Coatings & Waterproofing, Inc: [www.carlisleccw.com/#sle](http://www.carlisleccw.com/#sle).
    - c. Dow Chemical Company: [www.dow.com/#sle](http://www.dow.com/#sle).
    - d. Dyplast Products Company: [www.dyplastproducts.com](http://www.dyplastproducts.com).
    - e. GAF: [www.gaf.com](http://www.gaf.com).
    - f. Hunter Panels, LLC: [www.hunterxci.com/#sle](http://www.hunterxci.com/#sle).
    - g. Johns Manville: [www.jm.com/#sle](http://www.jm.com/#sle).
    - h. Rmax Inc.: [www.rmax.com](http://www.rmax.com).
  - 10. Substitutions: See Section 01 6000 - Product Requirements.

## **204 ACCESSORIES**

- A. Tape joints of rigid insulation in accordance with roofing and insulation manufacturers' instructions.
- B. Insulation Fasteners: Impaling clip of unfinished steel with washer retainer and clips, to be adhered to surface to receive insulation, length to suit insulation thickness and substrate, capable of securely and rigidly fastening insulation in place.
- C. Insulation Fasteners: Appropriate for purpose intended.
- D. Wire Mesh: Galvanized steel, hexagonal wire mesh.
- E. Adhesive: Type recommended by insulation manufacturer for application.
- F. Attachment for Nailbase Insulation: Provide manufacturer's approved fasteners.
- G. 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**

### **301 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.

### **301 BOARD INSTALLATION AT CAVITY WALLS**

- A. Secure impale fasteners to substrate at following frequency:
  - 1. 6 per insulation board.
- B. Adhere a 6 inch wide strip of polyethylene sheet over expansion joints with double beads of manufacturer's recommended adhesive each side of joint.
  - 1. Weatherlap joints.
  - 2. Extend sheet full height of joint.
- C. Apply adhesive to back of boards:
  - 1. Three continuous beads per board length.
- D. Install boards to fit snugly between wall ties.
- E. Install boards horizontally on walls.
  - 1. Place boards to maximize adhesive contact.
  - 2. Install in running bond pattern.
  - 3. Butt edges and ends tightly to adjacent boards and to protrusions.
- F. Cut and fit insulation tightly to protrusions or interruptions to the insulation plane.
- G. Place 6 inch wide water resistant membrane sheet at perimeter of wall openings, from adhesive vapor retarder bed to window and door frames. Seal in place to ensure continuity of vapor retarder and air seal.

**3.03 BOARD INSTALLATION UNDER CONCRETE SLABS**

- A. Place insulation under slabs on grade after base for slab has been compacted.
- B. Cut and fit insulation tightly to protrusions or interruptions to the insulation plane.
- C. Prevent insulation from being displaced or damaged while placing vapor retarder and placing slab.

**3.04 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.

**3.02 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 5400 - Thermoplastic Membrane Roofing: Vapor retarder installed as part of roofing system.
- C. Section 07 6200 - Sheet Metal Flashing and Trim: Metal flashings installed in conjunction with weather barriers.
- D. 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,  $57.2 \text{ ng}/(\text{Pa s q m}) = 1 \text{ perm}$ .
- 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.
- B. ASTM D226/D226M - Standard Specification for Asphalt-Saturated Organic Felt Used in Roofing and Waterproofing.
- C. ASTM D412 - Standard Test Methods for Vulcanized Rubber and Thermoplastic Elastomers--Tension.
- D. ASTM D1970/D1970M - Standard Specification for Self-Adhering Polymer Modified Bituminous Sheet Materials Used as Steep Roofing Underlayment for Ice Dam Protection.
- E. ASTM E96/E96M - Standard Test Methods for Water Vapor Transmission of Materials.
- F. ASTM E2178 - Standard Test Method for Air Permeance of Building Materials.
- G. ICC-ES AC38 - Acceptance Criteria for Water-Resistive Barriers.
- H. ICC-ES AC212 - Acceptance Criteria for Water-Resistive Coatings Used as Water-Resistive Barriers over Exterior Sheathing.

**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.

#### **1.07 FIELD CONDITIONS**

- A. Maintain temperature and humidity recommended by the materials manufacturers before, during and after installation.

### **PART 2 PRODUCTS**

#### **201 WEATHER BARRIER ASSEMBLIES**

- A. Water-Resistive Barrier: Provide on exterior walls under exterior cladding.
  - 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 single wythe masonry and concrete exterior walls use integral moisture barrier in masonry and mortar, and surface applied silane type water resistant penetrant.
  - 3. On outside surface of sheathing of exterior walls use air barrier coating.

#### **202 WATER-RESISTIVE BARRIER MATERIALS (NEITHER AIR BARRIER OR VAPOR RETARDER)**

- A. Asphalt Felt: ASTM D226/D226M Type II felt (No. 30).
- 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. Manufacturers:
    - a. Fortifiber Building Systems Group; Super Jumbo Tex 60 Minute: [www.fortifiber.com/#sle](http://www.fortifiber.com/#sle).
    - b. Substitutions: See Section 01 6000 - Product Requirements.

#### **203 AIR BARRIER MATERIALS (WATER VAPOR PERMEABLE AND WATER-RESISTIVE)**

- A. Air Barrier, Fluid Applied: Vapor permeable, elastomeric waterproofing.
  - 1. Air Barrier Coating:
    - a. Acceptable Substrates: Stated by manufacturer as suitable for installation on visibly damp surfaces and concrete that has hardened but is not fully cured ("green" concrete) without requiring a primer.
    - b. Adhesion to Paper and Glass Mat Faced Sheathing: Sufficient to ensure failure due to delamination of sheathing.
    - c. Dry Film Thickness (DFT): 10 mil, 0.010 inch, minimum.
    - d. Air Permeance: 0.001 cubic feet per minute per square foot, maximum, when tested in accordance with ASTM E2178.
    - e. Water Vapor Permeance: 18 perms, minimum, when tested in accordance with ASTM E96/E96M, Procedure B.
    - f. Ultraviolet (UV) and Weathering Resistance: Approved in writing by manufacturer for up to six months of weather exposure after application.
    - g. Elongation: 300 percent, minimum, when tested in accordance with ASTM D412.
    - h. Nail Sealability: Pass, when tested in accordance with ASTM D1970/D1970M.
    - i. Code Acceptance: Comply with applicable requirements of ICC-ESAC212.
    - j. Sealants, Tapes and Accessories: As recommended by coating manufacturer.



- k. Manufacturers:
- 1) BASF Corporation; MasterSeal AWB 660: [www.master-builders-solutions.basf.us/#sle](http://www.master-builders-solutions.basf.us/#sle).
  - 2) DuPont Building Innovations; 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).
  - 3) Hohmann & Barnard, Inc; ENVIRO-BARRIER VP: [www.h-b.com/#sle](http://www.h-b.com/#sle).
  - 4) Master Wall, Inc; Rollershield LAB System: [www.masterwall.com/#sle](http://www.masterwall.com/#sle).
  - 5) Momentive Performance Materials, Inc/GE Construction Sealants; GE Elemax 2600 AWB: [www.siliconeforbuilding.com/#sle](http://www.siliconeforbuilding.com/#sle).
  - 6) Polyguard Products Inc; Airlok Flex WG Permeable Air Barrier System: [www.polyguardproducts.com](http://www.polyguardproducts.com).
  - 7) PROSOCO, Inc; R-GUARD Spray Wrap MVP: [www.prosoco.com/r-guard/#sle](http://www.prosoco.com/r-guard/#sle).
  - 8) Sto Corp; Sto Gold Coat: [www.stocorp.com/#sle](http://www.stocorp.com/#sle).
  - 9) Substitutions: See Section 01 6000 - Product Requirements.

## 204 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. Thinners and Cleaners: As recommended by material manufacturer.
- D. Attachment Battens: Galvanized steel bars, 1 by 0.010 inch; with anchors of same material.

## 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 all sides 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. 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.
- D. 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 5423**

**THERMOPLASTIC POLYOLEFIN (TPO) MEMBRANE ROOFING**

**PART 1 GENERAL**

**1.01 SECTION INCLUDES**

- A. Adhered system with thermoplastic polyolefin (TPO) roofing membrane.
- B. Insulation, flat and tapered.
- C. Cover Board.
- D. Flashings and edge metal.
- E. Roofing cant strips, stack boots, and walkway pads.

**1.02 RELATED REQUIREMENTS**

- A. Section 06 1000 - Rough Carpentry: Wood nailers and curbs.
- B. Section 07 6200 - Sheet Metal Flashing and Trim: Counterflashings, reglets and gutter/downspout system.
- C. Section 07 7100 - Roof Specialties: Prefabricated copings and counterflashings.
- D. Section 07 7129 – Manufactured Roof Expansion Joints for Proprietary Manufactured roof Expansions-joint assemblies.

**1.03 REFERENCE STANDARDS**

- A. ASCE 7 - Minimum Design Loads and Associated Criteria for Buildings and Other Structures.
- B. ASTM C1371 - Standard Test Method for Determination of Emittance of Materials Near Room Temperature Using Portable Emisometers.
- C. ASTM C1549 - Standard Test Method for Determination of Solar Reflectance Near Ambient Temperature Using a Portable Solar Reflectometer.
- D. ASTM C1177/C1177M - Standard Specification for Glass Mat Gypsum Substrate for Use as Sheathing.
- E. ASTM C1289 - Standard Specification for Faced Rigid Cellular Polyisocyanurate Thermal Insulation Board.
- F. ASTM D4263 - Standard Test Method for Indicating Moisture in Concrete by the Plastic Sheet Method.
- G. ASTM D6878/D6878M - Standard Specification for Thermoplastic Polyolefin Based Sheet Roofing.
- H. ASTM E1918 - Standard Test Method for Measuring Solar Reflectance of Horizontal and Low-Sloped Surfaces in the Field.
- I. ASTM E408 - Standard Test Methods for Total Normal Emittance of Surfaces Using Inspection-Meter Techniques.
- J. ASTM E903 - Standard Test Method for Solar Absorptance, Reflectance, and Transmittance of Materials Using Integrating Spheres.
- K. ASTM E1980 - Standard Practice for Calculating Solar Reflectance Index of Horizontal and Low-Sloped Opaque Surfaces.
- L. CRRC-1 - Standard; Cool Roofs Rating Council.
- M. FM DS 1-28 - Wind Design.
- N. NRCA (RM) - The NRCA Roofing Manual.
- O. UL 790 - Standard for Standard Test Methods for Fire Tests of Roof Coverings.

#### **1.04 ADMINISTRATIVE REQUIREMENTS**

- A. Preinstallation Meeting: Convene one week before starting work of this section.
  - 1. Review preparation and installation procedures and coordinating and scheduling required with related work.
- B. Review preparation and installation procedures and coordinating and scheduling required with related work.
  - 1. Do not proceed until all roof deck areas are inspected and all discussion points are agreed upon.
- C. Attendance: Architect, Building Commission Inspector, Owner's Insurer (if applicable), General Contractor, roofing contractor, sheet metal contractor, stucco and metal wall panel installers, roof deck manufacturer and installer (if applicable), and roofing materials manufacturer. If rooftop equipment is to be placed on roof, mechanical contractor shall also attend.
- D. Agenda:
  - 1. Review Factory Mutual and Underwriters Laboratories requirements specified. Resolve any questions or conflicts.
  - 2. Review methods, procedures and details including manufacturers written instructions.
  - 3. Review governing regulations, and requirements for insurance and certificates.
  - 4. Establish point at which work is advanced to point of allowing installation of roofing.
  - 5. Examine substrate and surrounding construction to determine suitability for application of roofing. Review structural loading limitations of roof deck during and after roofing.
  - 6. Establish trade-related job schedules, including roof-mounted equipment installation.
  - 7. Establish roofing schedule and work methods so as to prevent roof damage.
  - 8. Establish work and storage areas for roofing operations.
  - 9. Establish weather and working temperature conditions to which all must agree.
  - 10. Establish methods of protection of finished roof to prevent damage by other trades.
  - 11. Review roof observation and repair procedures after roofing installation.
- E. Architect will prepare written report indicating actions taken, decisions made, and items discussed. Report will become a part of the record.
  - 1. Distribution: General Contractor (for further distribution to subcontractors); Owner.

#### **1.05 SUBMITTALS**

- A. See Section 01 3000 - Administrative Requirements, for submittal procedures.
- B. Product Data: Provide manufacturer's written information listed below.
  - 1. Product data indicating membrane materials, flashing materials, insulation, vapor retarder, surfacing, and fasteners.
  - 2. Preparation instructions and recommendations.
  - 3. Storage and handling requirements.
- C. Shop Drawings: Indicate conditions of interface with other materials, setting plan for tapered insulation, and edge metal detail.
- D. Manufacturer's Certificate: Certify that products meet or exceed specified requirements.
- E. Manufacturer's Field Reports: Indicate procedures followed, ambient temperatures, humidity, wind velocity during application, and supplementary instructions given.
- F. Manufacturer's Installation Instructions: Indicate membrane seaming precautions and perimeter conditions requiring special attention.
- G. Specimen Warranty: For approval.

- 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 all warranty conditions for the waterproof membrane.
- I. Manufacturer's Qualification Statement.
- J. Installer's Qualification Statement.

#### **1.06 QUALITY ASSURANCE**

- A. Manufacturer Qualifications: Company specializing in manufacturing the products specified in this section with minimum twenty (20) years of documented experience.
- B. Installer Qualifications: Company specializing in performing the work of this section:
  - 1. With minimum five (5) years documented experience.
  - 2. Approved by membrane manufacturer.
- C. Single Source Responsibility: Provide and install products from single source.

#### **1.07 MOCK-UP**

- A. Provide mock-up for evaluation of surface preparation, installation methods, and workmanship mock-up.
- B. See Section 01 4000 - Quality Requirements for additional requirements.
- C. Locate where directed.
- D. Mock-up may remain as part of the Work.

#### **1.08 DELIVERY, STORAGE, AND HANDLING**

- A. Deliver products in manufacturer's original containers, dry, undamaged, with seals and labels intact.
- B. Store products in weather protected environment, clear of ground and moisture.
- C. Protect foam insulation from direct exposure to sunlight.
- D. Keep Material Safety Data Sheets (MSDS) at the project site at all times during transportation, storage, and installation of materials.
- E. Comply with all requirements of Owner to prevent overloading or disturbance of the structure when loading materials onto the roof.

#### **1.09 FIELD CONDITIONS**

- A. Weather Limitations: Proceed with installation only when existing and forecasted weather conditions permit roofing system to be installed according to manufacturer's written instructions and warranty requirements.
- B. Do not apply roofing membrane when ambient temperature is below 40 degrees F or above 98 degrees F.
- C. Do not apply roofing membrane to damp or frozen deck surface or when precipitation is expected or occurring.
- D. Do not expose materials vulnerable to water or sun damage in quantities greater than can be weatherproofed the same day.
- E. Proceed with work so new roofing materials are not subject to construction traffic as work progresses.
- F. Do not allow grease, oil, fats, or other contaminants to come into direct contact with membrane.

## 1.10 WARRANTY

- A. See Section 01 7800 - Closeout Submittals, for additional warranty requirements.
- B. Material Warranty: Provide membrane manufacturer's warranty agreeing to replace material that shows manufacturing defects within 10 years after installation.
- C. System Warranty: Provide manufacturer's system warranty agreeing to repair or replace roofing that leaks or is damaged due to wind or other natural causes.
  - 1. Warranty shall be governed by the laws of the State of Alabama. All provisions to the contrary shall be excluded from the warranty
  - 2. Warranty Term: 20 years.
  - 3. Include membrane roofing, base flashings, roof insulation, fasteners,
  - 4. Cover boards, substrate board, roofing accessories, and other components of roofing system.
  - 5. For repair and replacement include costs of both material and labor in warranty.
  - 6. Include accidental punctures according to the manufacturer's standard warranty terms.
  - 7. Include hail damage according to the manufacturer's standard warranty terms.
  - 8. Exceptions NOT Permitted:
    - a. Damage due to roof traffic.
    - b. Damage due to wind of speed greater than 56 mph but less than 90 mph.
- 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.

## PART 2 PRODUCTS

### 201 MANUFACTURER

- A. Basis of Design - Carlisle SynTec; Sure-Weld TPO: [www.carlisle-syntec.com/sle](http://www.carlisle-syntec.com/sle).
- B. Other Acceptable Manufacturers: Subject to compliance with requirements, and with written approval, provide equivalent products by one of the following:
  - 1. Duro-Last; Duro-Last 60 Mil to be considered as equal product: [www.duro-last.com](http://www.duro-last.com).
  - 2. GAF; Everguard TPO: [www.gaf.com/#sle](http://www.gaf.com/#sle).
  - 3. Firestone Building Products, LLC; UltraPly TPO: [www.firestonebpco.com](http://www.firestonebpco.com).
  - 4. Johns Manville; JM TPO Roofing: [www.jm.com/#sle](http://www.jm.com/#sle).
  - 5. Versico, a division of Carlisle Construction Materials Inc; VersiWeld TPO: [www.versico.com/#sle](http://www.versico.com/#sle).
- C. Substitutions: See Section 01 6000 - Product Requirements.

## **202 ROOFING APPLICATIONS**

- A. TPO Membrane Roofing: One ply membrane, mechanically fastened, over insulation.
- B. Roofing Assembly Performance Requirements and Design Criteria:
  - 1. Solar Reflectance Index (SRI): Minimum of 64 based on three-year aged value; if three-year aged data is not available, minimum of 82 initial value.
    - a. Calculate SRI in accordance with ASTM E1980.
    - b. Field applied coating may not be used to achieve specified SRI.
  - 2. Roof Covering External Fire Resistance Classification: Class A when tested per UL 790.
  - 3. Wind Uplift:
    - a. Designed to withstand wind uplift forces calculated with ASCE 7.
  - 4. Factory Mutual Classification: Class I and windstorm resistance of I-105, in accordance with FM DS 1-28.
  - 5. Acceptable Insulation Types - Tapered Application:
    - a. Uniform thickness polyisocyanurate board covered with tapered polyisocyanurate board.
    - b. Uniform Insulation Thickness:
      - 1) Provide 2 layers of 2-1/2 over main building roof.
  - 6. Drainage: No standing water within 48 hours after precipitation.
  - 7. Continuous Insulation Thermal Resistance (R-Value) Roof Type R-2: R-25 - Provide 5 inch minimum thickness.
  - 8. Acceptable Insulation Types:
    - a. Uniform thickness polyisocyanurate board covered with tapered polyisocyanurate board where indicated.
    - b. Uniform Insulation Thickness:
      - 1) Roof Type R-2: Provide 2 layers of 2-1/2. Provide tapered insulation over uniform insulation where indicated on Drawings.
  - 9. Drainage: No standing water within 48 hours after precipitation.

## **203 ROOFING MEMBRANE AND ASSOCIATED MATERIALS**

- A. Membrane:
  - 1. Material: Thermoplastic Polyolefin (TPO) complying with ASTM D6878/D6878M.
  - 2. Reinforcing: Internal fabric.
  - 3. Thickness: 60mils (0.060 inch), minimum.
  - 4. Sheet Width: Factory fabricated into largest sheets possible.
  - 5. Color: White.
  - 6. Product:
    - a. Carlisle Sure-Weld.
- B. Seaming Materials: As recommended by membrane manufacturer.
- C. Flexible Flashing Material: Same material as membrane.
- D. Base Flashing: Provide waterproof, fully adhered base flashing system at all penetrations, plane transitions, and terminations.

## **204 DECK SHEATHING AND COVER BOARDS**

- A. Cover Board: Glass mat faced gypsum panels, ASTM C1177/C1177M, fire resistant type, 1/2 inch thick.
  - 1. Product: GP Dens-Deck Prime, distributed by Carlisle.

## **205 INSULATION**

- A. Polyisocyanurate Board Insulation: ASTM C1289, Type II, Class 2, coated glass fiber mat both faces and with the following characteristics:
  - 1. Grade and Compressive Strength: Grade 2, 20 psi, minimum.
  - 2. Uniform Thickness Board: 2-1/2 inches each layer.
  - 3. Product:
    - a. Carlisle HP-H.
    - b. Carlisle SecurShield.

## 206 ACCESSORIES

- A. Prefabricated Flashing Accessories:
  - 1. Corners and Seams: Same material as membrane, in manufacturer's standard thicknesses.
    - a. Carlisle Sure-Weld TPO Inside Corners; 60 mils (0.060 inch) thick.
    - b. Carlisle Sure-Weld TPO Outside Corners; 60 mils (0.060 inch) thick.
    - c. Carlisle Sure-Weld TPO T-Joint Covers; 60 mils (0.060 inch) thick, 4-1/2 inch diameter.
  - 2. Penetrations: Same material as membrane, with manufacturer's standard cut-outs, rigid inserts, clamping rings, and flanges.
    - a. Carlisle Sure-Weld TPO Molded Pipe Flashings; for pipes 1 inch to 6 inches in diameter.
  - 3. Sealant Pockets: Same material as membrane, with manufacturer's standard accessories, in manufacturer's standard configuration.
    - a. Carlisle Sure-Weld TPO Molded Sealant Pockets: Two piece, interlocking, flexible pockets with rigid polypropylene vertical wall and preformed deck flanges. 6 inches wide and adjustable from 7-1/2 inches to 12 inches long.
  - 4. Pressure Sensitive Cover Strips: 6 inch wide, 45 mils (0.045 inch) thick, non-reinforced TPO membrane laminated to 35 mils (0.035 inch) thick cured synthetic rubber with pressure sensitive adhesive.
  - 5. TPO Pressure Sensitive RUSS:
    - a. 6 inch wide, 40 mils (0.040 inch) thick, reinforced TPO membrane with 3 inch wide, 35 mils (0.035 inch) thick cured synthetic rubber with pressure sensitive adhesive laminated to one edge.
    - b. 10 inch wide, 45 mils (0.045 inch) thick, reinforced TPO membrane with 3 inch wide, 35 mils (0.035 inch) thick cured synthetic rubber with pressure sensitive adhesive laminated to one edge.
  - 6. Walkway Rolls: Sure-Flex Heat Weldable Walkway Rolls; 80 mils (0.080 inch) thick; gray membrane.
  - 7. Miscellaneous Flashing: Non-reinforced TPO membrane; 80 mils (0.080 inch) thick, in manufacturer's standard lengths and widths.
- B. Insulation Adhesive: Two component polyurethane, expanding foam.
  - 1. OMG OlyBond 500 BA.
- C. Insulation Joint Tape: Glass fiber reinforced type as recommended by insulation manufacturer, compatible with roofing materials; 6 inches wide; self-adhering.
- D. Membrane Adhesive: As recommended by membrane manufacturer.
  - 1. Carlisle Sure-Weld Bonding Adhesive.
- E. Surface Conditioner for Adhesives: Compatible with membrane and adhesives.
- F. Sealants: As recommended by membrane manufacturer.
  - 1. Sure-Weld Cut Edge Sealant.
  - 2. Water Cut-Off Mastic.
- G. Cleaner: Manufacturer's standard, clear, solvent-based cleaner.
  - 1. Carlisle Weathered Membrane Cleaner.
- H. Primer: Manufacturer's recommended product.
  - 1. Carlisle TPO Primer.
- I. Edgings and Terminations: Manufacturer's standard edge and termination accessories.
  - 1. Drip Edge: Carlisle Sure-Seal Drip Edge.
  - 2. Coping:
    - a. SecurEdge 300 Coping.
  - 3. TPO Coated Sheet Metal.
  - 4. Termination Bar.



**PART 3 EXECUTION**

**3.01 EXAMINATION**

- A. Verify that surfaces and site conditions are ready to receive work.
- B. Verify deck is supported and secure.
- C. Verify deck is clean and smooth, flat, free of depressions, waves, or projections, properly sloped and suitable for installation of roof system.
- D. Verify deck surfaces are dry and free of snow or ice.
- E. Verify that roof openings, curbs, and penetrations through roof are solidly set, and cant strips are in place.

**3.02 PREPARATION, GENERAL**

- A. Clean substrate thoroughly prior to roof application.
- B. Do not begin work until other work that requires foot or equipment traffic on roof is complete.

**3.03 CONCRETE DECK PREPARATION**

- A. Verify adjacent precast concrete roof members do not vary more than 1/4 inch in height. Verify grout keys are filled flush.
- B. Fill surface honeycomb and variations with latex filler.
- C. Confirm dry deck by moisture meter with 12 percent moisture maximum when tested per ASTM D4263.

**3.04 INSTALLATION - GENERAL**

- A. Perform work in accordance with manufacturer's instructions and NRCA (RM) applicable requirements.
- B. Do not apply roofing membrane during unsuitable weather.
- C. Do not apply roofing membrane when ambient temperature is outside the temperature range recommended by manufacturer.
- D. Do not apply roofing membrane to damp or frozen deck surface or when precipitation is expected or occurring.
- E. Do not expose materials vulnerable to water or sun damage in quantities greater than can be weatherproofed the same day.
- F. Coordinate the work with installation of associated counter flashing installed by other sections as the work of this section proceeds.
- G. When substrate preparation is responsibility of another installer, notify Architect of unsatisfactory conditions before proceeding.

### **3.06 INSULATION APPLICATION**

- A. Attachment of Insulation: Embed each layer of insulation in adhesive in full contact, in accordance with roofing and insulation manufacturers' instructions.
- B. Do not install wet, damaged, or warped insulation boards.
- C. Lay subsequent layers of insulation with joints staggered minimum 6 inch from joints of preceding layer.
- D. Place tapered insulation to the required slope pattern in accordance with manufacturer's instructions.
- E. On metal deck, place boards parallel to flutes with insulation board edges bearing on deck flutes.
- F. Lay boards with edges in moderate contact without forcing, and gap between boards no greater than 1/4 inch. Cut insulation to fit neatly to perimeter blocking and around penetrations through roof.
- G. Tape joints of insulation in accordance with roofing and insulation manufacturers' instructions.
- H. Do not apply more insulation than can be completely waterproofed in the same day.

### **3.07 MEMBRANE APPLICATION**

- A. Roll out membrane, free from wrinkles or tears. Place sheet into place without stretching.
- B. Shingle joints on sloped substrate in direction of drainage.
- C. Fully Adhered Application: Apply adhesive at manufacturer's recommended rate. Fully embed membrane in adhesive except in areas directly over or within 3 inches of expansion joints. Fully adhere one roll before proceeding to adjacent rolls.
- D. Seam Welding:
  - 1. Clean membrane with Weathered Membrane Cleaner where membrane has been exposed to the elements for 7 or more days. Clean in accord with manufacturer recommendations.
  - 2. Seam Welding: Overlap edges and ends and seal seams by heat welding, minimum 2 inches.
  - 3. Probe seams once welds have thoroughly cooled. (Approximately 30 minutes.)
  - 4. Repair deficient seams within the same day.
  - 5. Seal cut edges of reinforced membrane after seam probe is complete.
- E. Seam Welding:
  - 1. Seam Welding: Overlap edges and ends and seal seams by heat welding, minimum 2 inches.
  - 2. Cover all seams with manufacturer's recommended joint covers.
  - 3. Probe all seams once welds have thoroughly cooled. (Approximately 30 minutes.)
  - 4. Repair all deficient seams within the same day.
  - 5. Seal cut edges of reinforced membrane after seam probe is complete.
    - a. Apply Cut edge sealant for flat surfaces.
- F. At intersections with vertical surfaces:
  - 1. Extend membrane over cant strips and up a minimum of 4 inches onto vertical surfaces.
  - 2. Fully adhere flexible flashing over membrane and up to nailing strips.
- G. Coordinate installation of roof drains and sumps and related flashings. Locate all field splices away from low areas and roof drains. Lap upslope sheet over downslope sheet.
- H. Install walkway pads at areas of concentrated traffic and as shown on Drawings. Space pad joints to permit drainage.
- I. Daily Seal: Install daily seal per manufacturer's instructions at the end of each work day. Prevent infiltration of water at incomplete flashings, terminations, and at unfinished membrane edges.

**3.09 FIELD QUALITY CONTROL**

- A. See Section 01 4000 - Quality Requirements, for general requirements for field quality control and inspection.
- B. Require site attendance of roofing and insulation material manufacturers daily during installation of the Work.

**3.10 CLEANING**

- A. See Section 01 7419 - Construction Waste Management and Disposal, for additional requirements.
- B. Remove wrappings, empty containers, paper, and other debris from the roof daily. Dispose of debris in compliance with local, State, and Federal regulations.
- C. Remove bituminous markings from finished surfaces.
- D. In areas where finished surfaces are soiled by work of this section, consult manufacturer of surfaces for cleaning advice and conform to their documented instructions.
- E. Repair or replace defaced or damaged finishes caused by work of this section.

**3.11 PROTECTION**

- A. Protect installed roofing and flashings from construction operations.
- B. Where traffic must continue over finished roof membrane, protect surfaces using durable materials.

**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, reglets, counter flashings, gutters, downspouts, low slope roof sheet metal fabrications and roofing, and other items indicated on Drawings.
- B. Sealants for joints within sheet metal fabrications.
- C. Precast concrete splash pads.

**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 7100 - Roof Specialties: Manufactured copings, flashings, and expansion joint covers.
- F. Section 07 9200 - Joint Sealants: Sealing non-lap joints between sheet metal fabrications and adjacent construction.

**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).
- B. AAMA 2605 - Voluntary Specification, Performance Requirements and Test Procedures for Superior Performing Organic Coatings on Aluminum Extrusions and Panels (with Coil Coating Appendix).
- C. ASTM A653/A653M - Standard Specification for Steel Sheet, Zinc-Coated (Galvanized) or Zinc-Iron Alloy-Coated (Galvannealed) by the Hot-Dip Process.
- D. ASTM B32 - Standard Specification for Solder Metal.
- E. ASTM B209 - Standard Specification for Aluminum and Aluminum-Alloy Sheet and Plate.
- F. ASTM B209M - Standard Specification for Aluminum and Aluminum-Alloy Sheet and Plate (Metric).
- G. ASTM C920 - Standard Specification for Elastomeric Joint Sealants.
- H. ASTM D2178/D2178M - Standard Specification for Asphalt Glass Felt Used in Roofing and Waterproofing.
- I. SMACNA (ASMM) - Architectural Sheet Metal Manual.

**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) 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 PERFORMANCE REQUIREMENTS**

- A. Sheet metal flashing and trim assemblies shall withstand wind loads, structural movement, thermally induced movement, and exposure to weather without failure due to defective manufacture, fabrication, installation, or other defects in construction. Completed sheet metal flashing and trim shall not rattle, leak, or loosen, and shall remain watertight.
- B. Sheet Metal Standard for Flashing and Trim: Comply with NRCA's "The NRCA Roofing Manual" and SMACNA's "Architectural Sheet Metal Manual" requirements for dimensions and profiles shown unless more stringent requirements are indicated.
- C. SPRI Wind Design Standard: Manufacture and install copings tested according to SPRI ES-1 and capable of resisting the following design pressure:
  - 1. Design Pressure: As indicated on Drawings.
- D. Thermal Movements: Allow for thermal movements from ambient and surface temperature changes to prevent buckling, opening of joints, overstressing of components, failure of joint sealants, failure of connections, and other detrimental effects. Base calculations on surface temperatures of materials due to both solar heat gain and nighttime-sky heat loss.
  - 1. Temperature Change: 120 deg F, ambient; 180 deg F, material surfaces.

#### **2.02 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.

#### **2.03 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.

Provide continuous cleat.

- H. Fabricate flashings to allow toe to extend 2 inches over roofing surface. Return and brake edges.

#### **204 GUTTER AND DOWNSPOUT FABRICATION**

- A. Gutters: SMACNA (ASMM), Rectangular profile.
- B. Downspouts: Rectangular profile.
- C. Gutters and Downspouts: Size for rainfall intensity determined by a storm occurrence of 1 in 10 years in accordance with SMACNA (ASMM).
- D. Expansion Control: Comply with SMACNA recommendations for control of gutter expansion/contraction. Provide gutter expansion joints midway between downspout locations (anchorage point). Do not exceed 50 feet between expansion joint and point of anchorage of gutter to structure.
- E. Accessories: Profiled to suit gutters and downspouts.
1. Anchorage Devices: In accordance with SMACNA (ASMM) requirements.
  2. Gutter Supports: Brackets.
  3. Downspout Supports: Brackets.
- F. Splash Pads: Precast concrete type, of size and profiles indicated; minimum 3000 psi at 28 days, with minimum 5 percent air entrainment.
- G. Seal metal joints.

#### **205 LOW-SLOPE ROOF SHEET METAL FABRICATIONS**

- A. Copings: Fabricate in minimum 96-inch- long, but not exceeding 12-foot- long, sections. Fabricate joint plates of same thickness as copings. Furnish with continuous cleats to support edge of external leg and drill elongated holes for fasteners on interior leg. Miter corners, seal and solder or weld watertight. Shop fabricate interior and exterior corners.
1. Joint Style: Butted with expansion space and 6-inch- wide, concealed backup plate.
  2. Fabricate from the Following Materials:
    - Aluminum: 0.050 inch thick.
- B. Counterflashing: Shop fabricate interior and exterior corners. Fabricate from the following materials:
1. Aluminum: 0.032 inch thick.
- C. Flashing Receivers: Fabricate from the following materials:
1. Aluminum: 0.032 inch thick.

## **207 ACCESSORIES**

- A. Fasteners: Galvanized steel, with soft neoprene washers.
1. General: Blind fasteners or self-drilling screws, gasketed, with hex-washer head.
    - Exposed Fasteners: Heads matching color of sheet metal using plastic caps or factory-applied coating.
    - Blind Fasteners: High-strength aluminum or stainless-steel rivets suitable for metal being fastened.
  2. Fasteners for Aluminum Sheet: Aluminum or Series 300 stainless steel.
  3. Fasteners for Stainless-Steel Sheet: Series 300 stainless steel.
- 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.
1. Material: Aluminum, 0.024 inch thick.
  2. Surface-Mounted Type: Provide with slotted holes for fastening to substrate, with neoprene or other suitable weatherproofing washers, and with channel for sealant at top edge.
  3. Accessories:
    - Flexible-Flashing Retainer: Provide resilient plastic or rubber accessory to secure flexible flashing in reglet where clearance does not permit use of standard metal counterflashing or where Drawings show reglet without metal counterflashing.
    - Counterflashing Wind-Restraint Clips: Provide clips to be installed before counterflashing to prevent wind uplift of counterflashing's lower edge.
  4. Finish: With manufacturer's standard color coating.
- H. Solder: ASTM B32; Sn50 (50/50) type.

## **PART 3 EXECUTION**

### **301 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.

### **302 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.

**3.04 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.
- F. Secure gutters and downspouts in place with concealed fasteners.
- G. Slope gutters 1/4 inch per 10 feet, minimum.
- H. Set splash pads under downspouts.

**3.05 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.

**3.06 ERECTION TOLERANCES**

- A. Installation Tolerances: Shim and align sheet metal flashing and trim within installed tolerance of 1/4 inch in 20 feet on slope and location lines indicated on Drawings and within 1/8-inch offset of adjoining faces and of alignment of matching profiles.

**3.07 CLEANING AND PROTECTION**

- A. Clean exposed metal surfaces of substances that interfere with uniform oxidation and weathering.
- B. Clean off excess sealants.
- C. Remove temporary protective coverings and strippable films as sheet metal flashing and trim are installed unless otherwise indicated in manufacturers written installation instructions.

**END OF SECTION**



## SECTION 077129 - MANUFACTURED ROOF EXPANSION JOINTS

### PART 1 - GENERAL

#### 1.1 SUMMARY

- A. Section Includes:
  - 1. Flanged bellows-type roof expansion joints.

#### 1.2 PREINSTALLATION MEETINGS

- A. Preinstallation Conference: Conduct conference at Project site.

#### 1.3 ACTION SUBMITTALS

- A. Product Data: For each type of product.
- B. Shop Drawings: For roof expansion joints.

#### 1.4 INFORMATIONAL SUBMITTALS

- A. Sample Warranties: For special warranty.

#### 1.5 QUALITY ASSURANCE

- A. Installer Qualifications: Installer of roofing membrane.

#### 1.6 WARRANTY

- A. Special Warranty: Manufacturer and Installer agree to repair or replace roof expansion joints and components that leak, deteriorate beyond normal weathering, or otherwise fail in materials or workmanship within specified warranty period.
  - 1. Warranty Period: Two years from date of Substantial Completion.

### PART 2 - PRODUCTS

#### 2.1 FLANGED BELLOWS-TYPE ROOF EXPANSION JOINTS

- A. Flanged Bellows-Type Roof Expansion Joint: Factory-fabricated, continuous, waterproof joint cover consisting of exposed membrane bellows laminated to flexible, closed-cell support foam, and secured along each edge to 3- to 4-inch- wide metal flange.

1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
  - a. Balco, Inc.
  - b. C/S Group.
  - c. InPro Corporation (IPC).
  - d. Johns Manville; a Berkshire Hathaway company.
  - e. MM Systems Corporation.
  - f. Watson Bowman Acme Corp.
2. Source Limitations: Obtain flanged bellows-type roof expansion joints approved by roofing manufacturer and that are part of roofing membrane warranty.
3. Bellows: PVC flexible membrane.
4. Flanges: Galvanized steel, 0.022 inch thick.
5. Corner, Intersection, and Transition Units: Provide factory-fabricated units for corner and joint intersections and horizontal and vertical transitions including those to other building expansion joints.
6. Secondary Seal: Continuous, waterproof membrane within joint and attached to substrate on sides of joint below the primary bellows assembly.
  - a. Thermal Insulation: Fill space above secondary seal with manufacturer's standard, factory-installed glass-fiber insulation; with maximum flame-spread and smoke-developed indexes of 25 and 50, respectively, per ASTM E 84.

## 2.2 MATERIALS

- A. Galvanized-Steel Sheet: ASTM A 653/A 653M, hot-dip zinc-coating designation G90.
- B. PVC Membrane: ASTM D 4434, Type standard with manufacturer for application.

## 2.3 MISCELLANEOUS MATERIALS

- A. Fasteners: Manufacturer's recommended fasteners, suitable for application and designed to withstand design loads.
  1. Exposed Fasteners: Gasketed. Use screws with hex washer heads matching color of material being fastened.
- B. Mineral-Fiber Blanket: ASTM C 665.
- C. Bituminous Coating: Cold-applied asphalt emulsion complying with ASTM D 1187.

## PART 3 - EXECUTION

### 3.1 INSTALLATION

- A. General: Comply with manufacturer's written instructions for handling and installing roof expansion joints.
  1. Anchor roof expansion joints securely in place, with provisions for required movement.

2. Install roof expansion joints true to line and elevation; with limited oil-canning and without warping, jogs in alignment, buckling, or tool marks.
  3. Provide for linear thermal expansion of roof expansion joint materials.
  4. Provide uniform profile of roof expansion joint throughout its length; do not stretch or squeeze membranes.
  5. Provide uniform, neat seams.
- B. Directional Changes: Install factory-fabricated units at directional changes to provide continuous, uninterrupted, and watertight joints.
- C. Transitions to Other Expansion-Control Joint Assemblies: Coordinate installation of roof expansion joints with other exterior expansion-control joint assemblies specified in Section 079513.16 "Exterior Expansion Joint Cover Assemblies" to result in watertight performance. Install factory-fabricated units at transitions between roof expansion joints and exterior expansion-control joint systems.
- D. Splices: Splice roof expansion joints to provide continuous, uninterrupted, and waterproof joints.
1. Install waterproof splices and prefabricated end dams to prevent leakage of secondary-seal membrane.
- E. Metal Protection: Protect metals against galvanic action by separating dissimilar metals from contact with each other or with corrosive substrates by painting contact surfaces with bituminous coating or by other permanent separation as recommended by manufacturer.

END OF SECTION 077129

**SECTION 07 8400  
FIRESTOPPING**

**PART 1 GENERAL**

**1.01 SECTION INCLUDES**

- A. Firestopping systems.
- B. Firestopping of all joints and penetrations in fire resistance rated and smoke resistant assemblies, whether indicated on drawings or not, and other openings indicated.

**1.02 RELATED REQUIREMENTS**

- A. Section 01 7000 - Execution and Closeout Requirements: Cutting and patching.
- 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 (Reapproved 2017).
- C. ASTM E1966 - Standard Test Method for Fire-Resistive Joint Systems; 2015.
- D. ASTM E2174 - Standard Practice for On-Site Inspection of Installed Firestops; 2014b.
- E. ASTM E2393 - Standard Practice for On-Site Inspection of Installed Fire Resistive Joint Systems and Perimeter Fire Barriers; 2010a (Reapproved 2015).
- F. ASTM E2307 - Standard Test Method for Determining Fire Resistance of Perimeter Fire Barriers Using Intermediate-Scale, Multi-story Test Apparatus; 2015b, with Editorial Revision (2016).
- G. ASTM E2837 - Standard Test Method for Determining the Fire Resistance of Continuity Head-of-Wall Joint Systems Installed Between Rated Wall Assemblies and Nonrated Horizontal Assemblies; 2013 (Reapproved 2017).
- H. ASTM G21 - Standard Practice for Determining Resistance of Synthetic Polymeric Materials to Fungi; 2015.
- I. ITS (DIR) - Directory of Listed Products; current edition.
- J. FM 4991 - Approval Standard for Firestop Contractors; 2013.
- K. FM (AG) - FM Approval Guide; current edition.
- L. UL 1479 - Standard for Fire Tests of Penetration Firestops; Current Edition, Including All Revisions.
- M. UL 2079 - Standard for Tests for Fire Resistance of Building Joint Systems; Current Edition, Including All Revisions.
- N. UL (DIR) - Online Certifications Directory; current listings at database.ul.com.
- O. UL (FRD) - Fire Resistance Directory; current edition.

**1.04 SUBMITTALS**

- A. See Section 01 3000 - Administrative Requirements, for submittal procedures.
- B. Schedule of Firestopping: List each type of penetration, fire rating of the penetrated assembly, and firestopping test or design number.
- C. Product Data: Provide data on product characteristics, performance ratings, and limitations.
- D. Manufacturer's Installation Instructions: Indicate preparation and installation instructions.
- E. Manufacturer's Certificate: Certify that products meet or exceed specified requirements.
- F. 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 that provide the scheduled fire ratings when tested in accordance with methods indicated.
1. Listing in UL (FRD), FM (AG), or ITS (DIR) will be considered as constituting an acceptable test report.
  2. Valid evaluation report published by ICC Evaluation Service, Inc. (ICC-ES) at [www.icc-es.org](http://www.icc-es.org) will be considered as constituting an acceptable test report.
  3. 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 five years documented experience.
- C. Installer Qualifications: Company specializing in performing the work of this section and:
1. Trained by manufacturer.
  2. Approved by Factory Mutual Research Corporation under FM 4991, or meeting any two of the following requirements:
  3. Verification of minimum three years documented experience installing work of this type.
  4. Verification of at least five satisfactorily completed projects of comparable size and type.
  5. Licensed by local authorities having jurisdiction (AHJ).

### **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 2 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 FIELD CONDITIONS**

- A. Comply with firestopping manufacturer's recommendations for temperature and conditions during and after installation. Maintain minimum temperature before, during, and for 3 days after installation of materials.
- B. Provide ventilation in areas where solvent-cured materials are being installed.

## **PART 2 PRODUCTS**

### **201 MANUFACTURERS**

- A. Firestopping Manufacturers:
1. 3M Fire Protection Products: [www.3m.com/firestop](http://www.3m.com/firestop).
  2. A/D Fire Protection Systems Inc: [www.adfire.com](http://www.adfire.com).
  3. Hilti, Inc: [www.us.hilti.com/#sle](http://www.us.hilti.com/#sle).
  4. Nelson FireStop Products: [www.nelsonfirestop.com](http://www.nelsonfirestop.com).
  5. Specified Technologies Inc: [www.stifirestop.com/#sle](http://www.stifirestop.com/#sle).
  6. Substitutions: See Section 01 6000 - Product Requirements.

### **202 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.

### **203 FIRESTOPPING ASSEMBLY REQUIREMENTS**

- A. Perimeter Fire Containment Firestopping: Use any system that has been tested according to ASTM E2307 to have fire resistance F Rating equal to required fire rating of the floor assembly.
  - 1. Movement: In addition, provide systems that have been tested to show movement capability as indicated.
  - 2. Temperature Rise: In addition, provide systems that have been tested to show T Rating as indicated.
  - 3. Air Leakage: In addition, provide systems that have been tested to show L Rating as indicated.
  - 4. Where floor assembly is not required to have a fire rating, provide systems that have been tested to show L Rating as indicated.
- B. Head-of-Wall Joint System Firestopping at Joints Between Fire-Rated Wall Assemblies and Non-Rated Horizontal Assemblies: Use any system that has been tested according to ASTM E2837 to have fire resistance F Rating equal to required fire rating of floor or wall, whichever is greater.
  - 1. Movement: In addition, provide systems that have been tested to show movement capability as indicated.
- C. Floor-to-Floor, Wall-to-Wall, and Wall-to-Floor Joints, Except Perimeter, Where Both Are Fire-Rated: Use any system that has been tested according to ASTM E1966 or UL 2079 to have fire resistance F Rating equal to required fire rating of the assembly in which the joint occurs.
  - 1. Movement: In addition, provide systems that have been tested to show movement capability as indicated.
  - 2. Air Leakage: In addition, provide systems that have been tested to show L Rating as indicated.
  - 3. Watertightness: In addition, provide systems that have been tested to show W Rating as indicated.
  - 4. Listing by FM (AG), ITS (DIR), UL (DIR), or UL (FRD) in their certification directories will be considered evidence of successful testing.
- D. Through Penetration Firestopping: Use any system that has been tested according to ASTM E814 to have fire resistance F Rating equal to required fire rating of penetrated assembly.
  - 1. Temperature Rise: In addition, provide systems that have been tested to show T Rating as indicated.
  - 2. Air Leakage: In addition, provide systems that have been tested to show L Rating as indicated.
  - 3. Watertightness: In addition, provide systems that have been tested to show W Rating as indicated.
  - 4. Listing by FM (AG), ITS (DIR), UL (DIR), or UL (FRD) in their certification directories will be considered evidence of successful testing.

### **204 FIRESTOPPING SYSTEMS**

- A. Firestopping: Any material meeting requirements.
  - 1. Fire Ratings: Use any 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.

## **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 that could adversely affect bond of firestopping material.
- B. Remove incompatible materials that could adversely affect bond.
- C. Install backing materials to arrest liquid material 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 Owner's Independent Testing Agency.
- C. Do not cover installed firestopping until inspected by authorities having jurisdiction.
- D. Install labeling required by code.

**3.04 FIELD QUALITY CONTROL**

- A. Independent Testing Agency: Inspection agency employed and paid by Owner, will examine penetration firestopping in accordance with ASTM E2174, and ASTM E2393.
- B. 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 PROTECTION**

- A. Protect adjacent surfaces from damage by material installation.

**END OF SECTION**

## SECTION 07 9100 PREFORMED JOINT SEALS

### PART 1 GENERAL

#### 1.01 SECTION INCLUDES

- A. Precompressed foam seals.

#### 1.02 RELATED REQUIREMENTS

- A. Section 07 9200 - Joint Sealants: Liquid and mastic joint sealants and their backing materials.
- B. Section 07 9513 - Expansion Joint Cover Assemblies.

#### 1.03 REFERENCE STANDARDS

- A. ASTM D1056 - Standard Specification for Flexible Cellular Materials--Sponge or Expanded Rubber.
- B. ASTM D2240 - Standard Test Method for Rubber Property--Durometer Hardness.

#### 1.04 SUBMITTALS

- A. See Section 01 3000 - Administrative Requirements, for submittal procedures.
- B. Product Data: Manufacturer's technical data sheets for each product, including chemical composition, movement capability, color availability, limitations on application, and installation instructions.
- C. Color Cards: For color selection.
- D. Samples for Color Selection: 4 inch long pieces of each color available; at least 2 samples of each color.

#### 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 with minimum five years documented experience and approved by manufacturer.

#### 1.06 WARRANTY

- A. See Section 01 7800 - Closeout Submittals, for additional warranty requirements.
- B. Correct defective work within a two year period after Date of Substantial Completion.
- C. Warranty: Include coverage for installed sealers that fail to achieve watertight seal or exhibit loss of adhesion or cohesion.

### PART 2 PRODUCTS

#### 2.01 MANUFACTURERS

- A. Precompressed Foam Seals:
  - 1. Basis of Design: Emseal Joint Systems Ltd; Colorseal: [www.emseal.com](http://www.emseal.com).
    - a. Floor Seal System: Colorseal.
    - b. Wall Seal System: Colorseal SSH.
    - c. Fire Rated Floor Seal System: Emshield DFR2.
    - d. Fire Rated Wall Seal System: Emshield WFR2.
  - 2. Balco Inc; BCS Series Pre-compressed Foam Seal System: [www.balcousa.com](http://www.balcousa.com).
    - a. Floor Seal System: BCSF.
    - b. Wall Seal System: BCSW.
    - c. Fire Rated Systems: Provide MetaBlock MBF2H238 fire barrier system Inboard of floor/Wall seal system.



3. Nystrom, Inc: [www.nystrom.com](http://www.nystrom.com).
  - a. Floor or Wall Seal: PES-200.
  - b. Fire Rated Wall Seal: EJ-FES-2.
  - c. Fire Rated Floor Seal: EJ-FHES2.
4. Watson Bowman Acme; Wabo Weatherseal II: [www.wbacorp.com](http://www.wbacorp.com).
5. Substitutions: See Section 01 6000 - Product Requirements.

## **202 PRECOMPRESSED FOAM SEALS**

- A. Precompressed Foam Seal: Silicone faced urethane foam impregnated with water-repellent, with self-adhesive faces protected prior to installation by release paper.
  1. Face Color: as selected by Architect from manufacturers color offerings.
  2. Size as required to provide weathertight seal when installed.
  3. Calculate size according to manufacturer's recommendations.
  4. Measure size of existing joints before selecting seal width.
  5. Provide product recommended by manufacturer for traffic-bearing use.
  6. Applications:
    - a. Exterior wall expansion joints.
    - b. Interior partition expansion joint openings.

## **203 ACCESSORIES**

- A. Adhesive: As recommended by seal manufacturer.
- B. Masking Tape: Self-adhesive, nonabsorbent, non-staining, removable without adhesive residue, and compatible with surfaces adjacent to joints and strip seal.
- C. Substrate Cleaner: Non-corrosive, non-staining type recommended by seal manufacturer; compatible with joint forming materials.
- D. Primer: Type recommended by seal manufacturer to suit application; non-staining.

## **PART 3 EXECUTION**

### **301 EXAMINATION**

- A. Verify that joints are ready to receive this work.
- B. Measure joint dimensions and verify that seal products are of the correct size to properly seal the joints.

### **302 PREPARATION**

- A. Properly prepare construction components adjacent to the work of this section to prevent damage and disfigurement due to this work.

### **303 INSTALLATION**

- A. Install in accordance with manufacturer's written instructions.
- B. Precompressed Foam Seals:
  1. Install only when ambient temperature is within recommended application temperature range of adhesive. Consult manufacturer when installing outside this temperature range.
  2. Prepare joints and install seals in accordance with manufacturer's written recommendations.
  3. Remove loose materials and foreign matter that could impair adhesion of sealant.
  4. Do not stretch precompressed seal; avoid joints except at corners, ends, and intersections; install with face 1/8 to 1/4 inch below adjoining surface.

### **304 CLEANING**

- A. Clean adjacent soiled surfaces.

### **305 PROTECTION**

- A. Protect joints from damage until adhesives have properly cured.

**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 8400 - Firestopping: Firestopping sealants.
- B. Section 08 7100 - Door Hardware: Setting exterior door thresholds in sealant.

**1.03 REFERENCE STANDARDS**

- A. ASTM C661 - Standard Test Method for Indentation Hardness of Elastomeric-Type Sealants by Means of a Durometer.
- B. ASTM C794 - Standard Test Method for Adhesion-In-Peel of Elastomeric Joint Sealants.
- C. ASTM C834 - Standard Specification for Latex Sealants.
- D. ASTM C919 - Standard Practice for Use of Sealants in Acoustical Applications.
- E. ASTM C920 - Standard Specification for Elastomeric Joint Sealants.
- F. ASTM C1087 - Standard Test Method for Determining Compatibility of Liquid-Applied Sealants with Accessories Used in Structural Glazing Systems.
- G. ASTM C1193 - Standard Guide for Use of Joint Sealants.
- H. ASTM C1248 - Standard Test Method for Staining of Porous Substrate by Joint Sealants.
- I. ASTM C1311 - Standard Specification for Solvent Release Sealants.
- J. ASTM C1330 - Standard Specification for Cylindrical Sealant Backing for Use with Cold Liquid-Applied Sealants.
- K. ASTM C1521 - Standard Practice for Evaluating Adhesion of Installed Weatherproofing Sealant Joints.
- L. SWRI (VAL) - SWR Institute Validated Products Directory.

**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**

### **201 MANUFACTURERS**

- A. Non-Sag Sealants: Permits application in joints on vertical surfaces without sagging or slumping.
1. Master Builders Solutions BASF : [www.master-builders-solutions.basf.us.com](http://www.master-builders-solutions.basf.us.com).
  2. [Bostik Inc: www.bostik-us.com/](http://www.bostik-us.com/).
  3. Dow Chemical Company:  
[consumer.dow.com/en-us/industry/ind-building-construction.html](http://consumer.dow.com/en-us/industry/ind-building-construction.html).
  4. [Hilti, Inc: www.us.hilti.com](http://www.us.hilti.com).
  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 Commercial Sealants and Waterproofing: [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. Master Builders Solutions BASF: [www.master-builders-solutions.basf.us.com](http://www.master-builders-solutions.basf.us.com).
  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 Commercial Sealants and Waterproofing: [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).
  10. Substitutions: See Section 01 6000 - Product Requirements.

### **202 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. Wall expansion and control joints.
    - b. Joints between door, window, and other frames and adjacent construction.
    - c. Joints between different exposed materials.
    - d. Openings below ledge angles in masonry.
    - e. Other joints indicated below.
  2. Exterior Joints: Use non-sag non-staining silicone sealant, Type A or B, unless otherwise indicated.
  3. 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.

4. Interior Joints: Use non-sag polyurethane sealant, unless otherwise indicated.
5. Wall and Ceiling Joints in Wet Areas: Non-sag polyurethane sealant for continuous liquid immersion.
6. Floor Joints in Wet Areas: Non-sag polyurethane "traffic-grade" sealant suitable for continuous liquid immersion.
7. Joints between Fixtures in Wet Areas and Floors, Walls, and Ceilings: Mildew-resistant silicone sealant; white.
8. In Sound-Rated Assemblies: Acrylic emulsion latex sealant especially recommended as acoustical sealant..
9. Other Floor Joints: Self-leveling polyurethane "traffic-grade" sealant; Type J.
10. 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.
11. Lap Joints in Sheet Metal Fabrications: Butyl rubber, non-curing; Type H.
12. Control and Expansion Joints in Concrete Paving: Self-leveling polyurethane "traffic-grade" sealant; Type F or H.
13. Cooling Tower and Fountain Basins: Nonsag polyurethane sealant for continuous immersion; Type E or J.
14. 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.

### **203 JOINT SEALANTS - GENERAL**

- A. Colors: As selected by Architect to match paint finish as shown on drawings.

### **204 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; 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: [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 50 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; Pecora 864NST: [www.pecora.com/#sle](http://www.pecora.com/#sle).
  - b. Sherwin-Williams Company; Silicone Rubber All Purpose Sealant: [www.sherwin-williams.com/#sle](http://www.sherwin-williams.com/#sle).
  - c. Sika Corporation; Sikasil WS-295: [www.usa-sika.com/#sle](http://www.usa-sika.com/#sle).
  - d. Dow Corning; 795 Silicone Building Sealant: [www.dowcorning.com](http://www.dowcorning.com).
  - e. Substitutions: See Section 01 6000 - Product Requirements.
- 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: [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 Commercial Sealants & Waterproofing; 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 I-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 Commercial Sealants & Waterproofing; Dymeric 240 FC: [www.tremcosealants.com/#sle](http://www.tremcosealants.com/#sle).
    - f. Tremco Commercial Sealants & Waterproofing; Vulkem 116: [www.tremcosealants.com/#sle](http://www.tremcosealants.com/#sle).
    - g. W. R. Meadows, Inc; POURTHANE NS: [www.wrmeadows.com/#sle](http://www.wrmeadows.com/#sle).
    - h. 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; \_\_\_\_\_: [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 - 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. Pecora Corporation; BA98 Non-Skinning Butyl Sealant: [www.pecora.com](http://www.pecora.com).
    - b. Sika Corporation; SikaLstomer 511: [www.usa.sika.com](http://www.usa.sika.com)
    - c. Tremco Global Sealants; TremPro JS-773: [www.tremcosealants.com](http://www.tremcosealants.com).
    - d. Substitutions: See Section 01 6000 - Product Requirements.

## **205 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.

## **206 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.
  - 5. Manufacturers:
    - a. Nomaco, Inc; HBR: [www.nomaco.com/#sle](http://www.nomaco.com/#sle).
    - b. Substitutions: See Section 01 6000 - Product Requirements.
- 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 the low temperature in the thermal cycle. Report failures immediately and repair.

**END OF SECTION**

SECTION 079513.13 - INTERIOR EXPANSION JOINT COVER ASSEMBLIES

PART 1 - GENERAL

1.1 SUMMARY

- A. Section includes interior expansion joint cover assemblies.

1.2 ACTION SUBMITTALS

- A. Product Data: For each type of product.
- B. Shop Drawings: For each expansion joint cover assembly.
  - 1. Include plans, elevations, sections, details, splices, block-out requirement, attachments to other work, and line diagrams.
- C. Samples: For each expansion joint cover assembly and for each color and texture specified.

PART 2 - PRODUCTS

2.1 ASSEMBLY DESCRIPTION

- A. Furnish units in longest practicable lengths to minimize field splicing.

2.2 PERFORMANCE REQUIREMENTS

- A. Expansion Joint Design Criteria:
  - 1. Type of Movement: Wind sway.
    - a. Nominal Joint Width: As indicated on Drawings.

2.3 WALL EXPANSION JOINT COVERS

- A. Metal-Plate Wall Joint Cover: Metal cover plate fixed on one side of joint gap and free to slide on other.
  - 1. Basis-of-Design Product: Subject to compliance with requirements, provide Construction Specialties, Inc.; Models ASM-400 and ASMC-400 or a comparable product by one of the following:
    - a. Balco, Inc.
    - b. InPro Corporation (IPC).
    - c. MM Systems Corporation.
    - d. Watson Bowman Acme Corp.

2. Application: Wall to wall or wall to corner.
3. Exposed Metal:
  - a. Aluminum: Clear anodic.

## 2.4 MATERIALS

- A. Aluminum: ASTM B 221, Alloy 6063-T5 for extrusions; ASTM B 209, Alloy 6061-T6 for sheet and plate.

## 2.5 ALUMINUM FINISHES

- A. Clear Anodic Finish: AAMA 611, AA-M12C22A41, Class I, 0.018 mm or thicker.

## 2.6 ACCESSORIES

- A. Manufacturer's standard attachment devices, as indicated or required for complete installations.

## PART 3 - EXECUTION

### 3.1 INSTALLATION

- A. Prepare substrates according to expansion joint cover assembly manufacturer's written instructions.
- B. Coordinate and furnish anchorages, setting drawings, and instructions for installing expansion joint cover assemblies.
- C. Comply with manufacturer's written instructions for storing, handling, and installing expansion joint cover assemblies and materials unless more stringent requirements are indicated.
- D. Metal Frames: Perform cutting, drilling, and fitting required to install expansion joint cover assemblies.
  1. Repair or grout block out as required for continuous frame support using nonmetallic, shrinkage-resistant grout.
  2. Install frames in continuous contact with adjacent surfaces.
    - a. Shimming is not permitted.
  3. Install in true alignment and proper relationship to joints and adjoining finished surfaces measured from established lines and levels.
  4. Adjust for differences between actual structural gap and nominal design gap due to ambient temperature at time of installation.
  5. Cut and fit ends to accommodate thermal expansion and contraction of metal without buckling of frames.
  6. Locate anchors at interval recommended by manufacturer, but not less than 3 inches from each end and not more than 24 inches o.c.

- E. Install with hairline mitered corners where expansion joint cover assemblies change direction or abut other materials.
- F. Terminate exposed ends of expansion joint cover assemblies with field- or factory-fabricated termination devices.

3.2 PROTECTION

- A. Do not remove protective covering until finish work in adjacent areas is complete.
- B. Protect the installation from damage by work of other Sections.

END OF SECTION 079513.13

## SECTION 079513.16 - EXTERIOR EXPANSION JOINT COVER ASSEMBLIES

### PART 1 - GENERAL

#### 1.1 SUMMARY

- A. Section includes exterior building expansion joint cover assemblies.
- B. Related Requirements:
  - 1. Section 077129 "Manufactured Roof Expansion Joints" for factory-fabricated roof expansion joint cover assemblies.

#### 1.2 ACTION SUBMITTALS

- A. Product Data: For each type of product.
- B. Shop Drawings: For each expansion joint cover assembly.
  - 1. Include plans, elevations, sections, details, splices, block-out requirement, attachments to other work, and line diagrams.
- C. Samples: For each exposed expansion joint cover assembly and for each color and texture specified.

### PART 2 - PRODUCTS

#### 2.1 ASSEMBLY DESCRIPTION

- A. Furnish units in longest practicable lengths to minimize field splicing.
- B. Include factory-fabricated closure materials and transition pieces, T-joints, corners, curbs, cross-connections, and other accessories as required to provide continuous expansion joint cover assemblies.

#### 2.2 PERFORMANCE REQUIREMENTS

- A. Expansion Joint Design Criteria:
  - 1. Type of Movement: Wind sway.
    - a. Nominal Joint Width: As indicated on Drawings.

## 2.3 EXTERIOR EXPANSION JOINT COVERS

- A. Exterior Elastomeric-Seal Joint Cover: Assembly consisting of elastomeric seal anchored to surface-mounted frames fixed to sides of joint gap.
  - 1. Basis-of-Design Product: Subject to compliance with requirements, provide Construction Specialties, Inc.; Model SC-400 or a comparable product by one of the following:
    - a. Balco, Inc.
    - b. InPro Corporation (IPC).
    - c. MM Systems Corporation.
    - d. Watson Bowman Acme Corp.
  - 2. Application: Wall to wall.
  - 3. Installation: Recessed.
  - 4. Seal: Preformed elastomeric membrane or extrusion.
    - a. Color: As selected by Architect from manufacturer's full range.

## 2.4 MATERIALS

- A. Aluminum: ASTM B 221, Alloy 6063-T5 for extrusions; ASTM B 209, Alloy 6061-T6 for sheet and plate.
- B. Elastomeric Seals: Manufacturer's standard preformed elastomeric membranes or extrusions to be installed in metal frames.
- C. Moisture Barrier: Manufacturer's standard, flexible elastomeric material.

## 2.5 ALUMINUM FINISHES

- A. Mill finish.

## 2.6 ACCESSORIES

- A. Moisture Barriers: Manufacturer's standard moisture barrier consisting of a continuous, waterproof membrane within joint and attached to substrate on sides of joint.
  - 1. Provide where indicated on Drawings.
- B. Manufacturer's standard attachment devices, as indicated or required for complete installations.

## PART 3 - EXECUTION

### 3.1 INSTALLATION

- A. Prepare substrates according to expansion joint cover assembly manufacturer's written instructions.

- B. Coordinate and furnish anchorages, setting drawings, and instructions for installing expansion joint cover assemblies. Provide fasteners of metal, type, and size to suit type of construction indicated and to provide for secure attachment of expansion joint cover assemblies.
- C. Comply with manufacturer's written instructions for storing, handling, and installing expansion joint cover assemblies and materials unless more stringent requirements are indicated.
- D. Metal Frames: Perform cutting, drilling, and fitting required to install expansion joint cover assemblies.
  - 1. Install in true alignment and proper relationship to joints and adjoining finished surfaces measured from established lines and levels.
  - 2. Adjust for differences between actual structural gap and nominal design gap due to ambient temperature at time of installation.
  - 3. Cut and fit ends to accommodate thermal expansion and contraction of metal without buckling of frames.
  - 4. Install frames in continuous contact with adjacent surfaces.
    - a. Shimming is not permitted.
  - 5. Locate anchors at interval recommended by manufacturer, but not less than 3 inches from each end and not more than 24 inches o.c.
- E. Seals: Install elastomeric seals and membranes in frames to comply with manufacturer's written instructions. Install with minimum number of end joints.
  - 1. Provide in continuous lengths for straight sections.
  - 2. Seal transitions. Vulcanize or heat-weld field-spliced joints as recommended by manufacturer.
  - 3. Installation: Mechanically lock seals into frames or adhere to frames with adhesive or pressure-sensitive tape as recommended by manufacturer.
- F. Install with hairline mitered corners where expansion joint cover assemblies change direction or abut other materials.
- G. Terminate exposed ends of expansion joint cover assemblies with field- or factory-fabricated termination devices.
- H. Moisture Barrier Drainage: If indicated, provide drainage fitting and connect to drains.
- I. Transition to Roof Expansion Joint Covers: Coordinate installation of exterior wall expansion joint covers with roof expansion joint covers specified in Section 077129 "Manufactured Roof Expansion Joints." Install factory-fabricated units at transition between exterior walls and roof expansion joint cover assemblies.

### 3.2 PROTECTION

- A. Protect the installation from damage by work of other Sections.

END OF SECTION 079513.16



**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. Accessories, including louvers, and matching panels.

**1.02 RELATED REQUIREMENTS**

- A. Section 08 7100 - Door Hardware.
- B. Section 09 9113 - Exterior Painting: Field painting.
- C. 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; 2015, with Editorial Revision (2016).
- 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; 2016.
- 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; 2017.
- I. BHMA A156.115 - American National Standard for Hardware Preparation in Steel Doors and Steel Frames; 2014.

- J. ICC (IECC) - International Energy Conservation Code; 2012.
- K. ICC A117.1 - Accessible and Usable Buildings and Facilities; 2017.
- L. ITS (DIR) - Directory of Listed Products; current edition.
- M. NAAMM HMMA 805 - Recommended Selection and Usage Guide for Hollow Metal Doors and Frames; 2012.
- N. NAAMM HMMA 830 - Hardware Selection for Hollow Metal Doors and Frames; 2002.
- O. NAAMM HMMA 831 - Hardware Locations for Hollow Metal Doors and Frames; 2011.
- P. NAAMM HMMA 840 - Guide Specifications for Installation and Storage of Hollow Metal Doors and Frames; 2007.
- Q. NAAMM HMMA 850 - Fire-Protection and Smoke Control Rated Hollow Metal Door and Frame Products; 2014.
- R. NAAMM HMMA 860 - Guide Specifications for Hollow Metal Doors and Frames; 2013.
- S. NAAMM HMMA 861 - Guide Specifications for Commercial Hollow Metal Doors and Frames; 2006.
- T. NFPA 80 - Standard for Fire Doors and Other Opening Protectives; 2016.
- U. NFPA 252 - Standard Methods of Fire Tests of Door Assemblies; 2012.
- V. SDI 117 - Manufacturing Tolerances for Standard Steel Doors and Frames; 2013.
- W. UL (DIR) - Online Certifications Directory; current listings at [database.ul.com](http://database.ul.com).
- X. 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, 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. Installation Instructions: Manufacturer's published instructions, including any special installation instructions relating to this project.
- F. Manufacturer's Certificate: Certification that products meet or exceed specified requirements.
- G. Manufacturer's Qualification Statement.
- H. 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**

### **201 MANUFACTURERS**

- A. Hollow Metal Doors and Frames:
  - 1. De La Fontaine Inc: [www.delafontaine.com](http://www.delafontaine.com).
  - 2. Mesker, dormakaba Group; FDJ Series Drywall Frames: [www.meskeropeningsgroup.com/#sle](http://www.meskeropeningsgroup.com/#sle).
  - 3. Republic Doors: [www.republicdoor.com](http://www.republicdoor.com).
  - 4. Technical Glass Products: [www.tgpamerica.com](http://www.tgpamerica.com).
  - 5. Substitutions: See Section 01 6000 - Product Requirements.

### **202 DESIGN CRITERIA**

- A. Requirements for Hollow Metal Doors and Frames:
  - 1. Steel used for fabrication of doors and frames shall comply with one or more of the following requirements; Galvannealed steel conforming to ASTM A653/A653M, cold-rolled steel conforming to ASTM A1008/A1008M, or hot-rolled pickled and oiled (HRPO) steel conforming to ASTM A1011/A1011M, Commercial Steel (CS) Type B for each.
  - 2. Accessibility: Comply with ICC A117.1 and ADA Standards.
  - 3. Exterior Door Top Closures: Flush end closure channel, with top and door faces aligned.
  - 4. Door Edge Profile: Manufacturers standard for application indicated.
  - 5. Typical Door Face Sheets: Flush.
  - 6. 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.

## **203 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. Core Material: Manufacturers 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.

## **204 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. Frames for Wood Doors: Comply with frame requirements in accordance with corresponding door.
- G. Mullions for Pairs of Doors: Removable type, with profile similar to jambs.
- H. Transom Bars: Fixed, of profile same as jamb and head.
- I. Provide mortar guard boxes for hardware cut-outs in frames to be installed in masonry or to be grouted.
- J. Frames in Masonry Walls: Size to suit masonry coursing with head member 4 inch high to fill opening without cutting masonry units.
- K. Frames Wider than 48 inches: Reinforce with steel channel fitted tightly into frame head, flush with top.
- L. Frames Installed Back-to-Back: Reinforce with steel channels anchored to floor and overhead structure.

## **205 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.

## **206 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. Removable Stops: Formed sheet steel, shape as indicated on drawings, mitered or butted corners; prepared for countersink style tamper proof screws.
- C. Astragals for Double Doors: Specified in Section 08 7100.
- D. Mechanical Fasteners for Concealed Metal-to-Metal Connections: Self-drilling, self-tapping, steel with electroplated zinc finish.
- E. Grout for Frames: Portland cement grout with maximum 4 inch slump for hand troweling; thinner pumpable grout is prohibited.
- F. 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.
- G. 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 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. 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.

## **202 WALL AND CEILING MOUNTED UNITS**

- A. Manufacturers:
  - 1. ACUDOR Products Inc: [www.acudor.com](http://www.acudor.com).
  - 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 & 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 springtype.
    - 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**

### **301 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.

### **302 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.

### **303 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 7100

### 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 6: Rough Carpentry.
  - 2. Division 8: Aluminum Doors and Frames
  - 3. Division 8: Hollow Metal Doors and Frames.
  - 4. Division 8: 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
  - 3. NFPA 80 -Fire Doors and Windows
  - 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. ICC – International Building Code
  
- 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 aren't definitely or correctly specified, are required for completion of the Work, a written statement of such omission, error, or other discrepancy to be submitted to Architect, prior to date specified for receipt of bids for clarification by addendum; or, furnish such items in the type and quality established by this specification, and appropriate to the service intended.
  
- E. Allowances
  - 1. Refer to Division 1 for allowance amount and procedures.
  
- F. Alternates
  - 1. Refer to Division 1 for Alternates and procedures.

1.2 SUBSTITUTIONS:

- A. Comply with Division 1.

1.3 SUBMITTALS:

- A. Comply with Division 1.

- 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.
5. Provide 9001-Quality Management and 14001-Environmental Management for products listed in Materials Section 2.2

- 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. Mounting heights.
7. Explanation of abbreviations and symbols used within schedule.
8. Detailed wiring diagrams, specially developed for each opening, indicating all electric hardware, security equipment and access control equipment, and door and frame rough-ins required for specific opening.

- 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.

1. Templates, wiring diagrams and "reviewed Hardware Schedule" of electrical terms to electrical for coordination and verification of voltages and locations.

- 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 1 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 representative for each manufacturer.
  - d. Parts list for each product.

2. Copy of final hardware schedule, edited to reflect, "As installed".
3. Copy of final keying schedule
4. As installed "Wiring Diagrams" for each piece of hardware connected to power, both low voltage and 110 volts.
5. One set of special tools required for maintenance and adjustment of hardware, including changing of cylinders.

#### 1.4 QUALITY ASSURANCE

##### A. Comply with Division 1.

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 years 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.
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 1.

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: Three 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. Extra Service Materials: Deliver to Owner extra materials from same production run as products installed. Package products with protective covering and identify with descriptive labels. Comply with Division 1 Closeout Submittals Section.
  - 1. Special Tools: Provide special wrenches and tools applicable to each different or special hardware component.
  - 2. Maintenance Tools: Provide maintenance tools and accessories supplied by hardware component manufacturer.
  - 3. Delivery, Storage and Protection: Comply with Owner's requirements for delivery, storage and protection of extra service materials.
- B. Maintenance Service: Submit for Owner's consideration maintenance service agreement for electronic products installed.

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 1.

<u>Item:</u>	<u>Manufacturer:</u>	<u>Approved:</u>
Hinges	Stanley	Bommer, McKinney
Continuous Hinges	Stanley	Select, ABH
Locksets	Best 45H Series	Sargent 8200, Schlage L9000
Cylinders	Best	'NO SUBSTITUTION '
Exit Devices	Precision	Von Duprin 98/99, SARGENT 80
Closers	Stanley D-4550, D-4551	Dorma 8900, LCN 4040XP
Protection Plates	Trimco	Burns, Rockwood
Overhead Stops	Dorma	ABH, Rixson
Door Stops	Trimco	Burns, Rockwood
Flush Bolts	Trimco	ABH, Burns, Rockwood
Coordinator & Brackets	Trimco	ABH, Burns, 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. Sufficient size to 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. Furnish UL or recognized independent laboratory certified mechanical operational testing to 4 million cycles minimum.
3. Provide 9001-Quality Management and 14001-Environmental Management.
4. Fit ANSI A115.1 door preparation
5. Functions and design as indicated in the hardware groups
6. Solid, one-piece, 3/4-inch (19mm) throw, anti-friction latchbolt made of self-lubricating stainless steel
7. Deadbolt functions shall have 1 inch (25mm) throw bolt made of hardened stainless steel
8. Latchbolt and Deadbolt are to extend into the case a minimum of 3/8 inch (9.5mm) when fully extended
9. Auxiliary deadlatch to be made of one piece stainless steel, permanently lubricated
10. Provide sufficient curved strike lip to protect door trim
11. 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
12. Lock shall have self-aligning, thru-bolted trim
13. Levers to operate a roller bearing spindle hub mechanism
14. 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.
15. Spindle to be designed to prevent forced entry from attacking of lever
16. Provide locksets with 7-pin removable and interchangeable core cylinders

17. Each lever to have independent spring mechanism controlling it
18. Core face must be the same finish as the lockset.

D. Exit Devices:

1. Exit devices to meet or exceed BHMA for ANSI 156.3, Grade 1.
2. Exit devices to be tested and certified by UL or by a recognized independent laboratory for mechanical operational testing to 10 million cycles minimum with inspection confirming Grade 1 Loaded Forces have been maintained.
3. Exit devices chassis to be investment cast steel, zinc dichromate.
4. Exit devices to have stainless steel deadlocking  $\frac{3}{4}$ " through latch bolt.
5. Exit devices to be equipped with sound dampening on touchbar.
6. Non-fire rated exit devices to have cylinder dogging.
7. Non-fire rated exit devices to have  $\frac{1}{4}$ " minimum turn hex key dogging.
8. Touchpad to be "T" style constructed of architectural metal with matching metal end caps.
9. Touchbar assembly on wide style exit devices to have a  $\frac{1}{4}$ " clearance to allow for vision frames.
10. All exposed exit device components to be of architectural metals and "true" architectural finishes.
11. Provide strikes as required by application.
12. Fire exit hardware to conform to UL10C and UBC 7-2. UL tested for Accident Hazard.
13. The strike is to be black powder coated finish.
14. Exit devices to have field reversible handing.
15. 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 latchsets.
16. Provide 9001-Quality Management and 14001-Environmental Management.
17. Vertical Latch Assemblies to have gravity operation, no springs.
18. Approved Manufacturers
  - a. The following manufacturers will be approved contingent on meeting or exceeding the above performance criteria:
    - 1) Precision Manufactured by dormakaba, USA

E. Door Closers shall:

1. Tested and approved by BHMA for ANSI 156.4, Grade 1
2. UL10C certified
3. Provide 9001-Quality Management and 14001-Environmental Management.
4. Closer shall have extra-duty arms and knuckles
5. Conform to ANSI 117.1
6. Maximum  $2 \frac{7}{16}$  inch case projection with non-ferrous cover
7. Separate adjusting valves for closing and latching speed, and backcheck
8. Provide adapter plates, shim spacers and blade stop spacers as required by frame and door conditions
9. Full rack and pinion type closer with  $1\frac{1}{2}$ " minimum bore
10. Mount closers on non-public side of door, unless otherwise noted in specification
11. Closers shall be non-handed, non-sized and multi-sized.

F. Door Stops: Provide a dome floor or wall stop for every opening as listed in the hardware sets.

1. Wall stop and floor stop shall be wrought bronze, brass or stainless steel.
2. Provide fastener suitable for wall construction.
3. Coordinate reinforcement of walls where wall stop is specified.
4. Provide dome stops where wall stops are not practical. Provide spacers or carpet riser for floor conditions encountered

- G. Over Head Stops: Provide a Surface mounted or concealed overhead when a floor or wall stop cannot be used or when listed in the hardware set.
1. Surface overhead stops shall be heavy duty bronze or stainless steel.
- H. Kickplates: Provide with four beveled edges ANSI J102, 8 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.
- I. Door Bolts: Flush bolts for wood or metal doors.
1. Provide a set of Automatic bolts, Certified ANSI/BHMA 156.3 Type 25 for hollow metal label doors.
  2. Provide a set of Automatic bolts, Certified ANSI/BHMA 156.3 Type 27 at wood label doors.
  3. Manual flush bolts, Certified ANSI/BHMA 156.16 at openings where allowed local authority.
  4. Provide Dust Proof Strike, Certified ANSI/BHMA 156.16 at doors with flush bolts without thresholds.
- J. Coordinator and Brackets: Provide a surface mounted coordinator when automatic bolts are used in the hardware set.
1. Coordinator, Certified ANSI/BHMA A1156.3 Type 21A for full width of the opening.
  2. Provide mounting brackets for soffit applied hardware.
  3. Provide hardware preparation (cutouts) for latches as necessary.
- K. Seals: All seals shall be finished to match adjacent frame color. Seals shall be furnished as listed in schedule. Material shall be UL listed for labeled openings.
- L. Weatherstripping: Provide at head and jambs only those units where resilient or flexible seal strip is easily replaceable. Where bar-type weatherstrip is used with parallel arm mounted closers install weatherstrip first.
1. Weatherstrip shall be resilient seal of (Neoprene, Polyurethane, Vinyl, Pile, Nylon Brush, Silicone)
  2. UL10C Positive Pressure rated seal set when required.
- M. 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.
- N. 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.
- O. Provide one wall mounted Telkee, Lund or MMF series key cabinet complete with hooks, index and tags to accommodate 50% expansion. Coordinate mounting location with architect.
- P. Silencers: Furnish silencers on all interior frames, 3 for single doors, 2 for pairs. Omit where any type of seals occur.

### 2.3 FINISH:

- A. Designations used in Schedule of Finish Hardware - 3.05, and elsewhere to indicate hardware finishes are those listed in ANSI/BHMA A156.18 including coordination with traditional U.S. finishes shown by certain manufacturers for their products
- B. Powder coat door closers to match other hardware, unless otherwise noted.

- C. Aluminum items shall be finished to match predominant adjacent material. Seals to coordinate with frame color.

#### 2.4 KEYS AND KEYING:

- A. Provide keyed brass construction cores and keys during the construction period. Construction control and operating keys and core shall not be part of the Owner's permanent keying system or furnished in the same keyway (or key section) as the Owner's permanent keying system. Permanent cores and keys (prepared according to the accepted keying schedule) will be furnished to the Owner.
- B. Cylinders, removable and interchangeable core system: Best CORMAX™ Patented 7-pin.
- C. Permanent keys and cores: Stamped with the applicable key mark for identification. These visual key control marks or codes will not include the actual key cuts. Permanent keys will also be stamped "Do Not Duplicate."
- D. Transmit Grand Masterkeys, Masterkeys and other Security keys to Owner by Registered Mail, return receipt requested.
- E. Furnish keys in the following quantities:
  - 1. 1 each Grand Masterkeys
  - 2. 4 each Masterkeys
  - 3. 2 each Change keys each keyed core
  - 4. 15 each Construction masterkeys
  - 5. 1 each Control keys
- F. The Owner, or the Owner's agent, will install permanent cores and return the construction cores to the Hardware Supplier. Construction cores and keys remain the property of the Hardware Supplier.
- G. Keying Schedule: Arrange for a keying meeting, and programming meeting with Architect Owner and hardware supplier, and other involved parties to ensure locksets and locking hardware, are functionally correct and keying and programming complies with project requirements. Furnish 3 typed copies of keying and programming schedule to Architect.

### 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 latchset, lockset, and exit devices are properly installed and adjusted to ensure proper operation.
    - a. Verify levers are free from binding.
    - b. Ensure latchbolts 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.

3.5 SCHEDULE OF FINISH HARDWARE:

**Manufacturer List**

<u>Code</u>	<u>Name</u>
BE	Best Access Systems
DM	Dorma Door Controls
NA	National Guard
PR	Precision
SD	Stanley Door Closers
ST	Stanley
TR	Trimco

**Option List**

<u>Code</u>	<u>Description</u>
CD	CYLINDER DOGGING
FL	Fire Exit Hardware
HC	Hurricane Code Device
SN	Sex Nuts (Pkg. of 4)
ALK	ALARM, BATTERY OPERATED
CSK	COUNTER SINKING OF KICK and MOP PLATES
SNB	SEX BOLTS

B4E-HEAVY-KP BEVELED 4 EDGES - KICK 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
US26D	Chromium Plated, Dull

**Hardware Sets**

**SET #01**

Doors: 001, 001B

2	Continuous Hinge	661HD UL 83"	AL	ST
1	Keyed Removable Mullion	HCKR822	600	PR
2	Exit Device-Classrm w/ Alarm	HC 2108 X V4908D ALK SNB (2)	630	PR
2	Mortise Cylinder-Alarm	1E-74 PATD	626	BE
3	Rim Cylinder-Exit / Mullion	12E-72 PATD	626	BE
2	Door Closer w/ Hold Open	CLD-4550 HCS SN	689	SD
2	Kick Plate	K0050 8" x 37" B4E-HEAVY-KP CSK	630	TR
1	Perimeter Gasketing	160 VA 1 x 76" 2 x 84"		NA
1	Astragal Set	9600 A (SET) 84"		NA
1	Door Sweeps	C627 A 38"		NA
1	Drip Cap	16 A 80"		NA
1	Mullion Seal	5100N-86 86"		NA
1	Threshold	653 76"	AL	NA

**SET #02**

Doors: 001A

2	Continuous Hinge	661HD UL 83"	AL	ST
1	Removable Mullion	KR822	600	PR
2	Exit Device-Classrm w/ CD	2108 X V4908D CD SNB (2)	630	PR
3	Rim Cylinder-Exit / Mullion	12E-72 PATD	626	BE
2	Mortise Cylinder-Dogging	1E-74 PATD	626	BE
2	Door Closer	CLD-4551 HCS	689	SD
2	Kick Plate	K0050 8" x 34" B4E-HEAVY-KP CSK	630	TR
2	Mullion Seal	5100N-86 86"		NA
2	Drip Cap	16 A 80"		NA
2	Door Silencers	1229A	GREY	TR

**SET #02A**

Doors: Currently Not Used

2	Continuous Hinge	661HD UL 83"	AL	ST
---	------------------	--------------	----	----

1 Removable Mullion	FLKR822	600	PR
2 Exit Device	FL 2108 X V4908D SNB (2)	630	PR
3 Rim Cylinder-Exit / Mullion	12E-72 PATD	626	BE
2 Door Closer	CLD-4551 CS SN	689	SD
2 Kick Plate	K0050 8" x 34" B4E-HEAVY-KP CSK	630	TR
2 Mullion Seal	5100N-86 86"		NA
2 Drip Cap	16 A 80"		NA
2 Door Silencers	1229A	GREY	TR

**SET #03**

Doors: 003

2 Continuous Hinge	661HD UL 83"	AL	ST
1 Exit Device-Exit Only	HC 2201 SNB (10)	630	PR
1 Exit Device-Storeroom	HC 2203 X 4903D SNB (10)	630	PR
1 Rim Cylinder-Exit / Mullion	12E-72 PATD	626	BE
2 Door Closer w/ Hold Open	CLD-4550 HCS SN	689	SD
2 Kick Plate	K0050 8" x 36" B4E-HEAVY-KP CSK	630	TR
2 Door Sweeps	C627 A 38"		NA
1 Astragal Set	9600 A (SET) 84"		NA
1 Panic Threshold	804 S 72"	AL	NA
2 Door Silencers	1229A	GREY	TR

**SET #04**

Doors: 002, 002A

6 Hinges	FBB168 4 1/2 X 4 1/2 NRP	US26D	ST
2 Flush Bolt	W3917-12	626	TR
1 Lockset-Storeroom	45H-7D14H PATD	630	BE
2 Overhead Stop	902 H	626	DM
1 Astragal Set	9600 A (SET) 84"		NA
1 Perimeter Seals	5075 B 1 x 72" 2 x 84"		NA
1 Threshold	653 72"	AL	NA

**SET #05**

Doors: 001C, 001D

1 Continuous Hinge	661HD UL 83"	AL	ST
1 Exit Device-Classrm w/ Alarm	HC 2108 X V4908D ALK SNB (2)	630	PR
1 Rim Cylinder-Exit	12E-72 PATD	626	BE
1 Mortise Cylinder-Alarm	1E-74 PATD	626	BE
1 Door Closer w/ Hold Open	CLD-4550 HCS SN	689	SD
1 Kick Plate	K0050 8" x 34" B4E-HEAVY-KP CSK	630	TR
1 Door Sweep	C627 A 36"		NA
1 Gasketing	160 VA 1 x 36" 2 x 84"		NA
1 Threshold	653 36"	AL	NA

**SET #06**

Doors: 004, 005

3 Hinges	FBB179 4 1/2 X 4 1/2	US26D	ST
1 Lockset-Storeroom	45H-7D14H PATD	630	BE
1 Door Closer	CLD-4551 STD W/PA BRKT SN	689	SD
1 Kick Plate	K0050 8" x 34" B4E-HEAVY-KP CSK	630	TR
1 Door Sweep	600 A 36"		NA
1 Threshold	653 36"	AL	NA
3 Door Silencers	1229A	GREY	TR

**Opening List**

<b><u>Opening</u></b>	<b><u>Hdw Set</u></b>
001	01
001A	02
001B	01
001C	05
001D	05
002	04
002A	04
003	03
004	06
005	06

**SECTION 09 0561**

**COMMON WORK RESULTS FOR FLOORING PREPARATION**

**PART 1 GENERAL**

**1.01 SECTION INCLUDES**

- A. This section applies to all floors identified in the contract documents as to receive the following types of floor coverings:
  - 1. Sheet Vinyl athletic flooring.
- B. Preparation of new concrete floor slabs for installation of floor coverings.
- C. Testing of concrete floor slabs for moisture and alkalinity (pH).
- D. Remediation of concrete floor slabs due to unsatisfactory moisture or alkalinity (pH) conditions.
  - 1. Contractor shall perform all specified remediation of concrete floor slabs. If such remediation is indicated by testing agency's report and is due to a condition not under Contractor's control or could not have been predicted by examination prior to entering into the contract, a contract modification will be issued.
- E. Remedial floor coatings.

**1.02 RELATED REQUIREMENTS**

- A. Section 03 3000 - Cast-in-Place Concrete: Limitations on curing requirements for new concrete floor slabs.
- B. Section 09 6566 - Sheet Vinyl Resilient Athletic Flooring

**1.03 REFERENCE STANDARDS**

- A. ASTM C109/C109M - Standard Test Method for Compressive Strength of Hydraulic Cement Mortars (Using 2-in. or (50-mm) Cube Specimens); 2016a.
- B. ASTM C472 - Standard Test Methods for Physical Testing of Gypsum, Gypsum Plasters and Gypsum Concrete; 1999 (Reapproved 2014).
- C. ASTM F710 - Standard Practice for Preparing Concrete Floors to Receive Resilient Flooring; 2011.
- 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 ADMINISTRATIVE REQUIREMENTS**

- A. Coordinate scheduling of cleaning and testing, so that preliminary cleaning has been completed for at least 24 hours prior to testing.

**1.05 SUBMITTALS**

- A. Floor Covering and Adhesive Manufacturers' Product Literature: For each specific combination of substrate, floor covering, and adhesive to be used; showing:
  - 1. Moisture and alkalinity (pH) limits and test methods.
  - 2. Manufacturer's required bond/compatibility test procedure.
- B. Testing Agency's Report:
  - 1. Description of areas tested; include floor plans and photographs if helpful.
  - 2. Summary of conditions encountered.
  - 3. Moisture and alkalinity (pH) test reports.
  - 4. Copies of specified test methods.

5. Recommendations for remediation of unsatisfactory surfaces.
  6. Product data for recommended remedial coating.
  7. Include certification of accuracy by authorized official of testing agency.
  8. Submit report to Architect.
  9. Submit report not more than two business days after conclusion of testing.
- C. Adhesive Bond and Compatibility Test Report.
- D. Remedial Materials Product Data: Manufacturer's published data on each product to be used for remediation.
1. Manufacturer's qualification statement.
  2. Manufacturer's statement of compatibility with types of flooring applied over remedial product.
  3. Test reports indicating compliance with specified performance requirements, performed by nationally recognized independent testing agency.
  4. Manufacturer's installation instructions.
  5. Specimen Warranty: Copy of warranty to be issued by coating manufacturer and certificate of underwriter's coverage of warranty.

#### **1.06 QUALITY ASSURANCE**

- A. Moisture and alkalinity (pH) testing shall be performed by an independent testing agency employed and paid by Contractor.
- B. Contractor may perform adhesive and bond test with his own personnel or hire a testing agency.
- C. Testing Agency Qualifications: Independent testing agency experienced in the types of testing specified.
1. Submit evidence of experience consisting of at least 3 test reports of the type required, with project Owner's project contact information.
- D. Contractor's Responsibility Relating to Independent Agency Testing:
1. Provide access for and cooperate with testing agency.
  2. Confirm date of start of testing at least 10 days prior to actual start.
  3. Allow at least 4 business days on site for testing agency activities.
  4. Achieve and maintain specified ambient conditions.
  5. Notify Architect when specified ambient conditions have been achieved and when testing will start.
- E. Remedial Coating Installer Qualifications: Company specializing in performing work of the type specified in this section, trained by or employed by coating manufacturer, and able to provide at least 3 project references showing at least 3 years' experience installing moisture emission coatings.

#### **1.07 DELIVERY, STORAGE, AND HANDLING**

- A. Deliver, store, handle, and protect products in accordance with manufacturer's instructions and recommendations.
- B. Deliver materials in manufacturer's packaging; include installation instructions.
- C. Keep materials from freezing.

#### **1.08 FIELD CONDITIONS**

- A. Maintain ambient temperature in spaces where concrete testing is being performed, and for at least 48 hours prior to testing, at not less than 65 degrees F or more than 85 degrees F.
- B. Maintain relative humidity in spaces where concrete testing is being performed, and for at least 48 hours prior to testing, at not less than 40 percent and not more than 60 percent.

## **PART 2 PRODUCTS**

### **201 MATERIALS**

- A. Patching Compound: Floor covering manufacturer's recommended product, suitable for conditions, and compatible with adhesive and floor covering. In the absence of any recommendation from flooring manufacturer, provide a product with the following characteristics:
  - 1. Cementitious moisture-, mildew-, and alkali-resistant compound, compatible with floor, floor covering, and floor covering adhesive, and capable of being feathered to nothing at edges.
  - 2. Latex or polyvinyl acetate additions are permitted; gypsum content is prohibited.
  - 3. Compressive Strength: 3000 psi, minimum, after 28 days, when tested in accordance with ASTM C109/C109M or ASTM C472, whichever is appropriate.
- B. Alternate Flooring Adhesive: Floor covering manufacturer's recommended product, suitable for the moisture and pH conditions present; low-VOC. In the absence of any recommendation from flooring manufacturer, provide a product recommended by adhesive manufacturer as suitable for substrate and floor covering and for conditions present.
- C. Remedial Floor Coating: Single- or multi-layer coating or coating/overlay combination intended by its manufacturer to resist water vapor transmission to degree sufficient to meet flooring manufacturer's emission limits, resistant to the level of alkalinity (pH) found, and suitable for adhesion of flooring without further treatment.
  - 1. Thickness: As required for application and in accordance with manufacturer's installation instructions.
  - 2. Products:
    - a. ARDEX Engineered Cements; ARDEX MC RAPID: [www.ardexamericas.com](http://www.ardexamericas.com).
    - b. Custom Building Products; TechMVC Moisture Vapor and Alkalinity Barrier: [www.custombuildingproducts.com](http://www.custombuildingproducts.com).
    - c. Koster American Corporation; Koster VAP I 2000 with Koster SL Premium overlay: [www.kosterusa.com](http://www.kosterusa.com).
    - d. LATICRETE International, Inc; LATICRETE SUPERCAP Moisture Vapor Control with LATICRETE SUPERCAP Underlayment: [www.laticrete.com/#sle](http://www.laticrete.com/#sle).
    - e. Proflex Products, Inc; Moisture Barrier 25 with DPU - Deep Pour Underlayment: [www.proflex.us](http://www.proflex.us).
    - f. ProSpec, an Oldcastle brand; Moisture Guard Max: [www.prospec.com](http://www.prospec.com).
    - g. Sika Corporation; Sikafloor Moisture Tolerance Epoxy Primer and Sikafloor Self-Leveling Moisture Tolerant Resurfacer: [www.sikafloorusa.com](http://www.sikafloorusa.com).
    - h. Stauf USA, LLC; ERP-270 Perma-Seal: [www.staufusa.com/#sle](http://www.staufusa.com/#sle).
    - i. TEC, an H.B. Fuller Construction Products Brand; TEC LiquiDam EZ with TEC Level Set 300 SLU: [www.tecspecialty.com/#sle](http://www.tecspecialty.com/#sle).
    - j. Substitutions: See Section 01 6000 - Product Requirements.

## **PART 3 EXECUTION**

### **301 CONCRETE SLAB PREPARATION**

- A. Follow recommendations of testing agency.
- B. Perform following operations where solid vinyl flooring material will be installed ontop of concrete building slab:
  - 1. Preliminary cleaning.
  - 2. Moisture vapor emission tests; 3 tests in the first 1000 square feet and one test in each additional 1000 square feet, unless otherwise indicated or required by flooring manufacturer.
  - 3. Internal relative humidity tests; in same locations as moisture vapor emission tests, unless otherwise indicated.
  - 4. Alkalinity (pH) tests; in same locations as moisture vapor emission tests, unless otherwise indicated.



5. Specified remediation, if required.
  6. Patching, smoothing, and leveling, as required.
  7. Other preparation specified.
  8. Use Solid Vinyl Floor recommended concrete based patching compound (i.e. Gerflor's GerPatch trowelable) with the same moisture vapor tolerance as the adhesive to fill depressions, holes, cracks, grooves or other irregularities in substrate.
  9. Sand the surface of the concrete slab.
  10. Sweep and then vacuum substrates immediately before installation. After cleaning, examine substrate for moisture, alkaline salts, grit, dust or other contamination. Proceed with installation only after unsatisfactory conditions have been corrected.
  11. Protection.
- C. Remediations:
1. Active Water Leaks or Continuing Moisture Migration to Surface of Slab: Correct this condition before doing any other remediation; re-test after correction.
  2. Excessive Moisture Emission or Relative Humidity: If an adhesive that is resistant to the level of moisture present is available and acceptable to flooring manufacturer, use that adhesive for installation of the flooring; if not, apply remedial floor coating or remedial sheet membrane over entire suspect floor area.
  3. Excessive Alkalinity (pH): If remedial floor coating is necessary to address excessive moisture, no additional remediation is required; if not, if an adhesive that is resistant to the level present is available and acceptable to the flooring manufacturer, use that adhesive for installation of the flooring; otherwise, apply a skim coat of specified patching compound over entire suspect floor area.

### **3.02 PRELIMINARY CLEANING**

- A. Clean floors of dust, solvents, paint, wax, oil, grease, asphalt, residual adhesive, adhesive removers, film-forming curing compounds, sealing compounds, alkaline salts, excessive laitance, mold, mildew, and other materials that might prevent adhesive bond.
- B. Do not use solvents or other chemicals for cleaning.

### **3.03 MOISTURE VAPOR EMISSION TESTING**

- A. Where the floor covering manufacturer's requirements conflict with either the referenced test method or this specification, comply with the manufacturer's requirements.
- B. Where this specification conflicts with the referenced test method, comply with the requirements of this section.
- C. Test in accordance with ASTM F1869 and as follows.
- D. Plastic sheet test and mat bond test may not be substituted for the specified ASTM test method, as those methods do not quantify the moisture content sufficiently.
- E. In the event that test values exceed floor covering manufacturer's limits, perform remediation as indicated. In the absence of manufacturer limits, perform remediation if test values exceed 3 pounds per 1000 square feet per 24 hours.
- F. Report: Report the information required by the test method.

### **3.04 INTERNAL RELATIVE HUMIDITY TESTING**

- A. Where the floor covering manufacturer's requirements conflict with either the referenced test method or this specification, comply with the manufacturer's requirements.
- B. Where this specification conflicts with the referenced test method, comply with the requirements of this section.
- C. Test in accordance with ASTM F2170 Procedure A and as follows.
- D. Testing with electrical impedance or resistance apparatus may not be substituted for the specified ASTM test method, as the values determined are not comparable to the ASTM test values and do not quantify the moisture content sufficiently.
- E. In the event that test values exceed floor covering manufacturer's limits, perform remediation as

indicated. In the absence of manufacturer limits, perform remediation if any test value exceeds 75 percent relative humidity.

- F. Report: Report the information required by the test method.

### **3.05 ALKALINITY TESTING**

- A. Where the floor covering manufacturer's requirements conflict with either the referenced test method or this specification, comply with the manufacturer's requirements.
- B. The following procedure is the equivalent of that described in ASTM F710, repeated here for the Contractor's convenience.
- C. Use a wide range alkalinity (pH) test paper, its associated chart, and distilled or deionized water.
- D. Place several drops of water on a clean surface of concrete, forming a puddle approximately 1 inch in diameter. Allow the puddle to set for approximately 60 seconds, then dip the alkalinity (pH) test paper into the water, remove it, and compare immediately to chart to determine alkalinity (pH) reading.
- E. In the event that test values exceed floor covering manufacturer's limits, perform remediation as indicated. In the absence of manufacturer limits, perform remediation if alkalinity (pH) test value is over 10.

### **3.06 PREPARATION**

- A. See individual floor covering section(s) for additional requirements.
- B. Comply with requirements and recommendations of floor covering manufacturer.
- C. Fill and smooth surface cracks, grooves, depressions, control joints and other non-moving joints, and other irregularities with patching compound.
- D. Do not fill expansion joints, isolation joints, or other moving joints.

### **3.07 ADHESIVE BOND AND COMPATIBILITY TESTING**

- A. Comply with requirements and recommendations of floor covering manufacturer.

### **3.08 APPLICATION OF REMEDIAL FLOOR COATING**

- A. Comply with requirements and recommendations of coating manufacturer.

### **3.09 PROTECTION**

- 4 A. Cover prepared floors with building paper or other durable covering.

**END OF SECTION**

**SECTION 09 2116  
NON-STRUCTURAL METAL FRAMING**

**PART 1 GENERAL**

**1.01 SECTION INCLUDES**

- A. Metal channel ceiling framing.

**1.02 RELATED REQUIREMENTS**

- A. Section 05 5000 - Metal Fabrications: Metal fabrications attached to stud framing.
- B. Section 05 5000 - Metal Fabrications: Execution requirements for anchors for attaching work of this section.
- C. Section 06 1000 - Rough Carpentry: Wood blocking product and execution requirements.
- D. Section 07 8400 - Firestopping: Top-of-wall assemblies at fire rated walls.
- E. Section 07 9200 - Joint Sealants: Sealing acoustical gaps in construction other than gypsum board or plaster work.
- F. Section 08 3100 - Access Doors and Panels.
- G. Section 09 2900 - Gypsum Board

**1.03 REFERENCE STANDARDS**

- A. ASTM A653/A653M - Standard Specification for Steel Sheet, Zinc-Coated (Galvanized) or Zinc-Iron Alloy-Coated (Galvannealed) by the Hot-Dip Process; 2015, with Editorial Revision (2016).
- B. ASTM C645 - Standard Specification for Nonstructural Steel Framing Members; 2014, with Editorial Revision (2015).
- C. ASTM C754 - Standard Specification for Installation of Steel Framing Members to Receive Screw-Attached Gypsum Panel Products; 2017.
- D. 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.
- E. 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.

**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 manufacturer's data on partition head to structure connectors, showing compliance with requirements.

**1.02 QUALITY ASSURANCE**

- A. Installer Qualifications: Company specializing in performing gypsum board installation and finishing, with minimum five years of experience.

## **PART 2 PRODUCTS**

### **201 METAL FRAMING MATERIALS**

- A. Fire Rated Assemblies: Comply with applicable code and as follows:
- B. Non-Loadbearing 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/240 at 5 psf.
  - 1. Studs: C shaped with flat or formed webs with knurled faces.
  - 2. Runners: U shaped, sized to match studs.
  - 3. Ceiling Channels: C shaped.
  - 4. Furring: Hat-shaped sections, minimum depth of 7/8 inch.
- C. Ceiling Hangers: Type and size as specified in ASTM C754 for spacing required.
- 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, 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 top track preassembled with connection devices spaced to fit stud spacing indicated on drawings; minimum track length of 12 feet.
- E. Tracks and Runners: Same material and thickness as studs, bent leg retainer notched to receive studs with provision for crimp locking to stud.
- F. Furring and Bracing Members: Of same material as studs; thickness to suit purpose; complying with applicable requirements of ASTM C754.
- G. Fasteners: ASTM C1002 self-piercing tapping screws.
- H. Anchorage Devices: Powder actuated or Drilled expansion bolts.
- I. Acoustic Sealant: As specified in Section 09 2116.
- J. Touch-Up Primer for Galvanized Surfaces: SSPC-Paint 20, Type I - Inorganic.

### **202 ACCESSORIES**

- A. Acoustic Sealant: Acrylic emulsion latex or water-based elastomeric sealant; do not use solvent-based non-curing butyl sealant.
- B. Beads, Joint Accessories, and Other Trim: ASTM C1047, rigid plastic, galvanized steel, or rolled zinc, unless noted otherwise.
- C. 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.
- D. 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.

### **203 FABRICATION**

- A. Fabricate assemblies of framed sections to sizes and profiles required.
- B. Fit, reinforce, and brace framing members to suit design requirements.
- C. Fit and assemble in largest practical sections for delivery to site, ready for installation.

## **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. Extend partition framing to structure where indicated and to ceiling in other locations.
- C. Partitions Terminating at Ceiling: Attach ceiling runner securely to ceiling track in accordance with manufacturer's instructions.
- D. 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.
- E. 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.
- F. Align and secure top and bottom runners at 24 inches on center.
- G. At partitions indicated with an acoustic rating:
- H. Provide components and install as required to produce STC ratings as indicated, based on published tests by manufacturer conducted in accordance with ASTM E90 with STC rating calculated in accordance with ASTM E413.
- I. Fit runners under and above openings; secure intermediate studs to same spacing as wall studs.
- J. Install studs vertically at spacing indicated on drawings.
- K. Align stud web openings horizontally.
- L. Secure studs to tracks using crimping method. Do not weld.
- M. Stud splicing is not permissible.
- N. Fabricate corners using a minimum of three studs.
- O. Double stud at wall openings, door and window jambs, not more than 2 inches from each side of openings.
- P. Brace stud framing system rigid.
- Q. Coordinate erection of studs with requirements of door frames; install supports and attachments.
- R. Coordinate installation of bucks, anchors, and blocking with electrical, mechanical, and other work to be placed within or behind stud framing.
- S. Blocking: Use wood blocking secured to studs. Provide blocking for support of plumbing fixtures, toilet partitions, wall cabinets, toilet accessories, hardware, and opening frames.
- T. Standard Wall Furring: Install at concrete walls and PEMB Girt 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.

### **3.03 ACOUSTIC ACCESSORIES INSTALLATION**

- A. Acoustic Sealant: Install in accordance with manufacturer's instructions.
  - 1. Place one bead continuously on substrate before installation of perimeter framing members.
  - 2. Place continuous bead at perimeter of each layer of gypsum board.
  - 3. Seal around all penetrations by conduit, pipe, ducts, and rough-in boxes, except where firestopping is provided

**3.04 CEILING AND SOFFIT FRAMING**

- A. Comply with requirements of ASTM C754.
- B. Install furring after work above ceiling or soffit is complete. Coordinate the location of hangers with other work.
- C. Install furring independent of walls, columns, and above-ceiling work.
- D. Securely anchor hangers to structural members or embed in structural slab. Space hangers as required to limit deflection to criteria indicated.
- E. Space main carrying channels at maximum 72 inch on center, and not more than 6 inches from wall surfaces. Lap splice securely.
- F. Securely fix carrying channels to hangers to prevent turning or twisting and to transmit full load to hangers.
- G. Place furring channels perpendicular to carrying channels, not more than 2 inches from perimeter walls, and rigidly secure. Lap splices securely.
  - 1. Space furring channels no greater than 16 inches on center.
- H. Reinforce openings in suspension system that interrupt main carrying channels or furring channels with lateral channel bracing. Extend bracing minimum 24 inches past each opening.
- I. Laterally brace suspension system.

**END OF SECTION**

## **SECTION 092900 - GYPSUM BOARD**

### **PART 1 - GENERAL**

#### **1.1 SUMMARY**

- A. Section Includes:
  - 1. Interior gypsum board.
  - 2. Exterior gypsum board for ceilings and soffits.
  - 3. Tile backing panels.
  - 4. Metal reveals.
  - 5. Sound attenuation insulation.
- B. Related Requirements:
  - 1. Section 061600 "Sheathing" for gypsum sheathing for exterior walls.
  - 2. Section 092216 "Non-Structural Metal Framing" for non-structural framing and suspension systems that support gypsum board panels.

#### **1.2 ACTION SUBMITTALS**

- A. Product Data: For each type of product.
- B. Samples: For the following products:
  - 1. Trim Accessories: Full-size Sample in 12-inch- long length for each trim accessory indicated.

#### **1.3 QUALITY ASSURANCE**

- A. Mockups: Build mockups of at least 100 sq. ft. in surface area to demonstrate aesthetic effects and to set quality standards for materials and execution.
  - 1. Build mockups for the following:
    - a. Each level of gypsum board finish indicated for use in exposed locations.
  - 2. Apply or install final decoration indicated, including painting, on exposed surfaces for review of mockups.
  - 3. Simulate finished lighting conditions for review of mockups.
  - 4. Subject to compliance with requirements, approved mockups may become part of the completed Work if undisturbed at time of Substantial Completion.

#### **1.4 FIELD CONDITIONS**

- A. Environmental Limitations: Comply with ASTM C 840 requirements or gypsum board manufacturer's written instructions, whichever are more stringent.
- B. Do not install paper-faced gypsum panels until installation areas are enclosed and conditioned.
- C. Do not install panels that are wet, moisture damaged, and mold damaged.
  - 1. Indications that panels are wet or moisture damaged include, but are not limited to, discoloration, sagging, or irregular shape.
  - 2. Indications that panels are mold damaged include, but are not limited to, fuzzy or splotchy surface contamination and discoloration.



**PART 2 - PRODUCTS**

**2.1 PERFORMANCE REQUIREMENTS**

- A. Fire-Resistance-Rated Assemblies: For fire-resistance-rated assemblies, provide materials and construction identical to those tested in assembly indicated according to ASTM E 119 by an independent testing agency.
- B. STC-Rated Assemblies: For STC-rated assemblies, provide materials and construction identical to those tested in assembly indicated according to ASTM E 90 and classified according to ASTM E 413 by an independent testing agency.

**2.2 GYPSUM BOARD, GENERAL**

- A. Size: Provide in maximum lengths and widths available that will minimize joints in each area and that correspond with support system indicated.

**2.3 INTERIOR GYPSUM BOARD**

- A. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
  - 1. CertainTeed Corporation.
  - 2. Continental Building Products, LLC.
  - 3. Georgia-Pacific Building Products.
  - 4. National Gypsum Company.
  - 5. PABCO Gypsum.
  - 6. United States Gypsum Company.
- C. Gypsum Board, Type X: ASTM C 1396/C 1396M.
  - 2. Long Edges: Tapered.
- D. Gypsum Ceiling Board: ASTM C 1396/C 1396M.
  - 1. Thickness: 1/2 inch.
  - 2. Long Edges: Tapered.

**2.4 EXTERIOR GYPSUM BOARD FOR CEILINGS AND SOFFITS**

- A. Exterior Gypsum Soffit Board: ASTM C 1396/C 1396M, with manufacturer's standard edges.
  - 1. Core: 1/2 inch, regular type.

**2.5 TRIM ACCESSORIES**

- A. Interior Trim: ASTM C 1047.
  - 1. Material: Galvanized or aluminum-coated steel sheet or rolled zinc.
  - 2. Shapes:
    - a. Cornerbead.
    - b. LC-Bead: J-shaped; exposed long flange receives joint compound.
    - c. L-Bead: L-shaped; exposed long flange receives joint compound.
    - d. U-Bead: J-shaped; exposed short flange does not receive joint compound.
    - e. Expansion (control) joint.
- B. Exterior Trim: ASTM C 1047.
  - 1. Material: Hot-dip galvanized-steel sheet, plastic, or rolled zinc.
  - 2. Shapes:
    - a. Cornerbead.
    - b. LC-Bead: J-shaped; exposed long flange receives joint compound.
    - c. Expansion (Control) Joint: One-piece, rolled zinc with V-shaped slot and removable strip covering slot opening.

- C. Structural Corner Trim: ASTM D 1037.
  - 1. Material: High strength tapered copolymer core. Copolymer tapered plastic trim with paper face and joint tape backing as manufactured by Structus Building Technologies, Inc.
    - a. Trim shall be engineered for fully bonded adhesive application with joint compound and without mechanical fasteners.
  - 2. Shapes:
    - a. Cornerbead: Use at all outside corners in public areas.
    - b. Copolymer Thickness: 0.060 inches.
    - c. Flange width: 2-1/8 inches.
- D. Aluminum Trim: Extruded accessories of profiles and dimensions indicated.
  - 1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
    - a. Fry Reglet Corp.
    - b. Gordon, Inc.
    - c. Pittcon Industries.
  - 2. Aluminum: Alloy and temper with not less than the strength and durability properties of ASTM B 221, Alloy 6063-T5.
  - 3. Shapes: "Z" reveal, unless noted otherwise.
  - 4. Finish: Corrosion-resistant primer compatible with joint compound and finish materials specified.

## 2.6 JOINT TREATMENT MATERIALS

- A. General: Comply with ASTM C 475/C 475M.
- B. Joint Tape:
  - 1. Interior Gypsum Board: Paper.
  - 2. Exterior Gypsum Soffit Board: Paper.
  - 3. Glass-Mat Gypsum Sheathing Board: 10-by-10 glass mesh.
  - 4. Tile Backing Panels: As recommended by panel manufacturer.
- C. Joint Compound for Interior Gypsum Board: For each coat use formulation that is compatible with other compounds applied on previous or for successive coats.
  - 1. Prefilling: At open joints and damaged surface areas, use setting-type taping compound.
  - 2. Embedding and First Coat: For embedding tape and first coat on joints, fasteners, and trim flanges, use drying-type, all-purpose compound.
  - 3. Fill Coat: For second coat, use drying-type, all-purpose compound.
  - 4. Finish Coat: For third coat, use drying-type, all-purpose compound.
  - 5. Skim Coat: For final coat of Level 5 finish, use drying-type, all-purpose compound.
- D. Joint Compound for Tile Backing Panels:
  - 1. Glass-Mat, Water-Resistant Backing Panel: As recommended by backing panel manufacturer.
  - 2. Cementitious Backer Units: As recommended by backer unit manufacturer.

## 2.7 AUXILIARY MATERIALS

- A. General: Provide auxiliary materials that comply with referenced installation standards and manufacturer's written recommendations.
- B. Laminating Adhesive: Adhesive or joint compound recommended for directly adhering gypsum panels to continuous substrate.
- C. Steel Drill Screws: ASTM C 1002, unless otherwise indicated.
  - 1. Use screws complying with ASTM C 954 for fastening panels to steel members from 0.033 to 0.112 inch thick.
  - 2. For fastening cementitious backer units, use screws of type and size recommended by panel manufacturer.
- D. Sound Attenuation Blankets: ASTM C 665, Type I (blankets without membrane facing) produced by combining thermosetting resins with mineral fibers manufactured from glass, slag wool, or rock wool.
  - 1. Fire-Resistance-Rated Assemblies: Comply with mineral-fiber requirements of assembly.

- E. Acoustical Sealant: As specified in Section 079200 "Joint Sealants."
- F. Thermal Insulation: As specified in Section 072100 "Thermal Insulation."

**PART 3 - EXECUTION**

**3.1 APPLYING AND FINISHING PANELS**

- A. Comply with ASTM C 840.
- B. Examine panels before installation. Reject panels that are wet, moisture damaged, and mold damaged.
- C. Install ceiling panels across framing to minimize the number of abutting end joints and to avoid abutting end joints in central area of each ceiling. Stagger abutting end joints of adjacent panels not less than one framing member.
- D. Install panels with face side out. Butt panels together for a light contact at edges and ends with not more than 1/16 inch of open space between panels. Do not force into place.
- E. Locate edge and end joints over supports, except in ceiling applications where intermediate supports or gypsum board back-blocking is provided behind end joints. Do not place tapered edges against cut edges or ends. Stagger vertical joints on opposite sides of partitions. Do not make joints other than control joints at corners of framed openings.
- F. Form control and expansion joints with space between edges of adjoining gypsum panels.
- G. Cover both faces of support framing with gypsum panels in concealed spaces (above ceilings, etc.), except in chases braced internally.
  - 1. Unless concealed application is indicated or required for sound, fire, air, or smoke ratings, coverage may be accomplished with scraps of not less than 8 sq. ft. in area.
  - 2. Fit gypsum panels around ducts, pipes, and conduits.
  - 3. Where partitions intersect structural members projecting below underside of floor/roof slabs and decks, cut gypsum panels to fit profile formed by structural members; allow 1/4- to 3/8-inch- wide joints to install sealant.
- H. Isolate perimeter of gypsum board applied to non-load-bearing partitions at structural abutments, except floors. Provide 1/4- to 1/2-inch- wide spaces at these locations and trim edges with edge trim where edges of panels are exposed. Seal joints between edges and abutting structural surfaces with acoustical sealant.
- I. Install trim with back flanges intended for fasteners, attach to framing with same fasteners used for panels. Otherwise, attach trim according to manufacturer's written instructions.
- J. Control Joints: Install control joints at locations indicated on Drawings or according to ASTM C 840 and in specific locations approved by Architect for visual effect.
- K. Aluminum Trim: Install in locations indicated on Drawings.
- L. Prefill open joints and damaged surface areas.
- M. Apply joint tape over gypsum board joints, except for trim products specifically indicated as not intended to receive tape.
- N. STC-Rated Assemblies: Seal construction at perimeters, behind control joints, and at openings and penetrations with a continuous bead of acoustical sealant. Install acoustical sealant at both faces of partitions at perimeters and through penetrations. Comply with ASTM C 919 and with manufacturer's written recommendations for locating edge trim and closing off sound-flanking paths around or through assemblies, including sealing partitions above acoustical ceilings.
- O. Install sound attenuation blankets before installing gypsum panels unless blankets are readily installed after panels have been installed on one side.

- P. Install interior gypsum board in the following locations:
  - 1. Wallboard Type: Vertical surfaces unless otherwise indicated.
  - 2. Type X: Where required for fire-resistance-rated assembly.
  - 3. Ceiling Type: Ceiling surfaces.
  - 4. Abuse-Resistant Type: Where indicated.
  - 5. Mold-Resistant Type:
    - a. Custodial Rooms.
    - b. Mechanical Rooms.
    - c. Other locations as indicated.
  - 6. Glass-Mat, Water-Resistant Backing Panels: Locations indicated to receive wall tile.
  - 7. Cementitious Backer Units:
    - a. Showers and other wet areas indicated to receive wall tile.
- Q. Apply exterior gypsum board panels perpendicular to supports, with end joints staggered and located over supports.
  - 1. Install with 1/4-inch open space where panels abut other construction or structural penetrations.
  - 2. Fasten with corrosion-resistant screws.
- R. Gypsum Board Finish Levels: Finish panels to levels indicated below and according to ASTM C 840:
  - 1. Level 1: Ceiling plenum areas, concealed areas, and where indicated.
  - 2. Level 2: Panels that are substrate for tile.
  - 3. Level 4: At panel surfaces that will be exposed to view unless otherwise indicated.
  - 4. Level 5: Surfaces to receive semi-gloss or high gloss paint, including abuse-resistant gypsum board.
- S. Protect adjacent surfaces from drywall compound and texture finishes and promptly remove from floors and other non-drywall surfaces. Repair surfaces stained, marred, or otherwise damaged during drywall application.
- T. Remove and replace panels that are wet, moisture damaged, and mold damaged.

**END OF SECTION 092900**

**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 07 9005 - Joint Sealers: Acoustical sealant.
- B. Section 21 1313 – Fire Sprinklers: Fire sprinkler components in ceiling system.
- C. Section 23 3000 - Air Distribution: Air diffusion devices in ceiling.
- D. Section 26 5100 - Interior Lighting: Light fixtures in ceiling system.
- E. Section 28 3100 - Fire Alarm: Fire alarm components 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 E1264 - Standard Classification for Acoustical Ceiling Products; 2014.
- C. CHPS (HPPD) - High Performance Products Database; Current Edition at [www.chps.net/](http://www.chps.net/).
- D. ITS (DIR) - Directory of Listed Products; Intertek Testing Services NA, Inc.; current edition.
- E. UL (FRD) - Fire Resistance Directory; current edition.
- F. UL (GGG) - GREENGUARD Gold Certified Products; current listings at <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 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, 8 inches long, of suspension system main runner.
- E. Manufacturer's Installation Instructions: Indicate special procedures.
- 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.
  - 3. Extra Suspension System: Quantity equal to 2 percent of total installed of each exposed component.

### **1.06 QUALITY ASSURANCE**

- A. Fire-Resistive Assemblies: Complete assembly listed and classified by UL (FRD) for the fire resistance indicated.
- B. Suspension System Manufacturer Qualifications: Company specializing in manufacturing the products specified in this section with minimum three years documented experience.
- C. Acoustical Unit Manufacturer Qualifications: Company specializing in manufacturing the products specified in this section with minimum three 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**

### **201 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.

### **202 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).

- C. 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: Angled Tegular 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.

#### **203 SUSPENSION SYSTEM(S)**

- A. Manufacturers:
1. Same as for acoustical units.
  2. Substitutions: See Section 01 6000 - Product Requirements.
- B. Suspension Systems - General: Complying with ASTM C635/C635M; die cut and interlocking components, with stabilizer bars, clips, splices, perimeter moldings, and hold down clips 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.

#### **204 ACCESSORIES**

- A. Support Channels and Hangers: Galvanized steel; size and type to suit application, seismic requirements, and ceiling system flatness requirement specified.
- B. Perimeter Moldings: Same material and finish as grid.
1. At Exposed Grid: Provide L-shaped molding for mounting at same elevation as face of grid.
- C. Gasket For Perimeter Moldings: Closed cell rubber sponge tape.
- D. 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. Install after major above-ceiling work is complete. Coordinate the location of hangers with other work.
- E. Provide hanger clips during steel deck erection. Provide additional hangers and inserts as required.
  
- F. 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.
- G. 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.
- H. Do not support components on main runners or cross runners if weight causes total dead load to exceed deflection capability.
- I. Support fixture loads using supplementary hangers located within 6 inches of each corner, or support components independently.
- J. Do not eccentrically load system or induce rotation of runners.
- K. 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.
- L. Form expansion joints as detailed. Form to accommodate plus or minus 1 inch movement. Maintain visual closure.
- M. 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 096513**  
**RESILIENT BASE AND ACCESSORIES**

**PART 1 - GENERAL**

**1.1 SUMMARY**

- A. Section Includes:
  - 1. Resilient base.

**1.2 ACTION SUBMITTALS**

- A. Product Data: For each type of product.
- B. Sustainable Design Submittals:
  - 1. Product Data: For recycled content, indicating postconsumer and preconsumer recycled content and cost.
  - 2. Product Data: For adhesives, indicating VOC content.
- C. Samples: For each exposed product and for each color and texture specified, not less than 12 inches long.

**1.3 MAINTENANCE MATERIAL SUBMITTALS**

- A. Furnish extra materials that match products installed and that are packaged with protective covering for storage and identified with labels describing contents.
  - 1. Furnish not less than 10 linear feet for every 500 linear feet or fraction thereof (maximum two boxes), of each type, color, pattern, and size of resilient product installed.

**1.4 FIELD CONDITIONS**

- A. Maintain ambient temperatures within range recommended by manufacturer, but not less than 70 deg F or more than 95 deg F, in spaces to receive resilient products during the following time periods:
  - 1. 48 hours before installation.
  - 2. During installation.
  - 3. 48 hours after installation.
- B. After installation and until Substantial Completion, maintain ambient temperatures within range recommended by manufacturer, but not less than 55 deg F or more than 95 deg F.
- C. Install resilient products after other finishing operations, including painting, have been completed.

## **PART 2 - PRODUCTS**

### **2.1 PERFORMANCE REQUIREMENTS**

- A. FloorScore Compliance: Resilient base and stair accessories shall comply with requirements of FloorScore certification.

### **2.2 THERMOSET-RUBBER BASE**

- A. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
  - 1. Johnsonite; A Tarkett Company.
  - 2. Roppe Corporation, USA.
  - 3. Burke Mercer Flooring Products, Division of Burke Industries Inc.
  - 4. Flexco.
  - 5. Nora Systems, Inc.
- B. Product Standard: ASTM F 1861, Type TS (rubber, vulcanized thermoset), Group I (solid, homogeneous).
  - 1. Style and Location:
    - a. Cove Case: Provide in areas as shown in the finish plan and schedule.
- C. Thickness: 0.125 inch.
- D. Height: 4 inches.
- E. Lengths: Coils in manufacturer's standard length.
- F. Outside Corners: Job formed.
- G. Inside Corners: Job formed.
- H. Colors: As selected by Architect from full range of industry colors.

### **2.3 INSTALLATION MATERIALS**

- A. Adhesives: Water-resistant type recommended by resilient-product manufacturer for resilient products and substrate conditions indicated.
  - 1. Adhesives shall have a VOC content of 50 g/L or less.

### **PART 3 - EXECUTION**

#### **3.1 PREPARATION**

- A. Prepare substrates according to manufacturer's written instructions to ensure adhesion of resilient products.
- B. Do not install resilient products until they are the same temperature as the space where they are to be installed.
  - 1. At least 48 hours in advance of installation, move resilient products and installation materials into spaces where they will be installed.

#### **3.2 RESILIENT BASE INSTALLATION**

- A. Comply with manufacturer's written instructions for installing resilient base.
- B. Apply resilient base to walls, columns, pilasters, casework and cabinets in toe spaces, and other permanent fixtures in rooms and areas where base is required.
- C. Install resilient base in lengths as long as practical without gaps at seams and with tops of adjacent pieces aligned.
- D. Tightly adhere resilient base to substrate throughout length of each piece, with base in continuous contact with horizontal and vertical substrates.
- E. Do not stretch resilient base during installation.
- F. On masonry surfaces or other similar irregular substrates, fill voids along top edge of resilient base with manufacturer's recommended adhesive filler material.
- G. Job-Formed Corners:
  - 1. Outside Corners: Use straight pieces of maximum lengths possible and form with returns not less than 3 inches in length.
    - a. Form without producing discoloration (whitening) at bends.
  - 2. Inside Corners: Use straight pieces of maximum lengths possible and form with returns not less than 3 inches in length.
    - a. Miter or cope corners to minimize open joints.

#### **3.3 CLEANING AND PROTECTION**

- A. Comply with manufacturer's written instructions for cleaning and protecting resilient products.
- B. Perform the following operations immediately after completing resilient-product installation:
  - 1. Remove adhesive and other blemishes from exposed surfaces.

**END OF SECTION 096513**

**SECTION 09 6566**  
**RESILIENT SHEET ATHLETIC FLOORING**

**PART 1 GENERAL**

**1.01 SECTION INCLUDES**

- A. Sheet vinyl resilient athletic flooring.
- B. 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 D412 - Standard Test Methods for Vulcanized Rubber and Thermoplastic Elastomers--Tension; 2016.
- B. ASTM D2240 - Standard Test Method for Rubber Property--Durometer Hardness; 2015.
- C. 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.
- F. Installation Instructions: Indicate standard and special installation procedures, perimeter conditions requiring special attention, and manufacturer's recommendations for accessory products.
- G. Maintenance Data: Include maintenance procedures, recommended maintenance materials, a suggested schedule for cleaning, stripping and re-finishing recommendations, and polishes and waxes.
- H. Provide certification of testing per ASTM F2772-11 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.

**1.05 CLOSEOUT SUBMITTALS**

- A. Manufacturer maintenance instructions.
- B. Manufacturer warranty for material defects, high moisture tolerance and not promoting mold growth on, within and directly under the installed flooring.
- C. Installer installation warranty.

**1.06 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 E 648, Class 1, by a qualified testing agency acceptable to authorities having jurisdiction.
- E. Athletic Performance Properties: Comply with ASTM F 2772-11 Performance Level CLASS 3 for force reduction, ball bounce, vertical deformation and surface friction.

**1.07 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.

**1.08 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 GC 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. GC will be responsible for keeping the floor in new condition until transfer of the building over to the Owner.

#### **1.09 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.
  - 2. Failures include, but are not limited to, the following:
    - a. Material and manufacturing defects.
    - b. 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.
    - c. System is warranted not to promote mold growth on, within and directly under the installed flooring.
  - 3. Warranty Period: 15 years from date of Substantial Completion.
- B. 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.
  - 1. Warranty Period: 2 years from date of Substantial Completion.

#### **1.10 EXTRA MATERIALS**

- A. See Section 01 6000 – Product Requirements, for additional provisions.
- B. Supply 10 Square Yards of Extra Vinyl Flooring Material.

### **PART 2 PRODUCTS**

#### **2.01 SHEET VINYL ATHLETIC FLOORING**

- A. Vinyl Sheet Flooring:
  - 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 & 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.
- B. Basis of Design: GERFLOR, Taraflex Sport M Plus DRY-TEX Sports Flooring
- C. Equivilant Manufacturers:
1. Tarkett Flooring; TarkettSPORTS: [www.tarkettsportsindoor.com](http://www.tarkettsportsindoor.com)
  2. Connor Sports Surface Solutions; Conner Sports: [www.connersports.com](http://www.connersports.com)
  3. 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.
  2. 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.

## 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 INSTALLATION**

- A. Prepare floor substrates for installation of flooring in accordance with Section 09 0561.
- B. Place flooring and installation materials into spaces where they will be installed at least 48 hours before installation.
- C. 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.

#### **3.04 CLEANING**

- A. Clean flooring using methods recommended by manufacturer.

#### **3.05 PROTECTION**

- A. Protect finished athletic flooring from construction traffic to ensure that it is without damage upon Date of Substantial Completion.

**END OF SECTION**

**SECTION 09 8400**  
**ACOUSTIC ROOM COMPONENTS**

**PART 1 GENERAL**

**1.01 SECTION INCLUDES**

- A. Fabric-covered fiberglass core panels and mounting accessories.

**1.02 RELATED REQUIREMENTS**

- A. Section 06100 – Rough Carpentry – Wood furring strips

**1.03 REFERENCE STANDARDS**

- A. ASTM C423 - Standard Test Method for Sound Absorption and Sound Absorption Coefficients by the Reverberation Room Method; 2017.
- B. ASTM E84 - Standard Test Method for Surface Burning Characteristics of Building Materials; 2015a.
- C. ASTM E795 - Standard Practices for Mounting Test Specimens During Sound Absorption Tests; 2016.
- D. Ceilings and Interior Systems Construction Association (CISCA): CISCA Code of Practices.

**1.04 SUBMITTALS**

- A. See Section 01 3000 - Administrative Requirements, for submittal procedures.
- B. Product Data: Manufacturer's printed data sheets for products specified.
- C. Shop Drawings: Fabrication and installation details, panel layout, and fabric orientation.
- D. Selection and Verification Samples for Cement - Wood Fiber Panel System (Tectum System): Submit selection and verification samples: 6" x 6" (152 x 152 mm) sample for each wood fiber wall panel unit required, showing full range of exposed texture to be expected in completed work.
- E. Attachment component sample of actual size and finish: provide 6" liner sample.

**1.05 QUALITY ASSURANCE**

- A. Manufacturer Qualifications: Company with not less than five years of experience in manufacturing acoustical products similar to those specified.
- B. Installer Qualifications: Utilize an installer having demonstrated experience on projects of similar size and complexity.

**1.06 DELIVERY, STORAGE, AND HANDLING**

- A. Comply with manufacturer's specific delivery, storage and handling requirements.
- B. Protect acoustical panels from moisture during shipment, storage, and handling. Deliver in factory-wrapped bundles; do not open bundles until panels are needed for installation.
- C. Store panels flat, in dry, well-ventilated space; do not stand panels on end.
- D. Protect panel edges from damage.

**1.07 MOCK-UP**

- A. See Section 01 4000 - Quality Requirements, for additional mock-up requirements.
- B. Construct mock-up of acoustical panels at location indicated by Architect.
  - 1. Minimum mock-up dimensions; 96 by 96 inches.
  - 2. Approved mock-up may remain as part of the Work.

## **PART 2 PRODUCTS**

### **201 MANUFACTURERS**

- A. Armstrong Ceiling & Wall Solutions:
  - 1. [www.Armstrongceilings.com](http://www.Armstrongceilings.com)
  - 2. Substitutions: See section 01 6000 – Project Requirements.
  - 3. Defer to Architect recommendation.
- B. Tectum (cement - wood fiber) acoustical panels.
  - 1. Tectum, Inc.; Product Tectum Kerfed V-line acoustical wall panels.
  - 2. Substitutions: See Section 01 6000 - Product Requirements.
- C. Provide all cement - wood fiber acoustic panels by one manufacturer.

### **202 CEMENT - WOOD FIBER ACOUSTIC WALL PANELS**

- A. 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.
- B. 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.
- C. Tectum Wall Panels.
  - 1. Panel Thickness: 1 1/2 inches. Edge bevel all 4 sides.
  - 2. Panel Size: As detailed.
  - 3. Finish: Provide factory custom painted finish.
  - 4. Furring: 7/8 inch light gage metal hat channel furring.
  - 5. Mounting: Tectum mounting type D-20 (1-1/2" 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.

### **203 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.

### **204 ACCESSORIES**

- A. Back-Mounting z-clip Accessories: Manufacturer's standard accessories for concealed support, designed to allow panel removal, and as follows:
- B. Back-Mounting z-clip Accessories for fabric panels: Manufacturer's standard accessories for concealed support, designed to allow panel removal, and as follows:
  - 1. Two-part clip and base-support bracket system; brackets designed to support full weight of panels and clips designed for lateral support, with one part mechanically attached to back of panel and the other attached to substrate.
  - 2. Hook and loop strips adhered to substrate and to back of panels.

## **PART 3 EXECUTION**

### **301 EXAMINATION**

- A. Examine substrates for conditions detrimental to installation of acoustical panels. Proceed with installation only after unsatisfactory conditions have been corrected.

### **302 INSTALLATION**

- A. Install materials in accordance with governing regulations, fire resistance rating requirements and industry standards applicable to work.
  - 1. Comply with CISCA Code of Practices.
- B. Install acoustical panels in locations indicated, following installation recommendations of panel

manufacturer. Align panels accurately, with edges plumb and top edges level. Scribe to fit accurately at adjoining work and penetrations.

1. Install in accord with details on Drawings.
- C. Install panels 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.
- B. Tectum Panel Cleaning:
1. Clean exposed surfaces of acoustical panel, trim, moldings and suspension members to comply with manufacturer's instructions for cleaning.
  2. Touch up any minor finish damage.
  3. Remove and replace work which cannot be successfully cleaned and repaired to permanently eliminate evidence of damage.
- C. Remove surplus materials, trimmed portions of panels, and debris resulting from installation.

### **3.04 PROTECTION**

- A. Provide protection of installed acoustical panels until completion of the work.
- 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 1313 – Fire Sprinkler: Color coding scheme for items to be painted under this section.
- E. Section 22 0500 - Common Work Results for Plumbing: Painted identification for HVAC Piping and Equipment.
- F. Section 23 0500 – Common Work Results for HVAC: Painted identification for Plumbing Piping and Equipment.

**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](http://www.behr.com).
  - 3. PPG Paints: [www.ppgpaints.com/sle](http://www.ppgpaints.com/sle).
  - 4. Pratt & Lambert Paints: [www.prattandlambert.com](http://www.prattandlambert.com).
  - 5. Sherwin-Williams Company: [www.sherwin-williams.com](http://www.sherwin-williams.com).
  - 6. Valspar Corporation: [www.valsparpaint.com](http://www.valsparpaint.com).
- 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): Interior Light Industrial Coating, Water Based.
    - a. Products:
  4. 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.

- 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; Pro-Park Waterborne Traffic Marking Paint.
  - 2. White: One coat, with reflective particles; Pro-Park Waterborne Traffic Marking Paint.
  - 3. Blue: One coat, with reflective particles; 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, stains, and varnishes.
- 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 5213 – Pipe and Tube Railings
- C. Section 09 9113 - Exterior Painting.
- D. Section 09 9123 – Metal Pan Stairs
- E. Section 09 9600 - High-Performance Coatings.
- F. Section 21 1313 – Fire Sprinkler: Color coding scheme for items to be painted under this section.
- G. Section 22 0500 - Common Work Results for Plumbing: Painted identification for HVAC Piping and Equipment.
- H. Section 23 0500 – Common Work Results for HVAC: Painted identification for Plumbing Piping and Equipment.
- I. Section 26 0553 - Identification for Electrical Systems: Painted identification.

## 1.03 DEFINITIONS

- A. Conform to ASTM D16 for interpretation of terms used in this section.

## 1.04 REFERENCE STANDARDS

- A. ASTM D16 - Standard Terminology for Paint, Related Coatings, Materials, and Applications; 2016.
- B. ASTM D4258 - Standard Practice for Surface Cleaning Concrete for Coating; 2005 (Reapproved 2017).
- C. ASTM D4442 - Standard Test Methods for Direct Moisture Content Measurement of Wood and Wood-Based Materials; 2016.
- 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: 2 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](http://www.behr.com).
  - 3. PPG Paints: [www.ppgpaints.com/sle](http://www.ppgpaints.com/sle).
  - 4. Pratt & Lambert Paints: [www.prattandlambert.com](http://www.prattandlambert.com).
  - 5. Sherwin-Williams Company: [www.sherwin-williams.com](http://www.sherwin-williams.com).
  - 6. Valspar Corporation: [www.valsparpaint.com](http://www.valsparpaint.com).
- 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.



## 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 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 clear sealer.

### **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.
- C. Section 05 5213 – Pipe and Tube Railings
- D. Section 09 9123 – Metal Pan Stairs

**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: 2 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 MOCK-UP**

- A. See Section 01 4000 - Quality Requirements, for general requirements for mock-up.
- B. Provide mock-up of each high performance coating system, 8 feet long by 9 feet wide, illustrating coating, color, and surface sheen, for each specified coating.
- C. Locate where directed.
- D. Mock-up may remain as part of the work.

**1.07 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.

**1.08 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.

**1.09 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. 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. Carboline Company: [www.carboline.com](http://www.carboline.com).
  - 3. PPG Paints: [www.ppgpaints.com/sle](http://www.ppgpaints.com/sle).
  - 4. Pratt & Lambert Paints: [www.prattandlambert.com](http://www.prattandlambert.com).
  - 5. Precision Coatings: [www.precisioncoatingsinc.com](http://www.precisioncoatingsinc.com).
  - 6. Sherwin-Williams Company: [www.protective.sherwin-williams.com/industries](http://www.protective.sherwin-williams.com/industries).
  - 7. Tnemec Company, Inc: [www.tnemec.com](http://www.tnemec.com).
  - 8. 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. Epoxy Coating for concrete and masonry, drywall and wood:
  - 1. Number of coats: Two.
  - 2. Product Characteristics:
    - a. Percentage of solids by volume, 41, minimum.
    - b. Dry film thickness, per coat, 3 mils, minimum.
    - c. Comply with the performance requirements specified above for moderate exposure.

3. Top Coat(s): High Performance Institutional, Two-Component, Water Based Coating; MPI #254.
  - a. Sheen: Eggshell.
  - b. Products:
    - 1) Sherwin-Williams Pro Industrial Water Based Catalyzed Epoxy. (MPI #254)
    - 2) Substitutions: Section 01 6000 - Product Requirements.
4. Primer: As specified under "PRIMERS" below.
- C. Urethane Coating for steel, galvanized steel and aluminum including metal building frame and structural components:
  1. Number of Coats: Two.
  2. Product Characteristics:
    - a. Percentage of solids by volume: 65, minimum.
    - b. Dry film thickness, per coat: 3 mils, minimum.
  3. Top Coat(s): Polyurethane, Two-Component; MPI #72.
    - a. Sheen: Semi-Gloss.
    - b. Products:
      - 1) Sherwin-Williams Acrolon 218 HS. (MPI #72, 174)
      - 2) Substitutions: Section 01 6000 - Product Requirements.
  4. Primer: As specified under "PRIMERS" below.

#### 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 Heavy Duty Block Filler. (MPI #4)
      - 2) Substitutions: Section 01 6000 - Product Requirements.
  2. Anti-Corrosive for Metal, Epoxy.
    - a. Products:
      - 1) Sherwin-Williams Recoatable Epoxy Primer B67 Series.
      - 2) Substitutions: Section 01 6000 - Product Requirements.
  3. Direct-To-Metal Wash Primer; Galvanized steel and aluminum.
    - a. Products:
      - 1) Sherwin-Williams; DTM Wash Primer: [www.protective.sherwin-williams.com](http://www.protective.sherwin-williams.com).
      - 2) Substitutions: Section 01 6000 - Product Requirements.
  4. Latex Primer; Interior wood and plywood.
    - a. Products:
      - 1) Sherwin-Williams Premium Wall & Wood Interior Latex Primer B28W08111.
      - 2) Substitutions: Section 01 6000 - Product Requirements
  5. Latex Primer; Interior gypsum board.
    - a. Products:
      - 1) Sherwin-Williams Pro-Mar 200 Zero VOC Interior Latex Primer B28W02600.
      - 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-SP1.

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 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. Concrete masonry walls at Pool Pump Room 001, Sanitizer 002 and PH Buffer 003: Polyamide Epoxy Coating.
- C. Concrete masonry walls at Concessions 017 and Storage 018: Water Based Epoxy Coating.
- D. Concrete locker benches at Men's Lockers 007 and Women's Lockers 016: Water Based Epoxy Coating.
- E. Exposed galvanized steel in Pool Pump Room: Urethane Coating.
- F. Exterior exposed structural steel: Urethane Coating.
- G. Miscellaneous exposed exterior steel: Urethane Coating.
- H. All aluminum fencing and gates: 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. Building identification signs.
- D. Flat plate metal cut logo signage.

**1.02 RELATED REQUIREMENTS**

- A. Section 22 0500 - Common Work Results for Plumbing: Identification for HVAC Piping and Equipment.
- B. Section 23 0500 – Common Work Results for HVAC: Identification for Plumbing Piping and Equipment.
- C. Section 26 0553 - Identification for Electrical Systems: Identification for 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**

### **201 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.

### **202 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. Building Identification Signs:
  - 1. Use individual metal letters.
  - 2. Mount on outside wall in location indicated on drawings.
- E. Other Dimensional Letter Signs: Wall-mounted.

F. Flat Plate Cut logo Signage:

1. Provide 1/4 inch thick stainless steel plate logos in sizes indicated on Drawings.
2. See drawings for logos required. Electronic images of logos will be provided.
3. Cut edges square and smooth.
4. Mounting Standoffs: Provide 2 inch standoffs.
5. Finish: Provide even and uniform brushed satin finish; matte edges.

**203 SIGN TYPES**

A. Flat Signs: Signage media without frame.

1. Edges: Square.
2. Corners: Radiuses.
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.

**204 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.

**205 DIMENSIONAL LETTERS**

A. Metal Letters:

1. Metal: Aluminum casting.
2. Finish: Brushed, satin.
3. Mounting: Concealed screws.
4. Letter Text and Sizes: Note: Verify sizes and text on drawings.

**206 ACCESSORIES**

- A. Concealed Screws: Stainless steel, galvanized steel, chrome plated, or other non-corroding metal.
- B. Stand-Offs: 3/8 inch natural matte finish aluminum stand-offs.
- C. Exposed Screws: Chrome plated.
- D. Tape Adhesive: Double sided tape, permanent adhesive.

**PART 3 EXECUTION**

**301 EXAMINATION**

- A. Verify that substrate surfaces are ready to receive work.

**302 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 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 (Reapproved 2017).
- 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**

**201 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).

## **202 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. Multipurpose Dry Chemical Type Fire Extinguishers: Carbon steel tank, with pressure gage.
  - 1. Cartridge Operated: Spun shell.
  - 2. Class: A:B:C type.
  - 3. Size: 10 pound.
  - 4. Finish: Baked polyester powder coat, Red color.
  - 5. Temperature range: Minus 65 degrees F to 120 degrees F.
  - 6. Provide extinguishers labeled by Underwriters Laboratories Inc. for the purpose specified and indicated.

## **203 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.

## **204 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 rough-in, 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 7316**  
**CANOPIES**

**PART 1 GENERAL**

**1.01 SECTION INCLUDES**

- A. Pre-engineered, pre-finished extruded aluminum canopies.

**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 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.

**1.05 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.

**1.06 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 Mason Products LLC.; [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 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 11 6623**  
**GYMNASIUM EQUIPMENT**

**PART 1 - GENERAL**

**1.01 SUMMARY**

- A. Section Includes:
  - 1. Basketball backboards, goals, and support framing.
  - 2. Manual Basketball height adjusters.
  - 3. Volleyball Equipment including net, post, pads, sleeves, sockets, tensioning system and antennas.
  - 4. Wall mounted and equipment mounted protection pads.
  - 5. Floor anchors for tensioned elements.
  - 6. Floor sleeves for net and goal posts.

**1.02 RELATED REQUIREMENTS**

- A. Section 03 3000 - Cast-in-Place Concrete: Concrete floor slab to receive floor sleeves and anchors.
- B. Section 05 1200 - Structural Steel Framing: Structural members supporting basketball systems.
- C. Section 05 5000 - Metal Fabrications: Secondary structural members supporting gymnasium equipment.
- D. Section 09 6466 - [Wood Athletic Flooring]: Gymnasium flooring.
- E. Section 11 6643 - Interior Scoreboards: Scoreboards and scoreboard controllers.
- F. Section 13 3419 - Metal Building Systems: Structural supports.
- G. Section See Electrical Sections and Division 16 for Equipment conduit and wiring.

**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 A36/A36M - Standard Specification for Carbon Structural Steel; 2014.
- E. ASTM A391/A391M - Standard Specification for Grade 80 Alloy Steel Chain; 2007 (Reapproved 2012).
- F. ASTM A47/A47M - Standard Specification for Ferritic Malleable Iron Castings; 1999 (Reapproved 2014).
- G. ASTM A500/A500M - Standard Specification for Cold-Formed Welded and Seamless Carbon Steel Structural Tubing in Rounds and Shapes; 2013.
- H. ASTM A513/A513M - Standard Specification for Electric-Resistance-Welded Carbon and Alloy Steel Mechanical Tubing; 2015.
- I. ASTM B179 - Standard Specification for Aluminum Alloys in Ingot and Molten Forms for Castings from All Casting Processes; 2014.
- J. ASTM B221 - Standard Specification for Aluminum and Aluminum-Alloy Extruded Bars, Rods, Wire, Profiles, and Tubes; 2014.
- K. ASTM C1107/C1107M - Standard Specification for Packaged Dry, Hydraulic-Cement Grout (Nonshrink); 2014a.
- L. ASTM E84 - Standard Test Method for Surface Burning Characteristics of Building Materials; 2017.
- M. AWPA U1 - Use Category System: User Specification for Treated Wood; 2017.

- N. AWS D1.1/D1.1M - Structural Welding Code - Steel; 2015 (with March 2016 Errata).
- O. NFHS (Guide) - Court and Field Diagram Guide; current edition.
- P. NFPA 70 - National Electrical Code; Most Recent Edition Adopted by Authority Having Jurisdiction, Including All Applicable Amendments and Supplements.

**1.04 ADMINISTRATIVE REQUIREMENTS**

- A. Coordinate installation of floor inserts with structural floors and finish flooring installation and with court layout and game lines and markers on finish flooring.
- B. Coordinate layout and installation of overhead-supported gymnasium equipment and suspension-system components with other construction including light fixtures, HVAC equipment, fire-suppression-system components, and partition assemblies.
- C. Large Components: Ensure that large components can be moved into final position without damage to other construction.
- D. Electrically Operated Equipment: Coordinate location and electrical characteristics of service connection.

**1.05 SUBMITTALS**

- A. See Section 01 3000 - Administrative Requirements, for submittal procedures.
- B. Product Data: Provide manufacturer's data showing configuration, sizes, materials, finishes, hardware, and accessories; include:
  - 1. Electrical characteristics and connection locations.
  - 2. Fire rating certifications.
  - 3. Structural steel welder certifications.
  - 4. Manufacturer's installation instructions.
- C. Shop Drawings: For custom fabricated equipment indicate, in large scale detail, construction methods; method of attachment or installation; type and gage of metal, hardware, and fittings; plan front elevation; elevations and dimensions; minimum one cross section; utility requirements as to types, sizes, and locations.
- D. Erection Drawings: Detailed dimensional requirements for proper location of equipment.
- E. Samples: Submit samples of wall pad coverings in manufacturer's available range of colors.
- F. Operating and maintenance data, for each operating equipment item.
- G. Warranty: Submit manufacturer warranty and ensure that forms have been completed in Owner's name and registered with manufacturer.

**1.06 QUALITY ASSURANCE**

- A. Manufacturer Qualifications: Company specializing in manufacturing products specified in this section, with not less than five years of documented experience.
- B. Installer Qualifications: Company specializing in performing work of the type specified with minimum five years of documented experience.

**1.07 DELIVERY, STORAGE, AND HANDLING**

- A. Deliver products to project site in manufacturer's original packaging with factory original labels attached.
- B. Store products indoors and elevated above floor; prevent warping, twisting, or sagging.
- C. Store products in accordance with manufacturer's instructions; protect from extremes of weather, temperature, moisture, and other damage.

## **1.08 WARRANTY**

- A. Special Warranty: Manufacturer agrees to repair or replace components of gymnasium equipment that fail in materials or workmanship within specified warranty period.
  - 1. Warranty Period:
    - a. Backboard: Limited lifetime warranty against defects in material and workmanship
    - b. Backboard Safety Padding: Five years from date of Substantial Completion.
    - c. Winch: Five (5) year warranty against material defects and workmanship.

## **PART 2 - PRODUCTS**

### **201 MANUFACTURERS**

- A. Gymnasium Equipment:
  - 1. Basis of Design Manufacturer: Unless otherwise indicated, Performance Sports Systems: [www.perfsports.com](http://www.perfsports.com).
  - 2. Basis of Design Manufacturer - Volleyball: Gared Sports: [www.garedsports.com](http://www.garedsports.com).
  - 3. Other Acceptable Manufacturers: Subject to requirements, provide equal products from the following manufacturers with approval of Architect:
  - 4. Jaypro Sports, Inc: [www.jaypro.com](http://www.jaypro.com).
  - 5. Porter Athletic Equipment Company: [www.porterathletic.com](http://www.porterathletic.com).
  - 6. Substitutions: See Section 01 6000 - Product Requirements.

### **202 GENERAL REQUIREMENTS**

- A. See drawings for sizes and locations, unless noted otherwise.
- B. Where mounting dimensions or sizes are not indicated, comply with applicable requirements of the following:
  - 1. National Federation of State High School Associations (NFHS) sports rules.
  - 2. United States Olympic association rules for the sport.
- C. General: Provide equipment complying with requirements in NFHS's "NFHS Basketball Rules Book."
- D. Provide mounting plates, brackets, and anchors of sufficient size and strength to securely attach equipment to building structure; comply with requirements of contract documents.
- E. Hardware: Heavy duty steel hardware, as recommended by manufacturer.
- F. Electrical Wiring and Components: Comply with NFPA 70; provide UL-listed equipment.
  - 1. Provide complete UL listed control system to fully meet local code to the satisfaction of Authority Having Jurisdiction.
- G. Structural Steel Fabrications: Welded in accordance with AWS D1.1/D1.1M, using certified welders.
- H. Seismic Performance: Basketball backstops and anchors shall withstand the effects of earthquake motions determined according to ASCE 7.
- I. Equipment shall be provided complete as per manufacturer's standard catalog description and specifications for the numbers indicated in the schedule. Equipment to be permanently installed shall be complete and ready for use.
- J. Materials and finishes shall be non-corrosive in type and quality of finish noted or as a part of the manufacturer's printed description or specifications.

## 203 BASKETBALL EQUIPMENT

- A. Provide manufacturer's recommended connections complying with Section 05 5000 "Metal Fabrications" of size and type required to transfer loads to building structure.
- B. Overhead-Supported Backstops:
  - 1. Provide Model 3107 Single post ceiling suspended, forward fold, front braced backstop by Performance Sports Systems
  - 2. Folding Type: Provide manufacturer's standard assembly for forward-folding, front braced backstop, with hardware and fittings to permit folding.
- C. Backstop Structure:
  - 1. Vertical main mast assembly shall be constructed of 6-5/8" O.D. (.120" wall ASTM A500/A500M Grade B) structural steel tubing with diagonal side sway braces of 2 1/2" X 1 1/2" X 14 gauge ASTM A-513 rectangular steel tube sway braces miter cut and welded in place to a top horizontal 4" x 1 1/2" x 0.18" web ASTM A36/A36M steel channel. Sway braces shall attach to mast above backboard for maximum rigidity. Mast and sway braces shall be welded for ceiling heights up to thirty (30) feet. Mast and sway braces shall be clamped for ceiling heights over thirty (30) feet. Backstop shall be front braced and fold forward. Front brace assembly shall have a fully adjustable folding knee joint allowing for exact playing position and maintenance free operation.
  - 2. Goal shall be mounted directly through backboard into a heavy structural steel weldment clamped to the vertical 6-5/8" O.D. center mast. (This direct attachment feature transfers the load on the goal directly to the mast pipe minimizing stress to glass backboard). Goal and backboard mounting design shall conform to NCAA, NFSHSA and FIBA regulations.
  - 3. The all-welded "Single Post" design shall be suspended from custom adjustable hangers with bronze bushings designed to be offset no less than 4" behind the center line of gravity of mast, providing for proper weighting of the assembly and insuring that unit locks securely and automatically into playing position.
  - 4. Backstop shall be supported from 3-1/2" O.D. pipe anchored to roof framing members by means of heavy formed steel support fittings. Superstructure pipes to be reinforced with special bridging or bracing when truss centers exceed spans of fourteen (14) feet. Each attachment clamp must be capable of supporting static loads of at least 10,000 lbs. with no deflection.
- D. Backstop Finish:
  - 1. Finish: Manufacturer's standard polyester powder-coat finish.
- E. Goal Height Adjuster: Adjustable from 8 to 10 feet with gear-drive mechanism, locking in any position within adjustment range, with visible height scale attached to side of framing.
  - 1. Operation: Manual with detachable crank handle.
  - 2. Model No. 1130 Manual Adjust-A-Goal manufactured by Performance Sports Systems.
- F. Backstop Safety Device: Designed to limit free fall if support cable, chains, pulleys, fittings, winch, or related components fail.
  - 1. Provide Model Number 1100 Safstop safety strap manufactured by Performance Sports Systems, Inc.
- G. Backstop Electric Operator: Provide operating machine of size and capacity recommended by manufacturer for equipment specified, with electric motor and factory-prewired motor controls, starter, gear-reduction unit, and remote controls. Coordinate wiring requirements and electrical characteristics with building electrical system.
  - 1. 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.
  - 2. Limit Switches: Adjustable switches, interlocked with motor controls and set to automatically stop basketball equipment at fully retracted and fully lowered positions.
  - 3. Key Switch Control System: NEMA ICS 6; Type 1 enclosure; momentary-contact, three position switch-operated control. Provide one key per station. Key all gymnasium equipment alike. See FFE Plan for key switch locations to be installed.
  - 4. Provide Model 1194 Electric Backstop Winch by Performance Sports Systems Inc.

- H. Basketball Backboards:
  - 1. Basis of Design Product: Model No. LXP4200 Steel Framed Rectangular Glass Backboard by Performance Sports Systems, Inc.
  - 2. Shape and Size:
    - a. Rectangular, 72 by 42 inches width by height.
  - 3. Backboard Material: With predrilled holes or preset inserts for mounting goals, and as follows:
    - a. Glass: Not less than 1/2-inch- thick, transparent tempered glass complying with impact testing requirements in 16 CFR 1201 Category II or ANSI Z97.1 Class A for safety glazing.
    - b. Rim-Restraining Device: Complying with NCAA and NFHS (Guide) rules and designed to ensure that basket remains attached if glass backboard breaks.
  - 4. Target Area and Border Markings: Permanently etched in white color, marked in pattern and stripe width according to referenced rules.
- I. Goal Mounting Assembly: Compatible with goal, backboard, and support framing.
  - 1. Goal mounting structure shall directly attached to lower horizontal frame member to minimize glass breakage.
    - a. Provide Performance Sports System's Direct Goal Attachment Feature.
- J. Basketball Goals: Complete with flanges, braces, attachment plate, and evenly spaced loops welded around underside of ring.
  - 1. Single-rim basket ring competition goal.
  - 2. Type: Movable, breakaway design with manufacturer's standard breakaway mechanism and rebound characteristics identical to those of fixed, nonmovable ring.
  - 3. Finish: Manufacturer's standard finish.
  - 4. Provide Model No. 2000+ Breakaway Goal as manufactured by Performance Sports Systems Inc.
- K. Basketball Nets: 12-loop-mesh net, between 15 and 18 inches long, sized to fit rim diameter, and as follows:
  - 1. Cord: Made from white nylon.
- L. Backboard Safety Pads: Designed for backboard thickness indicated and extending continuously along bottom and up sides of backboard and over goal mounting and backboard supports as required by referenced rules.
  - 1. Color: As selected by Architect from manufacturer's full range.
  - 2. Provide Model PMCE Bolt-On Cushion Edge manufactured by Performance Sports Systems, Inc.

## **204 VOLLEYBALL EQUIPMENT**

- A. General: Provide equipment complying with requirements in NCAA's "Women's Volleyball Rules and Interpretations, NFHS's "NFHS Volleyball Rules Book, and USAV's "USA Volleyball Rule Book."
- B. Floor Plate/Sleeves: Provide Model 6405 volleyball floor sleeves with Model 6424 cover plates as manufactured by Gared Sports.
  - 1. Cover plate shall be 6-1/4" diameter by 9/16" thick brass alloy with attached hinged cover. Diameter of opening shall be five (5) inches. Hinge and four holes in ring (for screwing into floor) shall be completely concealed under cover when in closed position, allowing for a completely flat surface. When installed in "floating" wood floors, floor plate shall be connected to floor only, allowing it to move with expansion and contraction of floor.
  - 2. Sleeve shall be 4" I.D. steel measuring 12-11/16" long. Sleeves made of aluminum shall not be considered as equal. Cover plate and sleeve are furnished as separate units to allow for any "floating" of playing surface.



- C. Volleyball Standards: Provide Model No. 6100 Scholastic Telescopic standards as manufactured by Gared Sports. Provide Model No. 5104 center standards as required for adjacent court layouts. See Drawings. Provide PSS Referee/Judges stand and applicable safety pads for volleyball systems specified.
  - 1. Standards are high strength, lightweight extruded anodized aluminum. The upper telescoping adjustable tube shall be 2 7/8" lightweight high strength aluminum. Finish shall be gray anodize. Uprights shall be removable type designed for use with below sleeves of above floor tee-bases. Upright shall be provided with adjustable high impact rubber foot to protect finished floors and allow for additional precise net adjustment. The uprights will have spring loaded infinite net height adjustment between 6' to 8'-4" to meet all age group
  - 2. Height settings for both men and women. Standards shall meet NCAA, NFSHSA and USVBA specifications. The net tensioner shall incorporate a heavy duty, self-locking ratchet mechanism with a compression clutch brake release. A high tensile nylon strap will be used with the winch to achieve required net tension.
- D. Protective Pads for Volleyball: Provide Model No. 6010 volleyball standard protective pads by Gared Sports. Provide model No. 6020 for center standards as required.
  - 1. Pads shall be 72" high and fabricated from 1-1/4" thick polyurethane foam covered with 14 oz. vinyl coated nylon on the outside and jersey inner liner. Each pad shall be tailored to easily fold around upright and fastened by Velcro flaps, covering winch and net tensioning hardware. Front side of pad shall be furnished with an opening for attaching and tensioning bottom strap from net. Standard pads to meet NCAA, NFSHSA and USVBA specifications
  - 2. Color: As selected by Architect from manufacturer's standard colors.
- E. Volleyball Net: Model No. 7602 Collegiate volleyball net by Gared Sports, Noblesville, IN.
  - 1. Net shall be 32' L x 39" H with #48 black nylon mesh measuring approximately 4" by 4" square. The net shall have a 2" white double thickness binding on all 4 sides. The end sleeves shall feature a 1' diameter wood dowel. The net shall meet NCAA, NFSHSA and USVBA specifications
- F. Net Antenna: Model No. 6412 antenna by Gared Sports.
  - 1. Antennae is secured firmly to the net by insertion in the full length pockets in then sidelines markers fully eliminating the possibility of the antennae dislodging from the net.
- G. Net-Tensioning System: Designed to adjust and hold tension of net. Fully enclosed, nonslip ratchet-type winch with cable length and fittings for connecting to net lines, positive-release mechanism, and removable handle.

## 205 WALL SAFETY PADS

- A. Basis-of-Design Product: Subject to compliance with requirements, provide Model 4100 Wall Pad by Performance Sports Systems, Inc: [www.perfsports.com](http://www.perfsports.com), or comparable product by one of the following:
  - 1. Jaypro Sports Equipment: [www.jaypro.com](http://www.jaypro.com).
  - 2. Porter Athletic: [www.porterathletics.com](http://www.porterathletics.com).
- B. Safety Pad Surface-Burning Characteristics: ASTM E84 by UL or another testing and inspecting agency acceptable to authorities having jurisdiction:
  - 1. Flame-Spread Index: 25 or less.
  - 2. Smoke-Developed Index: 450 or less.
- C. Pad Coverings: Provide safety pad fabric covering that is fabricated from puncture- and tear resistant, PVC-coated polyester or nylon-reinforced PVC fabric, not less than 14-oz./sq. yd and treated with fungicide for mildew resistance; with surface-burning characteristics indicated, and lined with fire-retardant liner.

- D. Wall Safety Pads: Padded wall wainscot panels designed to be attached in a continuous row; each panel section consisting of fill laminated to backer board with visible surfaces fully covered by seamless fabric covering, free of sag and wrinkles and firmly attached to back of backer board.
  - 1. Backer Board: Not less than 3/8-inch- thick fire-retardant-treated plywood according to AWPA U1, UCFA Fire Retardant Interior.
  - 2. Fire-Resistive Fill: Manufacturer's standard.
  - 3. Size: Each panel section, 24 inches wide by not less than 72 inches long.
  - 4. Number of Modular Panel Sections: As indicated. Include special configurations including column and corner configurations. See Drawings.
  - 5. Installation Method: Manufacturer's standard.
- E. Walls pads to attach to plywood support wall be means of stainless steel or aluminum Z-Clip system selected and installed per manufacturer recommendation.
  - 1. Fabric Covering Color(s): Custom colors and logo as selected by Architect. See Finish Legend; Sheet A9.10.
    - a. Type WP: Color – Navy Blue.
    - b. Type WPA: Color – Orange

## 206 MATERIALS

- A. Aluminum: Alloy and temper recommended by manufacturer for use and finish type indicated.
  - 1. Extruded Bars, Profiles, and Tubes: ASTM B221.
  - 2. Cast Aluminum: ASTM B179.
- B. Steel: Comply with the following:
  - 1. Steel Plates, Shapes, and Bars: ASTM A36/A36M.
  - 2. Steel Tubing: ASTM A500/A500M or ASTM A513/A513M, cold formed.
- C. Support Cable: Manufacturer's standard galvanized-stranded-steel wire rope. Provide fittings complying with wire rope manufacturer's written instructions for size, number, and installation method.
- D. Support Chain and Fittings: For chains used for overhead lifting, provide Grade 80 heat-treated alloy steel chains, complying with ASTM A391/A391M, with commercial-quality, hot-dip galvanized or zinc-plated steel connectors and hangars.
- E. Castings and Hangers: Malleable iron, complying with ASTM A47/A47M; grade required for structural loading.
- F. Softwood Plywood: DOC PS 1, exterior.
- G. Anchors, Fasteners, Fittings, and Hardware: Manufacturer's standard corrosion-resistant or noncorrodible units; concealed; tamperproof, vandal- and theft-resistant design.
- H. Grout: ASTM C1107/C1107M with minimum strength recommended in writing by gymnasium equipment manufacturer.

**PART 3 - EXECUTION**

**3.01 INSTALLATION**

- A. General: Comply with manufacturer's written installation instructions and competition rules indicated for each type of gymnasium equipment. Complete equipment field assembly where required.
- B. Permanently Placed Gymnasium Equipment and Components: Install rigid, level, plumb, square, and true; anchored securely to supporting structure; positioned at locations and elevations indicated; in proper relation to adjacent construction; and aligned with court layout.
  - 1. Floor Insert Location: Coordinate location with application of game lines and markers.
  - 2. Floor Insert Elevation: Coordinate installed heights of floor insert with installation and field finishing of finish flooring and floor-plate type.
- C. Connections: Connect electric operators to building electrical system.
- D. Removable Gymnasium Equipment and Components: Assemble in place to verify that equipment and components are complete and in proper working order. Instruct Owner's designated personnel in properly handling, assembling, adjusting, disassembling, transporting, storing, and maintaining units. Disassemble removable gymnasium equipment after assembled configuration is approved by Owner, and store units in location indicated on Drawings.
- E. Adjust movable components of gymnasium equipment to operate safely, smoothly, easily, and quietly, free from binding, warp, distortion, nonalignment, misplacement, disruption, or malfunction, throughout entire operational range. Lubricate hardware and moving parts.

**3.02 CLEANING**

- A. After completing gymnasium equipment installation, inspect components. Remove spots, dirt, and debris and touch up damaged shop-applied finishes according to manufacturer's written instructions.

**3.03 DEMONSTRATION**

- A. Train Owner's maintenance personnel to adjust, operate, and maintain gymnasium equipment.

**END OF SECTION**

**SECTION 11 6643  
INTERIOR SCOREBOARDS**

**PART 1 GENERAL**

**1.01 SECTION INCLUDES**

Single-sided LED basketball scoreboard.

**1.02 RELATED REQUIREMENTS**

- A. Section 11 6623 - Gymnasium Equipment

**1.03 REFERENCES**

- A. Standard for Electric Signs, UL-48, 13th Edition
- B. Standard for Control Centers for Changing Message Type Signs, UL-1433, 1st Edition
- C. Standard for CAN/CSA C22.2 No. 207-M89 for indoor use
- D. Federal Communications Commission Regulation Part 15
- E. National Electric Code

**1.04 SUBMITTALS**

- A. Product data: Submit manufacturer's product illustrations, data and literature that fully describe the scoreboards and accessories proposed for installation.
- B. Shop drawings: Submit mechanical and electrical product specification drawings.
- C. Maintenance data: Submit manufacturer's installation, operation, and maintenance manuals

**1.05 DELIVERY, STORAGE, AND HANDLING**

- A. Product delivered on site.
- B. Scoreboard and equipment to be housed in a clean, dry environment.

**1.06 PROJECT CONDITIONS**

- A. Environmental Limitations: Do not install scoring equipment until spaces are enclosed and weatherproof, wet work in spaces is complete and dry, and ambient temperature and humidity conditions are maintained at the levels indicated for project when occupied for its intended use.
- B. Field Measurements: Coordinate scoreboard location and height with the customer. Verify dimensions by field measurements.
- C. Verify building structure is capable of supporting the scoreboard's weight in addition to the auxiliary equipment.

**1.07 QUALITY ASSURANCE**

- A. For indoor use only.
- B. Source Limitations: Obtain each type of scoring equipment and electronic displays through one source from a single manufacturer.
- C. ETL listed to UL Standards 48 and 1433.
- D. NEC compliant
- E. FCC compliant
- F. ETL listed to CAN/CSA 22.2

## **WARRANTY/SERVICE PLAN**

- G. There shall be a one-year coverage of electronic components with four years of extended service coverage.
- H. There shall be an exchange program that provides replacement parts for components that fail during the one-year coverage. To minimize downtime, the exchange parts shall be shipped on the same day the order is received or on the following day. The manufacturer shall also enclose an air bill for return of the defective components.
- I. There shall be a local Authorized Service Company.\
- J. A help desk staffed by experienced technicians and coordinators thoroughly familiar with the scoreboard shall be available for technical support. This staff is available at no cost to the customer and is on call during weekends.

## **PART 2 PRODUCTS**

### **201 MANUFACTURER**

- A. Daktronics, Inc: [www.daktronics.com](http://www.daktronics.com).
- B. Nevco Scoreboard Company: [www.nevco.com](http://www.nevco.com).
- C. Sportable Scoreboards: [www.sportablescoreboards.com](http://www.sportablescoreboards.com).

### **202 PRODUCT**

- A. Scoreboard Basis of Design: Daktronics BB-2101-RAPV single-sided basketball scoreboard.
- B. Provide all equipment necessary for wireless communications between scoreboard and control console.
- C. Subject to provisions of this Section, equal products of other approved manufacturer with written approval of Architect.

### **203 SCOREBOARD**

- A. Single-sided basketball scoreboard shall be equipped also to score volleyball and wrestling. It scores home and guest to 199, period to 9, indicates possession and bonus, displays period time to 99:59 and during the last minute of the period, it displays time to 1/10 of a second.
- B. General information
  - 1. Dimensions: 4'-0" (1219 mm) high, 8'-0" (3048 mm) wide, 0'-6" (152 mm) deep.
  - 2. Weight: 150 lb (68 kg).
  - 3. Power requirement: 200 W.
  - 4. Primary and Accent colors to be chosen by Architect: 150 colors to choose from.
- C. Construction
  - 1. All-aluminum construction.
  - 2. Scoreboard face and perimeter: 0.063" thick
  - 3. Scoreboard back: 0.050" thick
  - 4. Digit faceplates: 0.063" thick
  - 5. Cabinet withstands high-velocity impact from indoor sports balls without the need for protective screens.
- D. Digits
  - 1. UniView® (UV) – enhanced digits with diffusant lenses over the LEDs that blend the light for a uniform bar look and 140° viewing angle
  - 2. Seven bar segments per digit
  - 3. LED digit technology: With a diffusant over the LEDs to blend the light achieving a uniform look with 140 degrees wide viewing angle.
  - 4. Clock and score digits: 13" (330 mm) high
  - 5. Period digit: 10" (254 mm) high
  - 6. Clock, colon, period digits and bonus indicators: amber LEDs
  - 7. Score digits and possession indicators: red LEDs

- E. Captions
  - 1. Home and guest captions: 6" (152 mm) high
  - 2. Period caption: 4" (102 mm) high
  - 3. All captions: white vinyl applied directly to scoreboard face
- F. Logo/Sponsor Panels
  - 1. There is space for two 17" (432 mm) high, 33" (838 mm) wide logo/sponsor panels on the top corners of the scoreboards.
- G. Horn
  - 1. Vibrating horn: mounts behind scoreboard face
  - 2. Sounds automatically when period clock counts down to zero
  - 3. Sounds manually as directed by operator
- H. Power Cord
  - 1. Cord is 11' (3353 mm) long
  - 2. Cord plugs into a standard grounded 120 V AC outlet provided by others.

#### **204 SCORING CONSOLE**

- A. Console is an All Sport® 5000 complete with all necessary equipment for wireless communications between control console and scoreboard.
- B. Capable of scoring basketball, volleyball, and wrestling through the use of keyboard inserts.
- C. Capable of controlling other All Sport controlled scoreboards
- D. Console has a maximum power requirement of 5 W
- E. Console recalls clock, score, and period information if power is lost
- F. Console includes:
  - 1. Rugged aluminum enclosure to house electronics
  - 2. Sealed membrane water-resistant keyboard
  - 3. 32-character liquid crystal prompting display to verify entries and recall information currently displayed
  - 4. 6' (1829 mm) power cord to plug into a standard grounded 120 V AC outlet
  - 5. 20' (6096 mm) control cable to connect to the control receptacle junction box
  - 6. Contractor to coordinate connection box with Owner for final installation location.
  - 7. Practice timer mode
    - a. Can sound the horn at the end of each segment
    - b. Has 99 programmable segments Displays the segment number and segment length
    - c. Has a programmable interval time
- G. Optional Equipment included.
  - 1. 2.4 GHz spread spectrum radio for scoreboard control

### **PART 3 EXECUTION**

#### **301 EXAMINATION**

- A. Verify that surfaces scoreboard will be mounted on are ready to receive work. Verify that placement of conduit and junction boxes are as specified and indicated in plans and shop drawings. Verify operation of wireless controller.

#### **302 INSTALLATION**

- A. Power conduit, cables and outlet boxes to be provided and installed by the electrical contractor. Signal raceways conduit and boxes to be provided by the electrical contractor. Electrical contractor is responsible for pulling, signal wire and terminators between each scoreboard and control location. Scoreboard vendor to terminate signal wire of controller and conduit scoreboard.
- B. Mount scoreboards and interior displays to wall in location detailed and in accordance with manufacturer's instructions. Unit to be plumb and level.

**3.03 INSTALLATION-CONTROL CENTER**

- A. Provide boxes, cover plates and jacks as required to meet control specifications requirements. Control cables to control panels shall be concealed.
- B. Test the operation of the scoreboard, controller and all wireless control elements, leave control unit in carrying case and other loose items with owner's designated representative.
- C. Conduct operator training on the scoreboard/controller operation.

**END OF SECTION**

**SECTION 11 6653**  
**GYMNASIUM CURTAINS**

**PART 1 - GENERAL**

**1.01 SUMMARY**

- A. Section Includes:
  - 1. Fold-up divider systems.

**1.02 RELATED REQUIREMENTS**

- A. Section 13 3419 - Metal Building Systems: Structural supports.

**1.03 REFERENCE STANDARDS**

- A. NEMA ICS 6 - Industrial Control and Systems: Enclosures
- B. ; 1993 (R2011).
- C. NFPA 70 - National Electrical Code; Most Recent Edition Adopted by Authority Having Jurisdiction, Including All Applicable Amendments and Supplements.
- D. NFPA 701 - Standard Methods of Fire Tests for Flame Propagation of Textiles and Films; 2015.

**1.04 ADMINISTRATIVE REQUIREMENTS**

- A. Coordination: Coordinate the structural requirements for installation of gymnasium dividers to assure adequate and proper support. Coordinate with metal building systems manufacturer.
- B. Large Components: Ensure that large components can be moved into final position without damage to other construction.
- C. Electrically Operated Equipment: Coordinate location and electrical characteristics of service connection.

**1.05 ACTION SUBMITTALS**

- A. Product Data: For each type of product.
- B. Shop Drawings: For gymnasium dividers.
- C. Structural analysis data signed and sealed by the qualified professional engineer responsible for their preparation including loads, point reactions, and locations for attachment of gymnasium dividers to structure.
- D. Samples: For each exposed product and for each item and color specified.

**1.06 CLOSEOUT SUBMITTALS**

- A. Operation and maintenance data.

**1.07 QUALITY ASSURANCE**

- A. Installer Qualifications: An entity that employs installers and supervisors who are trained and approved by manufacturer.

**1.08 WARRANTY**

- A. Motors shall have a five (5) year manufacturer's warranty against defects in material and workmanship.
- B. Vinyl shall have one year warranty against defects in material and workmanship.



**PART 2 - PRODUCTS**

**201 CENTER-DRIVE DIVIDER CURTAIN**

- A. Basis-of-Design Product: Subject to compliance with requirements, provide Model No. 4050 Center Drive Gymnasium Divider Curtain manufactured by Performance Sports Systems, Inc., or a comparable product by one of the following:
  - 1. Jaypro Sports, Inc: [www.jaypro.com](http://www.jaypro.com).
  - 2. Porter Athletic Equipment Company: [www.porterathletic.com](http://www.porterathletic.com).
  - 3. Substitutions: See Section 01 6000 - Product Requirements.

**202 CENTER-DRIVE DIVIDER CURTAINS – PANEL DESIGN CRITERIA**

- A. Upper Curtain, Mesh: Woven mesh of polyester yarn coated with vinyl, weighing not less than 9 oz./sq. yd. A pocket shall be formed in the top edge to accommodate a 1-7/8 inch o.d. top support pipe.
  - 1. Mesh Color: See Finish Legend, Sheet A9.10. If the Basis of design is not used, then GC must provide color selection for architect selection.
- B. Lower Curtain, Solid: Woven polyester fabric coated with vinyl, 18 oz./sq. yd., 8-foot height above floor. All seams to be welded with full 1" contact welds. Outer edge hems shall be triple turned with double welds. Pocket shall be formed along bottom edge of curtain to accommodate a 1-5/8" diameter batten pipe for curtain support.
  - 1. Fabric Color(s): One color, as selected by Architect from full range of industry colors and color densities. See Finish Legend, Sheet A9.10 If the Basis of design is not used, then GC must provide color selection for architect selection.
- C. Center-Drive Divider Curtain Type RDC: as indicated on Finish Legend & FFE Plan.
- D. Hems: Folded and electronically welded.
- E. Seams: Electronically welded.
- F. Overall Curtain Height: As indicated on the drawings.
- G. Bottom of Curtain: Approximately 2 inches above finished floor.
- H. Divider Curtain Flame-Resistance Ratings: Passes NFPA 701, Test 2.
- I. Superstructure that attaches to the building framing shall be painted to match building framing. Provide Architect Manufacturer color selection.

#### **204 SPORTS NETTING CURTAIN SYSTEMS**

- A. Basis-of-Design Product: Subject to compliance with requirements, provide Model No. 4020 Fold-up Gymnasium Curtain manufactured by Performance Sports Systems, Inc., or a comparable product by one of the following:
  - 1. Jaypro Sports, Inc: [www.jaypro.com](http://www.jaypro.com).
  - 2. Porter Athletic Equipment Company: [www.porterathletic.com](http://www.porterathletic.com).
  - 3. Substitutions: See Section 01 6000 - Product Requirements.

#### **205 SPORTS NETTING CURTAIN – PANEL DESIGN CRITERIA**

- A. Upper Curtain, Netting: 3/4" athletic netting #420 with vinyl lift straps and D-Rings. Includes 4021-40-25-PARA Curtain Structure.
  - 1. Netting Color: See Finish Legend, Sheet A9.10
- B. Lower Curtain, Solid: Woven polyester fabric coated with vinyl, 19 oz./sq. yd., 2-foot height above floor. All seams to be welded with full 1" contact welds. Outer edge hems shall be triple turned with double welds. Pocket shall be formed along bottom edge of curtain to accommodate a 1-5/8" diameter batten pipe for curtain support.
  - 1. Fabric Color(s): One color, as selected by Architect from full range of industry colors and color densities. See Finish Legend, Sheet A9.10.
    - a. Fold Up Sports Netting Curtain Type RSNC: indicated on Finish Legend & FFE Plan.
- C. Hems: Folded and electronically welded.
- D. Seams: Electronically welded.
- E. Overall Curtain Height: As indicated on the drawings.
- F. Bottom of Curtain: Approximately 2 inches above finished floor.
- G. Sports Netting Curtain Flame-Resistance Ratings: Passes NFPA 701, Test 2.
- H. Superstructure that attaches to the building framing shall be painted to match building framing. Provide Architect Manufacturer color selection.

#### **206 ELECTRIC OPERATORS**

- A. Curtain hoist shall be equipped with minimum heavy-duty 3/4 horsepower, 115 volt, 56 C-faced motor frame with double reduction 200:1 gear box, 60 hertz single phase instant reversing motor with thermal overload protection. Design shall lock and hold curtain in any position in event of power failure. Gear box shall be factory sealed and maintenance free. Hoist shall be pre-wired and come complete with twist-lock plug and receptacle. Motor must be provided by the curtain manufacturer being used.
- B. Motors shall utilize a flush mounted single keyed switch to raise and lower the divider curtain (eliminating the need for two keys). Key switch shall be located on the interior West wall of the building and will be located within the padding – see drawings for details for how to cut padding around switch. – See FFE Plans.
  - 1. Key switch must be positioned in a way so that curtain is in full view of authorized operator at all times
- C. The Contractor is responsible for coordinating the switch location with the manufacturer to match what is shown on the design documents prior to the purchase of the curtains.
- D. The Motor will be positioned on the East side of the Divider Curtain. – See FFE Plans.
- E. 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.
  - 1. Provide complete UL listed control system to fully meet local code to the satisfaction of Authority Having Jurisdiction.
- F. Limit Switches: Adjustable switches, interlocked with motor controls and set to automatically stop dividers at fully extended and fully retracted positions.
- G. Key Switch Control System: NEMA ICS 6; Type 1 enclosure; momentary-contact, three position switch-operated control. Provide one key per station. Key all gymnasium equipment alike.
- H. Mower and Turf Machine Parking and Batting

**207 CURTAIN ACCESSORIES**

- A. Safety Lock: Locks drive system when speed exceeds manufacturer's recommended speed.

**PART 3 - EXECUTION**

**301 INSTALLATION**

- A. General: Comply with manufacturer's written installation instructions.
- B. Gymnasium Dividers and Components: Install level, plumb, square, and true; anchored securely to supporting structure; positioned at locations and elevations indicated; in proper relation to adjacent construction; and aligned with court layout.
- C. Connections: Connect automatic operators to building electrical system.
- D. Adjust movable components of gymnasium dividers to operate safely, smoothly, easily, and quietly, free from binding, warp, distortion, uneven tension, nonalignment, misplacement, disruption, or malfunction, throughout entire operational range. Lubricate hardware and moving parts.
- E. Limit Switch Adjustment: Set and adjust upper and lower limit controls.

**302 CLEANING**

- A. After completing gymnasium divider installation, inspect components. Remove spots, dirt, and debris and touch up damaged shop-applied finishes according to manufacturer's written instructions.

**303 DEMONSTRATION**

- A. Train Owner's maintenance personnel to adjust, operate, and maintain gymnasium dividers.

**END OF SECTION**

**SECTION 12 6613**  
**TELESCOPING BLEACHERS**

**PART 1 GENERAL**

**1.01 SECTION INCLUDES**

- A. Telescoping bleachers.

**1.02 RELATED REQUIREMENTS**

- A. Section 26 2717 - Equipment Wiring: Connection of electric motors and controls.

**1.03 REFERENCE STANDARDS**

- A. ADA Standards - Americans with Disabilities Act (ADA) Standards for Accessible Design; 2010.
- B. 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; 2017.
- C. ASTM A500/A500M - Standard Specification for Cold-Formed Welded and Seamless Carbon Steel Structural Tubing in Rounds and Shapes; 2013.
- D. ASTM D635 - Standard Test Method for Rate of Burning and/or Extent and Time of Burning of Plastics in a Horizontal Position; 2014.
- E. ASTM D1929 - Standard Test Method for Determining Ignition Temperature of Plastics; 2016.
- F. ASTM D2843 - Standard Test Method for Density of Smoke from the Burning or Decomposition of Plastics; 2016.
- G. ASTM E84 - Standard Test Method for Surface Burning Characteristics of Building Materials; 2017.
- H. ICC (IBC) - International Building Code; 2015.
- I. NFPA 102 - Standard for Grandstands, Folding and Telescopic Seating, Tents, and Membrane Structures; 2016.
- J. PS 1 - Structural Plywood; 2009.
- K. AWS D1.1/D1.1M - Structural Welding Code - Steel; 2015 (with March 2016 Errata).
- L. AWS D1.3/D1.3M - Structural Welding Code - Sheet Steel; 2008.

**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 handling and requirements.
  - 3. Installation methods.
- C. Shop Drawings: Complete layout with dimensions, seat heights, row spacing and rise, aisle widths and locations, points of connection to substrate, assembly dimensions, and material types and finishes.
  - 1. Provide drawings customized to this project.
  - 2. Include Professional Engineer certification.
  - 3. Wiring Diagrams: Show locations of motors, electrical wiring, and rough-in connections.
- D. Selection Samples: For each material for which color selection is required, submit samples, 2 by 2 inches in size, illustrating colors and finishes available.
- E. Verification Samples: For each custom colored finish, submit samples of actual finish or product, for verification of color selection.
- F. Operation and Maintenance Data: Manufacturer's operation and maintenance instructions, including annual inspection and maintenance and bi-annual inspection by a Professional Engineer or manufacturer factory service personnel.

- G. Warranty: Submit manufacturer warranty and ensure that forms have been completed in Owner's name and registered with manufacturer.
- 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. Spare Parts: Two seats, seat to match selected color, size and style.
- I.

#### **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. Installer Qualifications: Approved by manufacturer.
- C. Welder Qualifications: Certified by AWS for the process employed.

#### **1.06 DELIVERY, STORAGE, AND HANDLING**

- A. Store, in original packaging, under cover and elevated above grade.

#### **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. Replace parts that fail under normal use at no extra charge to Owner.

### **PART 2 PRODUCTS**

#### **201 MANUFACTURERS**

- A. Telescoping Bleachers: Basis of design - Interkal LLC; Wall Attached Closed Deck Telescopic Bleachers with Excel Seat Module: [www.interkal.com](http://www.interkal.com).
  - 1. TM A
  - 2. Irwin Telescopic Seating Company; Model 4500 with Infinity Seating Module: [www.irwintelescopicseating.com](http://www.irwintelescopicseating.com).
  - 3. Hussey Seating Company; Maxam with Courtside 10 Seating Module: [www.husseyseating.com](http://www.husseyseating.com).
  - 4. Substitutions: See Section 01 6000 - Product Requirements.

#### **202 TELESCOPING BLEACHERS**

- A. Telescoping Bleachers: Factory assembled tiered benches that retract horizontally into depth approximately the same as a single row depth, with fixed seats mounted on leading edge of platforms.
  - 1. Comply with applicable provisions of ICC (IBC) and ADA Standards.
  - 2. Provide a design certified by a licensed Professional Engineer licensed in the State in which the Project is located.
  - 3. Design to comply with applicable requirements of NFPA 102 and requirements of code authorities having jurisdiction; where conflicts between requirements occur, comply with whichever is more stringent.
  - 4. Steel Components: Cold-formed from appropriate width strip stock conforming to ASTM A1011/A1011M - Grade C 30KSI, ASTM A653- Grade 33 and 50, ASTM A500/A500M - Grade B 46 KSI as applicable.
  - 5. Design with solid fascia (riser) or seat fronts that conceal interior mechanisms when fully retracted, fitting tightly enough to prevent climbing up face; at front row provide key locked, hinged fascia (skirt) to cover gap between seat riser/fascia and floor.
  - 6. Standard Extension: Top row fixed to floor, adjacent to wall under overhang, forward extension (away from wall); attachment to wall acceptable.
  - 7. Wheelchair Spaces: Recoverable Notch-outs. Provide manufacturers' standard recoverable handicap notch-outs (3'-0 1/4" wide) located as shown on architectural drawings. Notch-outs to be 1 row deep.
  - 8. Operation: Motor operated.

- B. Design Loads: Design to withstand the following loading conditions:
  - 1. Live Load on Structural Supports: 100 psf, minimum, of gross horizontal projection.
  - 2. Live Load on Seats and Walking Surfaces: 120 pounds per linear foot.
  - 3. Lateral Sway Stress on Structural Supports: 24 pounds per linear foot of seat plank.
  - 4. Perpendicular Sway Stress on Structural Supports: 10 pounds per linear foot of seat plank.
- C. Dimensions:
  - 1. See Drawings for overall dimensions and layout.
  - 2. Rows: 3.
  - 3. Rise Per Row: 10.25 inches.
  - 4. Row Depth: 26 inches.
  - 5. Seat Height Above Tread: 6 inches.
  - 6. Seat Size: 18 inch width, 10 inch depth.
- D. Structural Supports: Steel or aluminum; manufacturer's standard wheeled carriages supporting each tier separately, with moving parts permanently lubricated and metal parts cushioned to prevent metal-to-metal contact during operation.
  - 1. Design so that each row carriage so that it will individually support the design loads and is self-supporting when fully assembled without dependence on platform panels or boards, seats, or fascia.
  - 2. Welding: In accordance with AWS D1.1/D1.1M and AWS D1.3/D1.3M.
  - 3. Bolting: Use lock-washers or locknuts.
  - 4. Wheels: Minimum 5 inch diameter by 1-1/8 inch wide, with non-marring rubber tires; ball, roller, or oil-impregnated metal bearings; minimum of 2 wheels at each floor support.
  - 5. Finish: Manufacturer's standard enamel or powder coating.
  - 6. Row Locking: Automatically mechanically lock each carriage to adjacent carriages when fully extended.
  - 7. Unlocking: Automatically unlock all rows before engaging retraction mechanism.
- E. Motor Operation: Manufacturer's standard drive mechanism, using motor adequately sized for the purpose.
  - 1. Provide UL listed electrical components and wiring.
    - a. Entire power system shall be UL Recognized.
  - 2. Controls: Start, Stop, Forward, and Reverse in a single control unit.
  - 3. Control Station: Removable plug-in low-voltage pendant station, with first-row plug-in location for each motor.
  - 4. Limit Switches: Automatically stop operation when unit has reached fully open or fully closed position.
  - 5. Provide all wiring internal to bleacher units, to junction box located where indicated; ensure that wiring is not energized except during operation.
  - 6. Electrical Characteristics: 208/230V, 5 wire, 3-phase, 60 Hz.
  - 7. Provide access to motor from front side of bleachers; a hinged front skirt or hinged section at least 30 inches wide is acceptable.
  - 8. Manufacturer: Friction power, integral automatic electro-mechanical propulsion system manufactured by Intercal, LLC. or equivalent product by manufacturer of seating system.

### **203 SEAT AND PLATFORM COMPONENTS**

- A. Seats and Fascia/Risers: Kiln dried solid lumber of southern yellow pine, grade B or Better; 3/4 inch nominal in thickness; up to 4 finger joints in 20 feet are permitted, no other repairs permitted.
  - 1. Finish: Two coats high gloss clear urethane finish on all sides and high humidity sealer coat.
  - 2. Shape: Seat sloped slightly to back; front edge and riser top edge radius; other corners eased.
  - 3. Supports: Maximum spacing of 36 inches; countersunk through bolts.

- B. Seat/Fascia Assembly: Continuous, molded UV-stabilized high-density polyethylene plastic, seat minimum 1 inch thick, textured finish, homogeneous color throughout, color as selected from manufacturer's standard selection; approximately 18 inch long sections independently removable with tongue-and-groove or rabbeted interlock at end joints.
  - 1. Color: Type BLCH; See Finish Legend, Sheet A9.10.
  - 2. Shape: Ergonomically contoured, with internal ribs spaced for natural flexibility; rear edge cantilevered to provide toe room of not less than 3 inches; no openings to trap debris.
  - 3. Fire Retardance: Self-ignition temperature of 650 degrees F or greater when tested in accordance with ASTM D1929; smoke developed index of 450 or less, when tested in accordance with ASTM E84, or 75 or less when tested in thickness intended for use in accordance with ASTM D2843; and burning extent of 1 inch or less when tested in thickness intended for use in accordance with ASTM D635.
  - 4. Provide end caps of same material and finish on each exposed end.
  - 5. Supports: Internal steel reinforcement of each seat segment bolted to platform nose member; minimum two bolts per segment.
  - 6. Seat and Row Numbers: Provide recessed pockets for number plates by others.
- C. Platform, Tread, and Step Structure: Plywood continuously supported on front and rear with side joints tongue-and-grooved.
  - 1. Plywood: PS 1, 5-ply southern pine or polyethylene-overlaid douglas fir or southern pine, Grade A-C.
  - 2. Plywood Thickness: 5/8 inch, minimum.
  - 3. Front (Nose), Rear, and Intermediate Supports: Steel channel or tube, hot-dipped galvanized.
  - 4. Provide end caps of same material and finish on each exposed end.
  - 5. At aisles provide permanently attached intermediate steps of same construction and finish.
  - 6. At bottom of aisles provide step in front of first riser, hinged to first platform to fold for storage.

#### **204 HANDRAILS AND RAILINGS**

- A. Provide the following railings:
  - 1. Aisle Handrails: Single post Self-storing/folding mounted in center of aisle at every other row beginning at row 2.
  - 2. End of Row Guardrails: Self-storing, at open ends of sections beginning at row 2.
  - 3. Height: 42 inches above adjacent platform or tread.
- B. Design handrails and railings to withstand the following loads:
  - 1. Concentrated Load on Handrails: 200 pounds in any direction.
  - 2. Concentrated Load on Guardrails: 200 pounds in any direction along top rail.
  - 3. Live Load on Handrails: 50 pounds per linear foot, applied in any direction.
  - 4. Live Load on Guardrails:
    - a. Horizontal: 50 pounds per linear foot, applied at the guardrail height.
    - b. Vertical: 100 pounds per linear foot, applied vertically to top of guardrail.
- C. Railing Construction: Round steel or aluminum pipe or tube, with formed elbows at corners and caps at ends of straight runs.
  - 1. Aluminum: 1.66 inches minimum outside diameter; natural anodized finish.
  - 2. Steel: 1-1/2 inch minimum outside diameter, with 11 gage, 0.12 inch minimum wall thickness; textured powder coat epoxy finish.

#### **205 ACCESSORIES**

- A. Fillers and Closures:
  - 1. Ends of Retracted Units: Plywood panels, finished to match platforms.
  - 2. Top Row: Provide seat level rear filler panels to close openings between top row seat and wall; finish to match platforms.
  - 3. Sides of Extended Units: Vinyl curtains.

4. Vinyl Curtains: 18 ounce vinyl with grommets; color as selected from manufacturer's standard palette.
- B. Fasteners: Provide hardware and fasteners in accordance with manufacturer's recommendations.
- C. Anchorage: As indicated on drawings; provide hardware in accordance with manufacturer's recommendations.
- D. Provide manufacturers' standard intermediate step as necessary per applicable code.

## **206 FABRICATION**

- A. Continuous Wheel Channel
  1. Wheel channels shall consist of a one piece formed steel channel welded to the base of a vertical column. Wheel channels accommodate 8 to 12 wheels per row for maximum weight distribution and operating ease. The number of wheels increases as the number of rows increase.
- B. Wheels
  1. 3-1/2" diameter with 1-1/8" non-marring soft rubber face with rounded edges designed to protect wood or synthetic floor. Provide 1/2" diameter axle for all wheels.
- C. Columns
  1. Electrically welded closed rectangular steel tube, 2" x 3" minimum size, 14-gauge steel fitted with a rear welded gusset at the wheel channel.
- D. Row Interlocks
  1. Join each row structure front to rear by means of two (2) interacting steel connections, plus automatic gravity row locks where Engineering determines they are required.
  2. Lower track guides shall be an external superslide rod to guarantee positive engagement of vertical supports without binding and assures smooth operation over uneven floor conditions.
  3. Upper track guides shall completely interlock adjacent understructure support. A welded stop to ensure correct extension of bleacher unit on deck support. Use of bolt and nut stops is not acceptable, due to risk of loosening.
- E. Diagonal Braces
  1. Structural formed steel truss fitted to rows 4 and beyond. Bracing shall be attached to the rear riser at optimum locations to insure structural integrity. Bracing shall be designed and shaped to support a minimum load of 1000 lbs. of both compression and tension forces created when the bleacher is loaded.
- F. Deck Supports
  1. Shall be of structural steel, 11 gauge spaced not greater than 60" on center for maximum deck stiffness. Every deck support not attached to a vertical post shall have an integral nylon roller to avoid steel to steel friction points for more efficient operation.
- G. Decking
  1. All deck boards shall consist of 19/32" nominal C-C plugged Group 1 plywood with exterior glue and solid cross bands. Tongue and Groove deck boards are unacceptable. An extruded aluminum "H" connector shall be placed between plywood panels. Exposed wear surfaces shall be finished with a layer of high Density polyethylene plastic .025 - .030 thick, Light Gray in color, complimentary to the seat option. Deck finishes, such as clear coat, requiring more than simple touch up to restore it to a new appearance after wear occurs are unacceptable.
- H. Welds
  1. All welds shall be made at the factory by welders that are AWS certified on the equipment and process used.
- I. Nose Beam
  1. Shall be one-piece grade 40 galvanized steel. A minimum design thickness of .094" is utilized for the necessary structural integrity to accommodate section lengths up to 26'.



- J. Rear Riser
  - 1. Shall be one piece grade 40 galvanized steel, with a continuous access joint to fully encapsulate footrest panel for ease of cleaning and additional structural support. A minimum design thickness of .070" is utilized for the necessary structural integrity to accommodate section lengths up to 26'.
- K. Splice Plates
  - 1. Each section joint shall be tied together with two structural steel members per row, employing a minimum of four steel to steel through bolt connections at the nose beam and a minimum of eight steel to steel through bolt connections at the lower steel rear riser. Splice plate material to match the nose beam and rear riser. Splice plates employing steel to plywood deck board attachments will not be acceptable. In order to minimize deflections and keep rows in alignment during operation, splice connections shall transfer both axial loads (tension/compression) and bending.
- L. Fasteners
  - 1. All structural connections shall be made with S.A.E. grade 5 or better stress rated bolts. The use of self-tapping bolts is not acceptable.
- M. Finish
  - 1. Steel Understructure abraded, cleaned and finished with russet brown water base acrylic paint. Steel risers and nose beams finished with corrosion resistant silver gray matte finish with galvanized alloy plating.

### **PART 3 EXECUTION**

#### **3.01 EXAMINATION**

- A. Verify that field measurements are consistent with those on the shop drawings.
- B. Verify that electrical rough-ins have been installed and are accessible.
- C. Do not begin installation until substrates have been properly prepared and area has been cleared of obstructions.
- 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.
- B. Do not field cut or alter seats, fascia, or structural members without approval.
- C. Provide manufacturer's field representative to inspect completed installation.

#### **3.04 ADJUSTING**

- A. Lubricate, test, and adjust each moving assembly to ensure proper operation in compliance with manufacturer's recommendations.

#### **3.05 CLEANING**

- A. Clean exposed and semi-exposed assembly surfaces.
- B. Touch up finishes on damaged or soiled areas.

#### **3.06 CLOSEOUT ACTIVITIES**

- A. Demonstration and Training: Provide manufacturer's field representative to demonstrate to and train Owner's operating personnel in proper operation of equipment.
  - 1. Location: On site using installed equipment.

2. Time: As agreed between Owner and Contractor.

**307 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 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 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

## 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 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 Bibs: 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

## 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

**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.

END OF SECTION

**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

**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

## 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

**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



**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 fer 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 Louisiana 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 – 2009 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 – 2012 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 283200

SECTION 311000 – SITE CLEARING

PART 1 - GENERAL

1.1 SCOPE:

- A. The work under this section shall consist of partial clearing, grubbing, demolition and removal of all vegetation, debris, existing pavement, curb, sidewalk, drainage structures, other site related items from within the project area necessary to perform all items of work as shown on plans and set forth in the Specifications.
- B. All labor, materials, equipment, tools and services required to perform work under this section shall be furnished and performed in compliance with the Specifications.

1.2 PAYMENT:

- A. Payment for all associated items of work shall be incidental to the lump sum cost of the project.

PART 2 - PRODUCTS:

2.1 MATERIALS:

A. Clearing:

The area within the construction limits shall be cleared of all surface objects and all trees, stumps, roots, and other objectionable obstructions resting on or protruding through the surface of the original ground not designated to be retained.

B. Grubbing:

Areas within the construction limits shall be grubbed of all objectionable matter on or projecting through the ground surface. All fill areas shall be grubbed to a depth at least one foot.

C. Disposal:

1. BURNING of perishable material WILL NOT be acceptable. All material shall be removed from the site.
2. Only such property may be salvaged by the CONTRACTOR as is directed by the OWNER's Representative and in the event of any doubt respecting the ownership of any particular property, the CONTRACTOR shall request from the OWNER a written statement respecting its ownership.
3. All salvage becomes the property of the CONTRACTOR, but storage of such materials and equipment on the project area will not be permitted except for the duration of the Contract and such storage shall at no time interfere with activities of the OWNER or of other CONTRACTORS.

4. Removal and proper disposal of all sidewalks, utilities, culverts, pavement surfaces, structures, and associated appurtenances that require removing to complete construction as shown on the plans and set forth in the Specifications shall be included as payment under this section. This shall include any items not removed in previous separate demolition (building) project OR items not specifically identified on the plans.
5. Material and debris removed from the project shall be disposed of in a manner acceptable to the OWNER's Representative. Indiscriminate dumping of these materials on abutting property with or without the OWNERS consent will not be considered satisfactory disposal. The CONTRACTOR must comply with all local, State and Federal laws and ordinances pertaining to the type of material being disposed of.
6. CONTRACTOR will be responsible for coordinating with the respective utility companies for capping and/or necessary removal of all abandoned utilities.
7. As per UA General Conditions, CONTRACTOR shall be responsible for reporting tonnage of debris removed from site at the end of the project. See General Conditions for additional information.

END OF SECTION

**SECTION 31 3116**  
**TERMITE CONTROL**

**PART 1 GENERAL**

**1.01 SECTION INCLUDES**

- A. Chemical soil treatment.

**1.02 RELATED REQUIREMENTS**

- A. Section 03 3000 - Cast-in-Place Concrete: Vapor barrier placement under concrete slab-on-grade.
- B. Section 06 0573 - Wood Treatment: Field-applied termiticide for wood.

**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. Product Data: Submit manufacturers' data on manufactured products showing compliance with specified requirements.
- D. Test Reports: Indicate regulatory agency approval reports when required.
- E. Test Reports: Submit termite-resistant sheet manufacturer's summary of independent laboratory and field testing for effectiveness in subterranean termite exclusion.
- F. Manufacturer's Certificate: Certify that toxicants meet or exceed specified requirements.
- G. Certificate of compliance from authority having jurisdiction indicating approval of toxicants.
- H. Manufacturer's Instructions: Indicate caution requirement.
- I. Record and document moisture content of soil before application.
- J. Maintenance Data: Indicate re-treatment schedule .
- K. 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 five 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 CHEMICAL SOIL TREATMENT**

- A. Toxicant Chemical: EPA (Title 7, United States Code, 136 through 136y) approved; synthetically color dyed to permit visual identification of treated soil.
- B. Diluent: Recommended by toxicant manufacturer.

- C. Manufacturers:
  - 1. Bayer Environmental Science Corp; Premise Pro: [www.backedbybayer.com/pest-management](http://www.backedbybayer.com/pest-management).
  - 2. FMC Professional Solutions; Transport: [www.fmcprosolutions.com](http://www.fmcprosolutions.com).
  - 3. Syngenta Professional Products; Altriset: [www.syngentaprofessionalproducts.com](http://www.syngentaprofessionalproducts.com).
  - 4. Substitutions: See Section 01 6000 - Product Requirements.
- D. Mixes: 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 - CHEMICAL TREATMENT**

- 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**