

PROJECT MANUAL

BID SET

**BASEBALL/SOFTBALL FIELD RENOVATIONS AT ORANGE BEACH SPORTSPLEX
ORANGE BEACH, ALABAMA**



DAVIS

120 Twenty-Third Street South
Birmingham, AL 35233
TEL: 205/322-7482
FAX: 205/322-7485
Architect's Project # 3916
Resolution No. 19-173



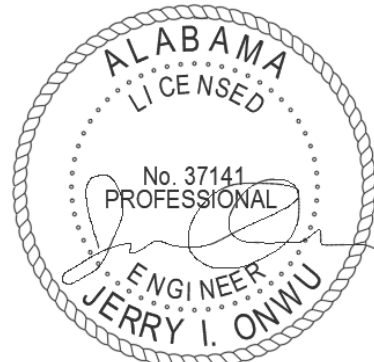
May 4, 2020

MECHANICAL & PLUMBING ENGINEER



05/04/2020

ELECTRICAL ENGINEER



05/04/2020

FIRE PROTECTION ENGINEER



05/04/2020

STRUCTURAL ENGINEER



CIVIL ENGINEER

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ADVERTISEMENT FOR BIDS

Sealed proposals will be received by the City of Orange Beach at the office of the City Clerk located at Orange Beach City Hall 4099 Orange Beach Blvd Orange Beach, AL 36561 until 2:00 PM, CST June 11, 2020 for

PROJECT: ORANGE BEACH SPORTSPLEX RENOVATION TO BASEBALL AND SOFTBALL COMPLEX
CITY OF ORANGE BEACH

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

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

Bid Drawings and specifications will be available and can be examined at the office of the Architect on and after May 22, 2020.

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

Bid Documents can also be reviewed at McCollough Architecture in Orange Beach and online at The City of Orange Beach website under the Department of Purchasing(Bids), or on any of the following plan rooms: F.W. Dodge Plan Rooms, Construction Market Data Plan Room and obtained from Alabama Graphic Digital Plan Room. Cost of printing plans and specifications are non-refundable.

General Contractor Bidders may obtain a digital copy of the documents from Davis Architects, Jeff Menasco - jmenasco@dadot.com. Also, hard copy sets of drawings and specifications will be available to qualified General Contractors and others for the cost of printing and handling directly from the document's printer: Alabama Graphics (2801 Fifth Avenue South, Birmingham, Alabama 35233; phone 205/252-8505). Addenda and other bidding information will be issued only to holders of drawings and specifications distributed by the Architect. Release of the Bid Documents to the bidder does not imply acceptance of the bidder's qualifications by the Owner or Architect.

Bids must be submitted on proposal forms furnished by the Architect or copies thereof. All bidders bidding in amounts exceeding that established by the State Licensing Board for General Contractors must be licensed under the provisions of Title 34, Chapter 8, Code of Alabama, 1975, and must show evidence of license before bidding or bid will not be received or considered by the Architect; the bidder shall show such evidence by clearly displaying his or her current license number on the outside of the sealed envelope in which the proposal is delivered.

The Owner reserves the right to reject any or all proposals and to waive technical errors if, in the Owner's judgment, the best interests of the Owner will thereby be promoted.

A Pre-Bid Conference will be held at the City of Orange Beach in Council Chambers located at Orange Beach City Hall, 4099 Orange Beach Blvd Orange Beach, AL 36561 at 11:00 A.M. Thursday, May 28, 2020. **Attendance by General Contractor Bidders at Pre-Bid Conference is mandatory.**

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

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

ALL BIDS MUST BE RETURNED AS FOLLOWS:

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

Sealed bids must be mailed to the following address:

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

Or hand delivered to:

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



SECTION 00 2113 INSTRUCTIONS TO BIDDERS (As Modified)

1.0 INTRODUCTION

All bidders will be bound to the bid documents and requirements set forth in these general instructions and such instructions shall form an integral part of each construction contract awarded by the Orange Beach City Council. All bids must be submitted on documents provided in Project Manual and in accord with Advertisement for Bids and Division 00 of the Project Manual.

2.0 BID DOCUMENTS

A complete set of Bid Documents will be provided in accord with Advertisement for Bids.

The date, time, and place of a bid opening will be given in the Advertisement for Bids. Bid Documents can also be reviewed at Davis Architects, Birmingham Alabama, McCollough Architecture in Orange Beach and online at F.W. Dodge Plan Rooms, Construction Market Data Plan Room and obtained from Alabama Graphic Digital Plan Room. Cost of printing plans and specifications are non-refundable. Documents may also be examined at:

Orange Beach City Hall
4099 Orange Beach Boulevard
Orange Beach, AL 36561

Or downloaded from the City's website:
www.orangebeachal.gov, see "Bids"

3.0 EXAMINATION OF DOCUMENTS AND PROJECT SITE

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

4.0 INTERPRETATIONS AND ADDENDA

- 4.1 Should a bidder find discrepancies, ambiguities, or omissions in the Specifications, or should he/she be in doubt as to their meaning, he/she shall immediately notify the Architect.
- 4.2 The Architect will issue Addenda to clarify discrepancies, ambiguities, or omissions in the Specifications.
- 4.3 Addenda will be issued to all General Contract Bidders, and posted on the City's website at: www.orangebeachal.gov



- 4.4 Addenda shall become part of the bid and all bidders must acknowledge receipt of Addenda on their Bid Form or their bid will be rejected. Bidders shall be bound by all Addenda.
- 4.5 All instructions shall be in written form. Oral instructions shall be considered invalid.

5.0 PRE-BID CONFERENCE

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

6.0 PREPARATION OF BID

- 6.1 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.
- 6.2 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.
- 6.3 Prices and all information must be legible. Illegible or vague bids may be rejected.
- 6.4 All signatures must be written. Facsimile, printed, or typewritten signatures are not acceptable.
- 6.5 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.

7.0 DELIVERY AND SUBMISSION OF BID

- 7.1 Each bid shall be placed, together with the Bid Bond, and other required documents 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.
- 7.2 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.



7.3 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.

8.0 MODIFICATIONS AND WITHDRAWALS OF BIDS

8.1 No alteration, erasure, or addition is to be made in the typewritten or printed matter.

8.2 Bids may not be modified after submittal.

8.3 Bidder may withdraw his/her bid, either personally or by written request, at any time prior to the scheduled bid opening time.

8.4 No bidder may withdraw his/her bid for a period of thirty (30) days after the bid opening.

9.0 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.

10.0 BASIS OF AWARD

10.1 The City will award a single contract, dependent on the availability of funds.

10.2 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.

10.3 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.

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

Refer to Section 00 7200 – General Conditions as modified by Section 00 7300 – Supplementary General Conditions.

20.0 COMPLETION DATE

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

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

SECTION 00 3100
AVAILABLE PROJECT INFORMATION

PART 1 GENERAL

1.01 EXISTING CONDITIONS

- A. Certain information relating to existing surface and subsurface conditions and structures is available to bidders but will not be part of Contract Documents, as follows:
- B. Alabama Line Locator Service - Alabama 811: 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: Entitled Foundation Bearing Soil Evaluation; Proposed Grandstand and Press Box Addition; Orange Beach Sportplex, Orange Beach, Alabama. GeoCon Engineering & Materials Testing Inc. Project No DL 2028-20, dated January 15, 2020. Copy attached following this Section.
 - 1. This report identifies properties of below grade conditions and offers recommendations for the design of foundations, prepared primarily for the use of Architect.
 - 2. The recommendations described shall not be construed as a requirement of this Contract, unless specifically referenced in Contract Documents.
 - 3. This report, by its nature, cannot reveal all conditions that exist on the site. Should subsurface conditions be found to vary substantially from this report, changes in the design and construction of foundations will be made, with resulting credits or expenditures to the Contract Price accruing to Owner.

1.02 PRELIMINARY DATA

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

PART 2 PRODUCTS (NOT USED)

PART 3 EXECUTION (NOT USED)

END OF SECTION

January 15, 2020

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

Attn: Mr. Ercil Godwin

RE: Foundation Bearing Soil Evaluation
Proposed Grandstand and Press Box Additions
Orange Beach Sportsplex
Orange Beach, Alabama
GeoCon Project No. DL 2028-20

Dear Mr. Godwin:

GeoCon Engineering & Materials Testing, Inc. is pleased to submit this report of Foundation Bearing Soil Evaluation 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 evaluation of the near-surface soils in the area of the proposed new grandstands and press boxes. The testing for this evaluation has been performed in general accordance with our earlier discussions with you.

Project Information

The subject site is located at the Sportsplex in Orange Beach, Alabama at 4385 William Silvers Parkway. The location of the subject site is shown on the attached Site Location Map (Figure 1). Specifically, the new grandstands and press boxes will be located directly behind home plate at fields No. 2 and 3. We understand that the new grandstand and press box structures will be supported on shallow foundations.

Geotechnical Field Testing

Soil conditions at the site were investigated by sampling soil from four (4) hand auger borings to a depth of about 7 feet below the existing ground surface. The borings were located in the grass areas adjacent to the existing concrete. The locations of the borings are shown on the attached Test Location Plan (Figure 2). The hand auger borings included dynamic cone penetration (DCP) soundings to evaluate soil density/consistency characteristics. A 1½-inch diameter cone is seated to penetrate any loose cuttings, then driven in 1¾-inch increments with blows from a 15 pound weight falling 20 inches. The number of blows required to drive the cone the 1¾-inch increments is an index of soil strength and compressibility. Samples were taken as the hand auger borings were extended and the

samples placed and sealed in plastic bags. The samples were then transported to our laboratory for review and evaluation by our engineering staff.

Soil Conditions Encountered

The borings initially encountered about 2 inches of organic topsoil material. Below organic topsoil material, the borings encountered tan and light tan sand soils described as fill to boring termination at a depth of about 7 feet below the existing ground surface. Based on the dynamic cone penetration (DCP) soundings of 10 to 15 blows per increment, the soils encountered at the boring locations were in a firm and stable condition.

Ground Water Conditions Encountered

Ground water was not encountered at the boring locations within the depths tested during 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. Therefore, actual depths to ground water may vary.

Evaluation and Recommendations

Below the thin layer of topsoil, the borings encountered relatively "clean" sand soils. When properly compacted, these sand soils are considered to be suitable to support the planned structures on shallow foundations.

The initial phase of construction should be the removal of topsoil material from the new construction area. Existing concrete that is required to be removed should also be removed at this time. Following foundation excavation, the footing bearing soils should be thoroughly compacted with mechanical compaction equipment prior to placement of reinforcing steel (rebar) and concrete. The top 12 inches of the footing bearing soils should be compacted to 100% standard density. Proper compaction of footing bearing soils is important to help limit excessive foundation settlement.

Foundations can be designed using a net allowable soil bearing pressure up to 1,500 psf. The allowable soil bearing pressure applies to dead loads plus design live loads. The allowable soil bearing pressure may be increased by one-third when considering total loads that include transient loads such as wind and seismic.

Lateral and uplift loads can be resisted by passive pressure of the soil acting against the side of the individual footings and/or the friction developed between the base of the footings and the underlying soil. For compacted backfill and firm native soils, the passive pressure may be taken as the equivalent to the pressure exerted by a fluid weighing 300 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 foundation 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 100 pcf can be used for backfill atop foundations.

Provided foundations bear atop properly compacted soils, we anticipate that total settlements will be less than about one inch. We anticipate that differential settlements will be less than about ½ inch.

GeoCon, Inc. should be called to observe and perform compaction testing on the footing excavations prior to the placement of reinforcing steel (rebar) and concrete to determine if the bearing soils are satisfactory for support of the foundations. Excessively loose footing bearing soils will require re-compaction or stabilization as per the recommendations of GeoCon's geotechnical engineer.

We recommend that all footing excavations be extended to final grade and the footings constructed as soon as possible to reduce the potential for disturbance of the bearing soils. The foundation bearing areas should be level or suitably benched and be free of loose soil, ponded water, mud and debris.

Soils exposed in the bottom of all satisfactory excavations should be protected against disturbance, excessive drying, freezing or rain. Surface runoff should be drained away from excavations and not allowed to pond. The saturation of soils at the footing bearing elevation level can reduce their strength and load carrying ability. Foundation concrete should not be placed on soils that have been disturbed by ground water seepage or rain water. If the bearing soils are softened by ground water intrusion or exposure, the softened soils must be removed from the foundation excavation bottom prior to placement of concrete. Concrete for foundations should be placed as soon after completion of the excavations as possible. If a delay in concrete placement is expected or if exposed to wet weather, a 2 to 3 inch "mud mat" consisting of lean concrete should be placed in the footing excavations to protect the bearing soils.

Closure

This report has been prepared for the exclusive use of Sawgrass Consulting, LLC., the City of Orange Beach and their project design professionals for specific application to the above referenced project in accordance with generally accepted current standards of geotechnical engineering practices common to the local area.

The comments and recommendations of this report provide manageable and reasonable solutions to the advancement of the project based on the collected test data and the provided design information. Significant changes in site conditions or project design may result in alternative solutions to the design required or may permit more manageable and economical construction techniques. Should such significant changes occur, we will be available to offer supplemental comment.

The comments and recommendations of this report are based upon our interpretation of the information supplied by the client, the data collected at the four (4) manual hand auger borings and the site conditions observed at the time of testing. A significant amount of interpolation was necessary. Because it is not possible to know or predict detailed conditions hidden beneath the ground surface, our comments and recommendations are presented as opinions and judgements, as opposed to statements of fact.

Improper site preparation, extremes in climatic conditions, significant changes in grade, time, etc., can affect the ground water, surface and subsurface conditions. If conditions are encountered as the construction advances which vary significantly from those described by this report, we should be contacted for additional comment. GeoCon should be retained to perform footing compaction testing prior to concrete placement.

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



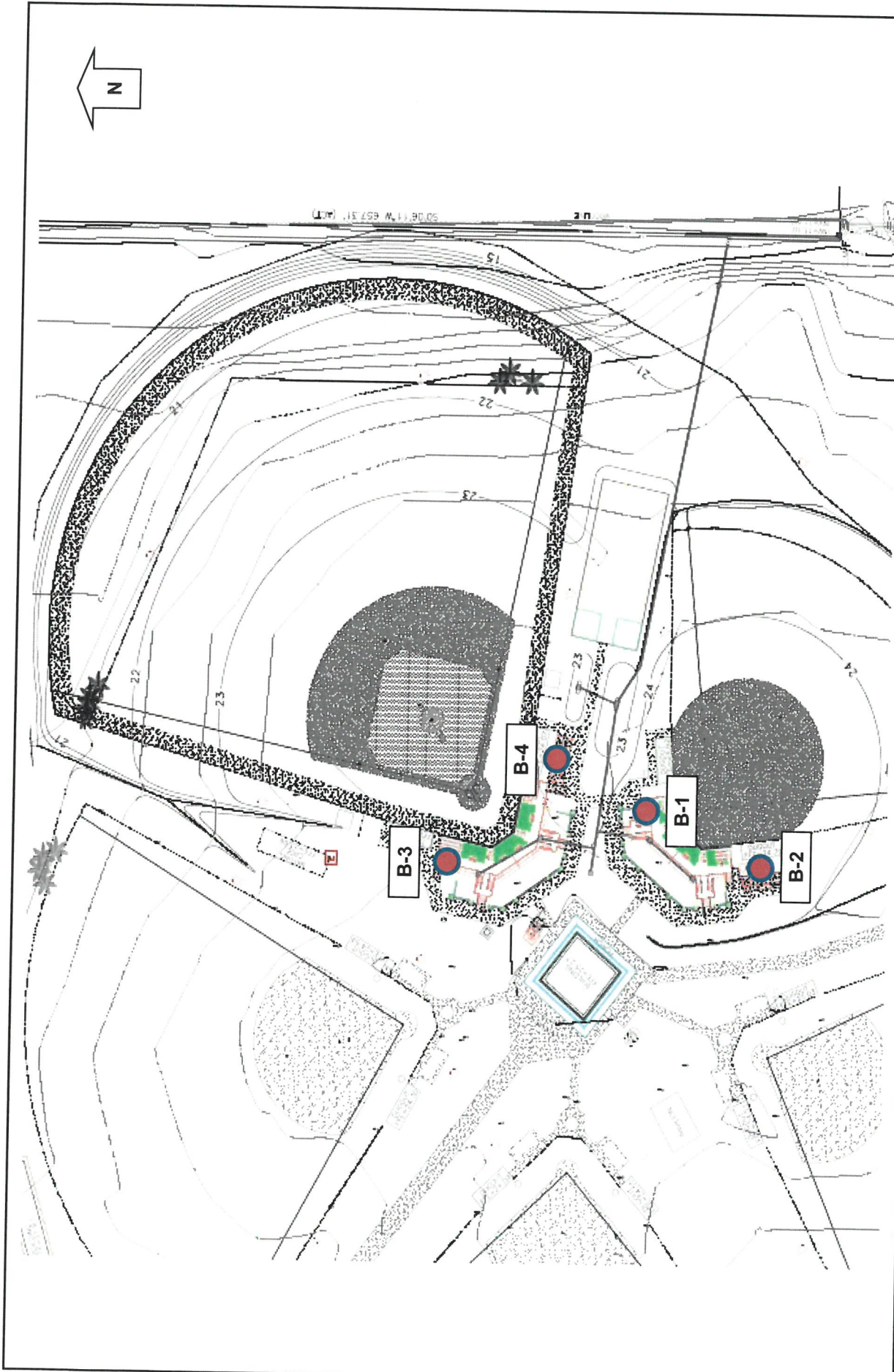


Figure 1

NOT TO SCALE
SITE LOCATION MAP
 Proposed Grandstand/Press Box
 Orange Beach Sportsplex
 Orange Beach, AL
 DL 2028-20

GEOCON, INC.
 22885 McAuliffe Drive
 Robertsdale, Alabama 36567

Date
 1/10/2020



GEOCON, INC.

22885 McAuliffe Drive
 Robertsdale, AL 36567

NOT TO SCALE
TEST LOCATION PLAN
 Proposed Grandstand/Press Box
 Orange Beach Sprotsplex
 Orange Beach, AL
 DL 2028-20

Figure 2
Date
1/15/2020

SECTION 00 4000
PROCUREMENT FORMS AND SUPPLEMENTS

PART 1 GENERAL

1.01 CONTRACTOR IS RESPONSIBLE FOR OBTAINING A VALID LICENSE TO USE ALL COPYRIGHTED DOCUMENTS SPECIFIED UNLESS LEGAL COPIES ARE INCLUDED IN THE PROJECT MANUAL.

- A. AIA documents may be obtained individually at the following web site:
<https://documentsondemand.aia.org>.
- B. AIA document bulk licensing may be obtained at the following web site:
<http://www.aia.org/contractdocs/forcontractors/index.htm>.

1.02 FORMS

- A. Use the following forms for the specified purposes unless otherwise indicated elsewhere in the procurement requirements.
- B. Instructions to Bidders: Section 00 2113 - City of Orange Beach Instructions to Bidders as modified to suit project.
- C. Substitution Request Form (During Procurement): CSI/CSC Form 1.5C - Substitution Request (During the Bidding/Negotiating Stage).
- D. Bid Form: Section 00 4100 - Bid Form.
- E. Procurement Form Supplements:
 - 1. Bid Form Supplements Cover Sheet: Document 00 4301 - Bid Form Supplements Cover Sheet.
 - 2. Bid Security Form: Section 00 4313 - City of Orange Beach Alabama Bid Bond.
 - 3. Sales Tax Form: Section 00 4322.16 - Attachment A to Bid Form: Sales Tax
 - 4. Orange Beach Contractor/Direct Vendor Affidavit: 00 4322.19 - Affidavit of Contractor or Direct Vendor.
 - 5. Substitution Request Form (for substitutions requested with bid): Section 00 4325 - Substitution Request Form - During Procurement, CSI/CCS Form 1.5C - Substitution Request Form (During Bidding Stage).
 - 6. Proposed Schedule of Values Form: AIA G703 with Continuation Sheet.
- F. Representations and Certifications:
 - 1. Bidder's Qualifications: AIA A305.
 - 2. Section 00 4546.13 - Disclosure Statement (Act 2016-312): Disclosure Statement of Relationship between Contractors and/or Guarantees and Employees and/or Officials of the City of Orange Beach, Alabama.
 - a. Act 2001-955 requires disclosure statement to be completed and filed with all proposals, bids, contracts, grant proposals to the State of Alabama in excess of \$5,000.00.

1.03 REFERENCE STANDARDS

- A. AIA A305 - Contractor's Qualification Statement; 1986.
- B. Instructions to Bidders: Section 00 2113 - City of Orange Beach Instructions to Bidders.
- C. CSI/CSC Form 1.5C - Substitution Request (During the Bidding/Negotiating Stage); Current Edition.

PART 2 PRODUCTS - NOT USED

PART 3 EXECUTION - NOT USED

END OF SECTION

BID FORM

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

In compliance with the Invitation to Bid and subject to all the conditions thereof, the undersigned

(Legal Name of Bidder)
hereby proposes to furnish all labor and materials and perform all work required for the construction of
WORK: Orange Beach Baseball/Softball Renovations

in accordance with Drawings and Specifications, dated May 4, 2020, prepared by
Davis Architects, Inc., Architect/Engineer.

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

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

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

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

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

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

Allowance No. 1 Contractor shall provide Builders' Risk Insurance and indicate 100% of the total deductible
amount below. All unclaimed deductible amounts will be reimbursed to the Owner at project completion as a
deductive change order to the contractor. Contractor shall provide evidence from insurer of 100% deductive
amount within 48 hours of bid.

Dollars (\$ _____)

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

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

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

For Alternate No. 1 (One-canopies over grandstand & related structure)(add)\$ _____

For Alternate No. 2 (Two-Batting Cage and Practice Facility) (add)\$ _____

For Alternate No. 3 (Three New Field Fencing) (add)\$ _____

For Alternate No. 4 (Four-Privacy Screen) (add)\$ _____
 For Alternate No. 5 (Five-Re-grad Field 2 Outfields) (add)\$ _____

Base Bid: For Construction
 UNIT PRICE: Provide unit prices in accord with Section 01 2200 – Unit Price

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

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

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

BIDDER'S ALABAMA LICENSE:
 State License for General Contracting: _____
 License Number Bid Limit Type(s) of Work

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

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

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

Legal	Name	of	Bidder

Mailing			Address

—			
*	By	(Legal	Signature)

—			
* Name (type or print)	_____		(Seal)
* Title	_____		

Telephone Number _____

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

- END OF PROPOSAL FORM -

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

PARTICULARS

TO (OWNER) : CITY OF ORANGE BEACH, ALABAMA

ARCHITECT'S PROJECT NUMBER: DAI 3916

PROJECT: ORANGE BEACH RECREATION COMPLEX NEW ADULT FITNESS CENTER.

DATE: _____

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

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

SUPPLEMENTS TO BID FORM

00 4313-Bid Bond.

00 4322.16-Attachment A to Bid Form Sales Tax.

00 4322.19-Affadavit of Contractor or Direct Vendor.

00 4513 - Contractor's Qualification Statement AIA Form A-305 - 86.

00 4546.13 - Disclosure Statement - Act 2001 - 955

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 SECTION



BID BOND

KNOW ALL MEN BY THESE PRESENTS:

THAT _____
(Name of Contractor/Principal)

_____, as Principal,
(Address)

and _____
(Name of Surety)

of _____, as Surety,
(Address)

are held and firmly bound unto **the City of Orange Beach**, as obligee, in the full and just sum of:

_____ lawful money of the United States, for the payment of which sum, well and truly to be made, we bind ourselves, our heirs, executors, administrators, successors and assigns, jointly and severally, firmly by these presents.

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

Orange Beach Recreation Center - New Adult Fitness Center

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

SIGNED, SEALED AND DELIVERED _____
(Date)

Witness

Witness

Principal (Seal)

Surety (Seal)

Title

Title

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

SECTION 00 4322.16
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	\$
Alternate 2 Sales Tax	\$
Alternate 3 Sales Tax	\$
Alternate 4 Sales Tax	\$
Alternate 5 Sales Tax	\$
TOTAL	\$

END OF ATTACHMENT A TO BID FORM



SECTION 004322.19
REQUIREMENTS FOR CONTRACTS AND PURCHASES
AFFIDAVIT OF CONTRACTOR OR DIRECT VENDOR

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.

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: _____

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 4513

CONTRACTOR QUALIFICATION STATEMENT

CONTRACTOR QUALIFICATION STATEMENT: AIA DOCUMENT A305 1986 CONTRACTOR QUALIFICATION STATEMENT, IS BOUND INTO THIS PROJECT MANUAL FOLLOWING THIS PAGE.

END OF SECTION



AIA[®] Document A305[™] – 1986

Contractor's Qualification Statement

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

SUBMITTED TO:

ADDRESS:

SUBMITTED BY:

NAME:

ADDRESS:

PRINCIPAL OFFICE:

- Corporation
- Partnership
- Individual
- Joint Venture
- Other

NAME OF PROJECT (if applicable):

TYPE OF WORK (file separate form for each Classification of Work):

- General Construction
- HVAC
- Electrical
- Plumbing
- Other (please specify)

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.

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

§ 1. ORGANIZATION

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

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

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

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

§ 1.3.1 Date of incorporation:

§ 1.3.2 State of incorporation:

§ 1.3.3 President's name:

§ 1.3.4 Vice-president's name(s)

§ 1.3.5 Secretary's name:

§ 1.3.6 Treasurer's name:

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

§ 1.4.1 Date of organization:

§ 1.4.2 Type of partnership (if applicable):

§ 1.4.3 Name(s) of general partner(s)

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

§ 1.5.1 Date of organization:

§ 1.5.2 Name of owner:

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

§ 2. LICENSING

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

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

§ 3. EXPERIENCE

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

§ 3.2 Claims and Suits. (If the answer to any of the questions below is yes, please attach details.)

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

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

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

§ 3.3 Within the last five years, has any officer or principal of your organization ever been an officer or principal of another organization when it failed to complete a construction contract? (If the answer is yes, please attach details.)

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

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

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

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

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

§ 4. REFERENCES

§ 4.1 Trade References:

§ 4.2 Bank References:

§ 4.3 Surety:

§ 4.3.1 Name of bonding company:

§ 4.3.2 Name and address of agent:

§ 5. FINANCING

§ 5.1 Financial Statement.

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

Current Assets (e.g., cash, joint venture accounts, accounts receivable, notes receivable, accrued income, deposits, materials inventory and prepaid expenses);

Net Fixed Assets;

Other Assets;

Current Liabilities (e.g., accounts payable, notes payable, accrued expenses, provision for income taxes, advances, accrued salaries and accrued payroll taxes);

Other Liabilities (e.g., capital, capital stock, authorized and outstanding shares par values, earned surplus and retained earnings).

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

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

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

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

§ 6. SIGNATURE

§ 6.1 Dated at this _____ day of _____

Name of Organization:

By:

Title:

§ 6.2

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

Subscribed and sworn before me this _____ day of _____ 20____

Notary Public:

My Commission Expires:

Additions and Deletions Report for AIA[®] Document A305[™] – 1986

This Additions and Deletions Report, as defined on page 1 of the associated document, reproduces below all text the author has added to the standard form AIA document in order to complete it, as well as any text the author may have added to or deleted from the original AIA text. Added text is shown underlined. Deleted text is indicated with a horizontal line through the original AIA text.

Note: This Additions and Deletions Report is provided for information purposes only and is not incorporated into or constitute any part of the associated AIA document. This Additions and Deletions Report and its associated document were generated simultaneously by AIA software at 13:28:18 on 03/22/2006.

PAGE 6

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

...

Subscribed and sworn before me this day of 20-20

Certification of Document's Authenticity

AIA® Document D401™ – 2003

I, Charles V. Bucci, hereby certify, to the best of my knowledge, information and belief, that I created the attached final document simultaneously with its associated Additions and Deletions Report and this certification at 13:28:18 on 03/22/2006 under Order No. 1000201877_1 from AIA Contract Documents software and that in preparing the attached final document I made no changes to the original text of AIA® Document A305™ – 1986 - Contractor's Qualification Statement, as published by the AIA in its software, other than those additions and deletions shown in the associated Additions and Deletions Report.

(Signed)

(Title)

(Dated)

**SECTION 00 4546.13
DISCLOSURE STATEMENT**

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

END OF SECTION



State of Alabama Disclosure Statement

(Required by Act 2001-955)

ENTITY COMPLETING FORM

ADDRESS

CITY, STATE, ZIP

TELEPHONE NUMBER

()

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

ADDRESS

CITY, STATE, ZIP

TELEPHONE NUMBER

()

This form is provided with:

- Contract
 Proposal
 Request for Proposal
 Invitation to Bid
 Grant Proposal

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

- Yes
 No

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

STATE AGENCY/DEPARTMENT	TYPE OF GOODS/SERVICES	AMOUNT RECEIVED
-------------------------	------------------------	-----------------

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

- Yes
 No

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

STATE AGENCY/DEPARTMENT	DATE GRANT AWARDED	AMOUNT OF GRANT
-------------------------	--------------------	-----------------

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

NAME OF PUBLIC OFFICIAL/EMPLOYEE	ADDRESS	STATE DEPARTMENT/AGENCY
----------------------------------	---------	-------------------------

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

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

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

1.01 CONTRACTOR IS RESPONSIBLE FOR OBTAINING A VALID LICENSE TO USE ALL COPYRIGHTED DOCUMENTS SPECIFIED UNLESS LEGAL COPIES ARE INCLUDED IN THE PROJECT MANUAL.

- A. AIA documents may be obtained individually at the following web site:
<https://documentsondemand.aia.org>.
- B. AIA document bulk licensing may be obtained at the following web site:
<http://www.aia.org/contractdocs/forcontractors/index.htm>.

1.02 AGREEMENT AND CONDITIONS OF THE CONTRACT

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

1.03 FORMS

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

1.04 REFERENCE STANDARDS

- A. AIA A101 - Standard Form of Agreement Between Owner and Contractor where the basis of Payment is a Stipulated Sum; 2007.
- B. AIA A132 - Standard Form of Agreement Between Owner and Contractor, Construction Manager as Adviser Edition; 2009.
- C. AIA A201 - General Conditions of the Contract for Construction; 2007.
- D. AIA G701 - Change Order; 2001.
- E. AIA G701Cma - Change Order, Construction Manager-Adviser Edition; 1992.
- F. AIA G702 - Application and Certificate for Payment; 1992.
- G. AIA G702Cma - Application and Certificate for Payment, Construction Manager-Adviser Edition; 1992.
- H. AIA G703 - Continuation Sheet; 1992.
- I. AIA G704 - Certificate of Substantial Completion; 2000.
- J. AIA G710 - Architect's Supplemental Instructions; 1992.
- K. AIA G714 - Construction Change Directive; 2007.
- L. AIA G732 - Application and Certificate for Payment, Construction Manager as Adviser Edition; 2009.
- M. AIA G810 - Transmittal Letter; 2001.
- N. CSI/CSC Form 1.5C - Substitution Request (During the Bidding/Negotiating Stage); Current Edition.
- O. CSI/CSC Form 13.1A - Substitution Request (After the Bidding/Negotiating Phase); Current Edition.

PART 2 PRODUCTS - NOT USED

PART 3 EXECUTION - NOT USED

END OF SECTION

**SECTION 00 5200
AGREEMENT FORM**

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

END OF SECTION

 **AIA** Document A101™ – 2017

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

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

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

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

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

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

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

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

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

The Owner and Contractor agree as follows.

Init.

TABLE OF ARTICLES

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

EXHIBIT A INSURANCE AND BONDS

ARTICLE 1 THE CONTRACT DOCUMENTS

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

ARTICLE 2 THE WORK OF THIS CONTRACT

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

ARTICLE 3 DATE OF COMMENCEMENT AND SUBSTANTIAL COMPLETION

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

(Check one of the following boxes.)

- The date of this Agreement.
- A date set forth in a notice to proceed issued by the Owner.
- Established as follows:
(Insert a date or a means to determine the date of commencement of the Work.)

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

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

§ 3.3 Substantial Completion

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

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

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

By the following date:

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

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

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

ARTICLE 4 CONTRACT SUM

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

§ 4.2 Alternates

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

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

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

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

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

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

§ 4.4 Unit prices, if any:

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

Item	Units and Limitations	Price per Unit (\$0.00)
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§ 4.5 Liquidated damages, if any:

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

§ 4.6 Other:

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

ARTICLE 5 PAYMENTS

§ 5.1 Progress Payments

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

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

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

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

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

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

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

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

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

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

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

§ 5.1.7 Retainage

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

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

§ 5.1.7.1.1 The following items are not subject to retainage:

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

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

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

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

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

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

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

§ 5.2 Final Payment

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

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

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

§ 5.3 Interest

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

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

_____ % _____

ARTICLE 6 DISPUTE RESOLUTION

§ 6.1 Initial Decision Maker

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

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

§ 6.2 Binding Dispute Resolution

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

(Check the appropriate box.)

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

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

ARTICLE 7 TERMINATION OR SUSPENSION

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

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

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

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

ARTICLE 8 MISCELLANEOUS PROVISIONS

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

§ 8.2 The Owner’s representative:

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

§ 8.3 The Contractor’s representative:

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

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

§ 8.5 Insurance and Bonds

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

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

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

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

§ 8.7 Other provisions:

ARTICLE 9 ENUMERATION OF CONTRACT DOCUMENTS

§ 9.1 This Agreement is comprised of the following documents:

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

.5 Drawings

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

.6 Specifications

Section	Title	Date	Pages
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.7 Addenda, if any:

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

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

.8 Other Exhibits:

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

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

The Sustainability Plan:

Title	Date	Pages
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Supplementary and other Conditions of the Contract:

Document	Title	Date	Pages
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.9 Other documents, if any, listed below:

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

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

OWNER (Signature)

CONTRACTOR (Signature)

(Printed name and title)

(Printed name and title)

SECTION 00 5210

AGREEMENT FORM EXHIBIT A - BONDS AND INSURANCE

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

END OF SECTION

 **AIA** 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)

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.

§ A.2.3 Required Property Insurance

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

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

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

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

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

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

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

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

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

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

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

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

§ A.2.3.3 Insurance for Existing Structures

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

§ A.2.4 Optional Extended Property Insurance.

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

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

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

§ A.2.5 Other Optional Insurance.

The Owner shall purchase and maintain the insurance selected below.

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

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

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

Coverage

Limits

ARTICLE A.3 CONTRACTOR'S INSURANCE AND BONDS

§ A.3.1 General

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

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

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

§ A.3.2 Contractor's Required Insurance Coverage

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

§ A.3.2.2 Commercial General Liability

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

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

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

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

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

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

§ A.3.2.5 Workers' Compensation at statutory limits.

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

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

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

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

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

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

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

§ A.3.3 Contractor's Other Insurance Coverage

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

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

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

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

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

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

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

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

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

Coverage

Limits

§ A.3.4 Performance Bond and Payment Bond

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

(Specify type and penal sum of bonds.)

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

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

ARTICLE A.4 SPECIAL TERMS AND CONDITIONS

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

Sample



PERFORMANCE BOND (SAMPLE)

KNOW ALL MEN:

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

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

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

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

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

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

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



SIGNED, SEALED, AND DELIVERED this _____ day of _____.

Attest:

(Corporate Principal Sign Here)

By: _____

Attest:

(Surety Sign Here)

By: _____

COUNTERSIGNED:

By: _____



LABOR AND MATERIALS BOND (SAMPLE)

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

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

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

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

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



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

SIGNED, SEALED, AND DELIVERED this _____ day of _____.

Attest:

(Corporate Principal Sign Here)

By: _____

Attest:

(Surety Sign Here)

By: _____

**SECTION 00 5410.13
DISCLOSURE STATEMENT**

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

END OF SECTION



State of Alabama Disclosure Statement

(Required by Act 2001-955)

ENTITY COMPLETING FORM

ADDRESS

CITY, STATE, ZIP

TELEPHONE NUMBER

()

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

ADDRESS

CITY, STATE, ZIP

TELEPHONE NUMBER

()

This form is provided with:

- Contract
 Proposal
 Request for Proposal
 Invitation to Bid
 Grant Proposal

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

- Yes
 No

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

STATE AGENCY/DEPARTMENT	TYPE OF GOODS/SERVICES	AMOUNT RECEIVED
-------------------------	------------------------	-----------------

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

- Yes
 No

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

STATE AGENCY/DEPARTMENT	DATE GRANT AWARDED	AMOUNT OF GRANT
-------------------------	--------------------	-----------------

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

NAME OF PUBLIC OFFICIAL/EMPLOYEE	ADDRESS	STATE DEPARTMENT/AGENCY
----------------------------------	---------	-------------------------

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

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

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 5410.16

STATEMENT OF COMPLIANCE WITH ACT 2011-535 AS AMMENDED BY 2012-491

STATEMENT OF COMPLIANCE: STATEMENT OF COMPLIANCE WITH BEESON-HAMMON ALABAMA TAXPAYER AND CITIZEN PROTECTION ACT (ACT 2011-535 AS AMENDED BY ACT 2012-491), IS BOUND INTO THIS PROJECT MANUAL FOLLOWING THIS PAGE.

END OF SECTION

State of _____)

County of _____)

CERTIFICATE OF COMPLIANCE WITH THE BEASON-HAMMON ALABAMA TAXPAYER AND CITIZEN PROTECTION ACT (ACT 2011-535, as amended by Act 2012-491)

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 the provisions of THE BEASON-HAMMON ALABAMA TAXPAYER AND CITIZEN PROTECTION ACT (ACT 2011-535 of the Alabama Legislature, as amended by Act 2012-491) which is described herein as "the Act".
2. Using the following definitions from Section 3 of the Act, select and initial either (a) or (b), below, to describe the Contractor/Grantee's business structure.

BUSINESS ENTITY. Any person or group of persons employing one or more persons performing or engaging in any activity, enterprise, profession, or occupation for gain, benefit, advantage, or livelihood, whether for profit or not for profit. "Business entity" shall include, but not be limited to the following:

- a. Self-employed individuals, business entities filing articles of incorporation, partnerships, limited partnerships, limited liability companies, foreign corporations, foreign limited partnerships, foreign limited liability companies authorized to transact business in this state, business trusts, and any business entity that registers with the Secretary of State.
- b. Any business entity that possesses a business license, permit, certificate, approval, registration, charter, or similar form of authorization issued by the state, any business entity that is exempt by law from obtaining such a business license, and any business entity that is operating unlawfully without a business license.

EMPLOYER. Any person, firm, corporation, partnership, joint stock association, agent, manager, representative, foreman, or other person having control or custody of any employment, place of employment, or of any employee, including any person or entity employing any person for hire within the State of Alabama, including a public employer. This term shall not include the occupant of a household contracting with another person to perform casual domestic labor within the household.

____ (a) The Contractor/Grantee is a business entity (a) or employer as those terms are defined in Section 3 of the Act.

____ (b) The Contractor/Grantee is not a business entity or employer as those terms are defined in Section 3 of the Act.

3. As of the date of this Certificate, Contractor/Grantee does not knowingly employ an unauthorized alien within the State of Alabama and hereafter it will not knowingly employ, hire for employment, or continue to employ an unauthorized alien within the State of Alabama;
4. Contractor/Grantee is enrolled in E-Verify unless it is not eligible to enroll because of the rules of that program or other factors beyond its control.

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

ORANGE BEACH BASEBALL/SOFTBALL FIELD RENOVATIONS
CITY OF ORANGE BEACH
ORANGE BEACH, ALABAMA

May 4, 2020
DAI 3916

ATTACHMENT C

CERTIFICATE OF COMPLIANCE WITH ACT 2016-312

DATE: _____

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

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

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

1. The undersigned holds the position of _____ with the Contractor/Grantee named above, and is authorized to provide representations set out in this Certificate as the official and binding act of that entity, and has knowledge of Alabama's Act 2016-312.
2. In compliance with Act 2016-312, the contractor hereby certifies that it is not currently engaged in, and will not engage in, the boycott of a person or an entity based in or doing business with a jurisdiction with which this state can enjoy open trade.

Certified this _____ day of _____, 20____.

Name of Contractor/Grantee/Recipient

By: _____

Its: _____

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

Witness: _____

Printed Name of Witness

SECTION 00 6276

APPLICATION AND CERTIFICATE FOR PAYMENT

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

END OF SECTION



AIA[®] Document G702™ – 1992

Application and Certificate for Payment

TO OWNER: _____ PROJECT: _____

PROJECT: _____ APPLICATION NO: _____

Distribution to:
OWNER

FROM CONTRACTOR: _____ VIA ARCHITECT: _____

PERIOD TO: _____ ARCHITECT

CONTRACT FOR: _____ CONTRACTOR

CONTRACT DATE: _____ FIELD

PROJECT NOS: _____ OTHER

CONTRACTOR'S APPLICATION FOR PAYMENT

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

1. ORIGINAL CONTRACT SUM \$ _____

2. NET CHANGE BY CHANGE ORDERS \$ _____

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

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

5. RETAINAGE:

a. _____ % of Completed Work \$ _____

(Columns D + E on G703)

b. _____ % of Stored Material \$ _____

(Column F on G703)

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

6. TOTAL EARNED LESS RETAINAGE \$ _____

(Line 4 minus Line 5 Total)

7. LESS PREVIOUS CERTIFICATES FOR PAYMENT \$ _____

(Line 6 from prior Certificate)

8. CURRENT PAYMENT DUE \$ _____

9. BALANCE TO FINISH, INCLUDING RETAINAGE \$ _____

(Line 3 minus Line 6)

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

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

CONTRACTOR: _____ Date: _____

By: _____

State of: _____

County of: _____

Subscribed and sworn to before

me this _____ day of _____

Notary Public: _____

My commission expires: _____

ARCHITECT'S CERTIFICATE FOR PAYMENT

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

AMOUNT CERTIFIED \$ _____

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

ARCHITECT: _____ Date: _____

By: _____

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

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

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AIA®

Document G703™ – 1992

Continuation Sheet

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

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

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

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

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SECTION 00 6325

SUBSTITUTION REQUEST (POST BID)

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

END OF SECTION



SUBSTITUTION REQUEST

(After the Bidding/Negotiating Phase)

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

Specification Title: _____ Description: _____
 Section: _____ Page: _____ Article/Paragraph: _____

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

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

Differences between proposed substitution and specified product: _____

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

Reason for not providing specified item: _____

Similar Installation:
 Project: _____ Architect: _____
 Address: _____ Owner: _____
 _____ Date Installed: _____

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

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

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

Supporting Data Attached: Drawings Product Data Samples Tests Reports _____

SUBSTITUTION REQUEST

(After the Bidding/Negotiating Phase — Continued)

The Undersigned certifies:

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

Submitted by: _____

Signed by: _____

Firm: _____

Address: _____

Telephone: _____

Attachments:

A/E's REVIEW AND RECOMMENDATION

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

Signed by: _____ Date: _____

OWNER'S REVIEW AND ACTION

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

Signed by: _____ Date: _____

Additional Comments: Contractor Subcontractor Supplier Manufacturer A/E

SECTION 00 6516

CERTIFICATE OF SUBSTANTIAL COMPLETION

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

END OF SECTION

 **AIA** Document G704™ – 2017**Certificate of Substantial Completion**

PROJECT: *(name and address)***CONTRACT INFORMATION:**Contract For:
Date:**CERTIFICATE INFORMATION:**Certificate Number:
Date:**OWNER:** *(name and address)***ARCHITECT:** *(name and address)***CONTRACTOR:** *(name and address)*

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

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

ARCHITECT *(Firm Name)***SIGNATURE****PRINTED NAME AND TITLE****DATE OF SUBSTANTIAL COMPLETION****WARRANTIES**

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

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

WORK TO BE COMPLETED OR CORRECTED

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

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

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

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

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

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

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

CONTRACTOR *(Firm Name)***SIGNATURE****PRINTED NAME AND TITLE****DATE**

OWNER *(Firm Name)***SIGNATURE****PRINTED NAME AND TITLE****DATE**

SECTION 00 6536.13

GENERAL CONTRACTOR'S ROOFING GUARANTEE

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

END OF SECTION

GENERAL CONTRACTOR'S ROOFING GUARANTEE

B. C. Project No. _____ _____

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

General Contractor's Name, Address, & Telephone Number	EFFECTIVE DATES OF GUARANTEE
	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

**SECTION 00 6573.13
FORM OF ADVERTISEMENT FOR COMPLETION**

LEGAL NOTICE

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

(Contractor)

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

at _____

(Insert location data in County or City)

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

_____*(Architect)*

(Contractor)

(Business Address)

NOTE: This notice must be run once a week for four successive weeks for projects
exceeding \$50,000.00, for projects of less than \$50,000.00, run one time only.
Proof of publication is required.

SECTION 00 7200

GENERAL CONDITIONS OF THE CONTRACT

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

END OF SECTION



AIA[®] Document A201[™] – 2017

General Conditions of the Contract for Construction

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

THE OWNER:
(Name, legal status and address)

THE ARCHITECT:
(Name, legal status and address)

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

For guidance in modifying this document to include supplementary conditions, see AIA Document A503[™], Guide for Supplementary Conditions.

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ARTICLE 1 GENERAL PROVISIONS

§ 1.1 Basic Definitions

§ 1.1.1 The Contract Documents

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

§ 1.1.2 The Contract

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

§ 1.1.3 The Work

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

§ 1.1.4 The Project

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

§ 1.1.5 The Drawings

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

§ 1.1.6 The Specifications

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

§ 1.1.7 Instruments of Service

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

§ 1.1.8 Initial Decision Maker

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

§ 1.2 Correlation and Intent of the Contract Documents

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

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

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

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

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

§ 1.3 Capitalization

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

§ 1.4 Interpretation

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

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

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

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

§ 1.6 Notice

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

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

§ 1.7 Digital Data Use and Transmission

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

§ 1.8 Building Information Models Use and Reliance

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

information model, and each of their agents and employees.

ARTICLE 2 OWNER

§ 2.1 General

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

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

§ 2.2 Evidence of the Owner's Financial Arrangements

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

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

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

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

§ 2.3 Information and Services Required of the Owner

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

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

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

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

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

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

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

§ 2.4 Owner's Right to Stop the Work

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

§ 2.5 Owner's Right to Carry Out the Work

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

ARTICLE 3 CONTRACTOR

§ 3.1 General

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

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

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

§ 3.2 Review of Contract Documents and Field Conditions by Contractor

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

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

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

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

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

§ 3.3 Supervision and Construction Procedures

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

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

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

§ 3.4 Labor and Materials

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

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

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

§ 3.5 Warranty

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

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

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

§ 3.6 Taxes

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

§ 3.7 Permits, Fees, Notices and Compliance with Laws

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

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

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

§ 3.7.4 Concealed or Unknown Conditions

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

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

§ 3.8 Allowances

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

§ 3.8.2 Unless otherwise provided in the Contract Documents,

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

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

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

§ 3.9 Superintendent

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

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

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

§ 3.10 Contractor's Construction and Submittal Schedules

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

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

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

§ 3.11 Documents and Samples at the Site

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

§ 3.12 Shop Drawings, Product Data and Samples

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

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

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

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

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

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

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

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

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

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

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

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

time and in the form specified by the Architect.

§ 3.13 Use of Site

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

§ 3.14 Cutting and Patching

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

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

§ 3.15 Cleaning Up

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

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

§ 3.16 Access to Work

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

§ 3.17 Royalties, Patents and Copyrights

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

§ 3.18 Indemnification

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

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

ARTICLE 4 ARCHITECT

§ 4.1 General

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

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

§ 4.2 Administration of the Contract

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

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

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

§ 4.2.4 Communications

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

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

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

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

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

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

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

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

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

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

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

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

ARTICLE 5 SUBCONTRACTORS

§ 5.1 Definitions

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

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

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

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

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

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

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

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

§ 5.3 Subcontractual Relations

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

§ 5.4 Contingent Assignment of Subcontracts

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

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

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

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

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

ARTICLE 6 CONSTRUCTION BY OWNER OR BY SEPARATE CONTRACTORS

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

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

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

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

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

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

§ 6.2 Mutual Responsibility

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

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

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

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

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

§ 6.3 Owner's Right to Clean Up

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

ARTICLE 7 CHANGES IN THE WORK

§ 7.1 General

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

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

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

§ 7.2 Change Orders

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

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

§ 7.3 Construction Change Directives

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

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

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

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

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

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

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

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

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

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

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

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

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

§ 7.4 Minor Changes in the Work

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

ARTICLE 8 TIME

§ 8.1 Definitions

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

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

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

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

§ 8.2 Progress and Completion

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

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

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

§ 8.3 Delays and Extensions of Time

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

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

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

ARTICLE 9 PAYMENTS AND COMPLETION

§ 9.1 Contract Sum

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

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

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

§ 9.2 Schedule of Values

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

§ 9.3 Applications for Payment

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

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

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

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

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

§ 9.4 Certificates for Payment

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

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

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

§ 9.5 Decisions to Withhold Certification

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

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

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

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

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

§ 9.6 Progress Payments

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

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

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

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

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

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

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

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

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

§ 9.7 Failure of Payment

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

§ 9.8 Substantial Completion

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

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

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

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

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

§ 9.9 Partial Occupancy or Use

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

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

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

§ 9.10 Final Completion and Final Payment

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

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

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

constitute a waiver of Claims.

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

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

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

ARTICLE 10 PROTECTION OF PERSONS AND PROPERTY

§ 10.1 Safety Precautions and Programs

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

§ 10.2 Safety of Persons and Property

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

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

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

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

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

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

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

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

§ 10.2.8 Injury or Damage to Person or Property

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

§ 10.3 Hazardous Materials and Substances

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

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

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

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

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

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

§ 10.4 Emergencies

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

ARTICLE 11 INSURANCE AND BONDS

§ 11.1 Contractor's Insurance and Bonds

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

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

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

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

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

§ 11.2 Owner's Insurance

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

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

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

§ 11.3 Waivers of Subrogation

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

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

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

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

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

§ 11.5 Adjustment and Settlement of Insured Loss

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

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

ARTICLE 12 UNCOVERING AND CORRECTION OF WORK

§ 12.1 Uncovering of Work

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

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

§ 12.2 Correction of Work

§ 12.2.1 Before Substantial Completion

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

Contractor's expense.

§ 12.2.2 After Substantial Completion

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

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

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

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

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

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

§ 12.3 Acceptance of Nonconforming Work

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

ARTICLE 13 MISCELLANEOUS PROVISIONS

§ 13.1 Governing Law

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

§ 13.2 Successors and Assigns

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

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

§ 13.3 Rights and Remedies

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

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

§ 13.4 Tests and Inspections

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

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

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

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

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

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

§ 13.5 Interest

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

ARTICLE 14 TERMINATION OR SUSPENSION OF THE CONTRACT

§ 14.1 Termination by the Contractor

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

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

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

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

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

§ 14.2 Termination by the Owner for Cause

§ 14.2.1 The Owner may terminate the Contract if the Contractor

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

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

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

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

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

§ 14.3 Suspension by the Owner for Convenience

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

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

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

§ 14.4 Termination by the Owner for Convenience

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

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

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

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

ARTICLE 15 CLAIMS AND DISPUTES

§ 15.1 Claims

§ 15.1.1 Definition

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

§ 15.1.2 Time Limits on Claims

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

§ 15.1.3 Notice of Claims

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

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

§ 15.1.4 Continuing Contract Performance

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

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

§ 15.1.5 Claims for Additional Cost

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

§ 15.1.6 Claims for Additional Time

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

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

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

§ 15.1.7 Waiver of Claims for Consequential Damages

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

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

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

§ 15.2 Initial Decision

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

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

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

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

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

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

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

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

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

§ 15.3 Mediation

§ 15.3.1 Claims, disputes, or other matters in controversy arising out of or related to the Contract, except those waived as provided for in Sections 9.10.4, 9.10.5, and 15.1.7, shall be subject to mediation as a condition precedent to binding dispute resolution.

§ 15.3.2 The parties shall endeavor to resolve their Claims by mediation which, unless the parties mutually agree otherwise, shall be administered by the American Arbitration Association in accordance with its Construction Industry Mediation Procedures in effect on the date of the Agreement. A request for mediation shall be made in writing, delivered to the other party to the Contract, and filed with the person or entity administering the mediation. The request may be made concurrently with the filing of binding dispute resolution proceedings but, in such event, mediation shall proceed in advance of binding dispute resolution proceedings, which shall be stayed pending mediation for a period of 60 days from the date of filing, unless stayed for a longer period by agreement of the parties or court order. If an arbitration is stayed pursuant to this Section 15.3.2, the parties may nonetheless proceed to the selection of the arbitrator(s) and agree upon a schedule for later proceedings.

§ 15.3.3 Either party may, within 30 days from the date that mediation has been concluded without resolution of the dispute or 60 days after mediation has been demanded without resolution of the dispute, demand in writing that the other party file for binding dispute resolution. If such a demand is made and the party receiving the demand fails to file for binding dispute resolution within 60 days after receipt thereof, then both parties waive their rights to binding dispute resolution proceedings with respect to the initial decision.

§ 15.3.4 The parties shall share the mediator's fee and any filing fees equally. The mediation shall be held in the place where the Project is located, unless another location is mutually agreed upon. Agreements reached in mediation shall be enforceable as settlement agreements in any court having jurisdiction thereof.

§ 15.4 Arbitration

§ 15.4.1 If the parties have selected arbitration as the method for binding dispute resolution in the Agreement, any Claim subject to, but not resolved by, mediation shall be subject to arbitration which, unless the parties mutually agree otherwise, shall be administered by the American Arbitration Association in accordance with its Construction Industry Arbitration Rules in effect on the date of the Agreement. The Arbitration shall be conducted in the place where the Project is located, unless another location is mutually agreed upon. A demand for arbitration shall be made in writing, delivered to the other party to the Contract, and filed with the person or entity administering the arbitration. The party filing a notice of demand for arbitration must assert in the demand all Claims then known to that party on which arbitration is permitted to be demanded.

§ 15.4.1.1 A demand for arbitration shall be made no earlier than concurrently with the filing of a request for mediation, but in no event shall it be made after the date when the institution of legal or equitable proceedings based on the Claim would be barred by the applicable statute of limitations. For statute of limitations purposes, receipt of a written demand for arbitration by the person or entity administering the arbitration shall constitute the institution of legal or equitable proceedings based on the Claim.

§ 15.4.2 The award rendered by the arbitrator or arbitrators shall be final, and judgment may be entered upon it in accordance with applicable law in any court having jurisdiction thereof.

§ 15.4.3 The foregoing agreement to arbitrate and other agreements to arbitrate with an additional person or entity duly

consented to by parties to the Agreement, shall be specifically enforceable under applicable law in any court having jurisdiction thereof.

§ 15.4.4 Consolidation or Joinder

§ 15.4.4.1 Subject to the rules of the American Arbitration Association or other applicable arbitration rules, either party may consolidate an arbitration conducted under this Agreement with any other arbitration to which it is a party provided that (1) the arbitration agreement governing the other arbitration permits consolidation, (2) the arbitrations to be consolidated substantially involve common questions of law or fact, and (3) the arbitrations employ materially similar procedural rules and methods for selecting arbitrator(s).

§ 15.4.4.2 Subject to the rules of the American Arbitration Association or other applicable arbitration rules, either party may include by joinder persons or entities substantially involved in a common question of law or fact whose presence is required if complete relief is to be accorded in arbitration, provided that the party sought to be joined consents in writing to such joinder. Consent to arbitration involving an additional person or entity shall not constitute consent to arbitration of any claim, dispute or other matter in question not described in the written consent.

§ 15.4.4.3 The Owner and Contractor grant to any person or entity made a party to an arbitration conducted under this Section 15.4, whether by joinder or consolidation, the same rights of joinder and consolidation as those of the Owner and Contractor under this Agreement.

Sample



WAIVER AND RELEASE OF LIEN (SAMPLE)

FROM:

TO: City of Orange Beach, Alabama (Owner)

PROJECT: **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.

SECTION 00 7300
SUPPLEMENTARY CONDITIONS

PART 1 GENERAL

1.01 SUMMARY

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

1.02 RELATED SECTIONS

- A. Section 00 5000 - Contracting Forms and Supplements.

1.03 REFERENCE STANDARDS

1.04 MODIFICATIONS TO GENERAL CONDITIONS

A. ARTICLE 1.1 - BASIC DEFINITIONS

After Section 1.1.8, add the following definitions:

1.1.9 Miscellaneous Definitions:

- .1 The term "product" includes materials, systems, and equipment.
- .2 The term "furnish" means to supply and deliver to project site.
- .3 The term "install" means to place in position for service or use.
- .4 The term "provide" includes furnishing and installing a product, complete in place, tested and approved.
- .5 The term "building code" and the term "code" refer to regulations of governmental agencies having jurisdiction.
- .6 The terms "approved", "required", and "as directed" refer to and indicate the work or materials that may be approved, required, or directed by the Architect acting as the agent of the Owner.
- .7 The term "similar" means in its general sense and not necessarily identical.
- .8 The terms "shown", "indicated", "detailed", "noted", "scheduled", and terms of similar import, refer to requirements contained in the Contract Documents.
- .9 Project Manual: The Project Manual is the volume, usually assembled for the Work which includes the Bid Documents, Contract Documents and Specifications.
- .10 Authority Having Jurisdiction (AHJ) means an organization, office or individual responsible for enforcing the requirements of a code or standard, for approving construction documents for compliance with enacted codes and standards, and for inspecting construction for such compliance; example Local Building Official and Fire Marshal, State School Architect, State Fire Marshal, State Division of Construction Management and similar individuals and organizations.

B. Add the following §1.2.1.2 as follows:

1.2.1.2 Discrepancies Between Contract Documents: Contract Documents shall be interpreted collectively; each part complimenting the other parts. Items occurring on one contract document shall be provided at Contractors expense, complete and ready for service or further construction unless specifically indicated as Not In Contract (NIC) or By Owner, consistent with the reasonably inferable intent of the Contract Documents as a whole.

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

- C. Add the following to §2.3.6 to read as follows: The date, time, and place of a bid opening will be given in the Invitation to bidders. Copies of the complete set of Bid Documents may be inspected and/or obtained as indicated in the Advertisement to Bid:
- Orange Beach City Hall
 - 4099 Orange Beach Boulevard
 - Orange Beach, AL 36561
- Or downloaded from the City's website: www.orangebeachal.gov.
- D. Add §3.2.5: The Owner is entitled to reimbursement from the Contractor for amounts paid to the Architect for evaluating and responding to the Contractor's requests for information that are not prepared in accordance with the Contract Documents or where the requested information is available to the Contractor from a careful study and comparison of the Contract Documents, field conditions, other Owner-provided information, Contractor- prepared coordination drawings, or prior Project correspondence or documentation.
- E. Add §3.4.2.1: After the Contract has been executed, the Owner, and Architect will consider requests for the substitution of products in place of those specified only under the conditions set forth in the General Requirements (Division 1 of the Specifications). By making requests for substitutions, the Contractor:
1. represents that it has personally investigated the proposed substitute product and determined that it is equal or superior in all respects to that specified;
 2. represents that it will provide the same warranty for the substitution as it would have provided for the product specified;
 3. certifies that the cost data presented is complete and includes all related costs for the substituted product and for Work that must be changed as a result of the substitution, except for the Architect's redesign costs, and waives all claims for additional costs related to the substitution that subsequently become apparent; and shall coordinate the installation of the accepted substitute, making such changes as may be required for the Work to be complete in all respects.
- F. Add §3.4.2.2 The Owner shall be entitled to reimbursement from the Contractor for amounts paid to the Architect for reviewing the Contractor's proposed substitutions and making agreed-upon changes in the Drawings and Specifications resulting from such substitutions.
- G. Add §3.4.4 All manufactured articles, materials and equipment must be supplied, installed, connected, erected, used, cleansed and conditioned in accordance with the manufacturer's specifications, directions and appropriate industry standards unless otherwise specified.
- H. Add §3.4.5 The Contractor shall comply with all applicable State and Federal statutes regarding minimum wages to be paid. The Contract sum will not be increased because of subsequent increases in wage rates.
- I. Replace §3.6 in its entirety with the following: Materials purchased for incorporation into the facility shall be exempt from taxes in accordance with Alabama Department of Revenue Rule 810-6-3-.69.02. The contractor shall not include the cost of sales tax on such materials in their bid price or contract amount. See Section 01 2976.13 for specific requirements and procedures.
- J. Modify §3.7.4: replace "14 days after first observance of conditions" with "seven (7) days after first observance of conditions".
- K. Add §4.2.3.1 The Owner is entitled to reimbursement from the Contractor for amounts paid to the Architect for site visits made necessary by the fault of the Contractor or by defects and deficiencies in the Work.
- L. Delete Section 4.2.4 and substitute the following: § 4.2.4 The Owner and Contractor shall communicate with each other through the Architect about matters arising out of or relating to the Project. Communications by and with the Architect's consultants shall be through the Architect. Communications by and with Subcontractors and suppliers shall be through the Contractor. Communications by and with Separate Contractors shall be through the Owner. The Contract Documents may specify other communication protocols.

- M. Add §5.2.5 Not later than (20) days after the date of commencement of the Work, the Contractor shall furnish in writing to the Owner, through the Architect, the names of persons or entities proposed as manufacturers or fabricators for certain products, equipment and systems identified in the General Requirements (Division 01 of the Specifications) and, where applicable, the name of the installing Subcontractor(s).
- N. Add §7.1.4 The combined overhead and profit included in the total cost to the Owner for a change in the Work shall be based on the following schedule:
1. For the Contractor, for Work performed by the Contractor's own forces 20% of the cost of the work.
 2. For the Contractor, for work performed by the Contractor's Subcontractors, 10% of the cost of the Work.
 3. For each Subcontractor involved, for Work performed by that Subcontractor's own forces, 10% of the cost of the Work
 4. For each subcontractor involved for Work performed by the Subcontractor's subcontractors, 10% of the cost of the Work.
 5. Cost to which overhead and profit is to be applied shall be determined in accordance with Section 7.3.7
 6. In order to facilitate checking of quotations for extras or credits, all proposals, except those so minor that their propriety can be seen by inspection, shall be accompanied by a complete itemization of costs including labor, materials and subcontracts. Labor and materials shall be itemized in the manner prescribed above. Where major cost items are subcontracts, they shall be itemized also. In no case will a change involving over \$5,000.00 be approved without such itemization.
- O. Add §8.4 CONSTRUCTION DURATION.
1. 8.4.1 The Contractor shall achieve substantial completion of Work, or portion of the Work, per the Time Allotted for Completion included in Paragraph 1.02 B of Section 01 1000 - Summary.
 2. The completion date shall not be extended except for unavoidable delays caused by, but not limited to, fires, floods, storms, strikes, accidents, or other circumstances beyond the Contractor's control. The Contractor may request additional completion time within one week from the occurrence of the delay. The City shall be the sole judge of such "unavoidable delays," and the extent thereof. In the event that such a determination is made, the date of completion shall be extended by a length of time equal to that lost by such circumstances. The City shall not be liable to the Contractor for any damages or additional compensation as a consequence of any delay, hindrance, interference, or other similar event beyond the City's control. Failure by the Contractor to notify the City within one week from the occurrence of delay will constitute a forfeiture of any potential time extension.
- P. Add §9.3.1.3: Until Substantial Completion, the Owner shall pay 90 percent of the amount due the Contractor on account of progress payments.
- Q. Add §9.3.1.4 Until all work is satisfactorily completed in accordance with this agreement and all closeout requirements have been provided, full payment shall be paid less five percent (5%) of the amount of such pay request which is to be retained by the Owner until all outstanding items have been fully completed.
- R. Add §9.11 Liquidated Damages: The Contractor and the Contractor's surety, if any, shall be liable for and shall pay the Owner the sums hereinafter stipulated as liquidated damages, and not as a penalty, for each calendar day of delay after the date established for Substantial Completion of the Work, or portion of the Work, as defined in the Contract Documents until the Work is substantially complete: Seven hundred fifty dollars (\$750.00).
1. 9.11.1: It is mutually understood and agreed between the contracting parties and contractor's surety that such amount is a reasonable measure of liquidated damages.

- S. § 10.2.4.1 When use or storage of explosives, or other hazardous materials, substances or equipment, or unusual methods, are necessary for execution of the Work, the Contractor shall give the Owner reasonable advance notice.
- T. Add §11.1.1.1 The limits for Worker's Compensation insurance shall meet statutory limits mandated by State and Federal Laws. If (1) limits in excess of those required by statute are to be provided, (2) the employer is not statutorily bound to obtain such insurance coverage, or (3) additional coverages are required, additional coverages and limits for such insurance shall be as follows:
- U. Add §11.1.1.2 The Contractor shall be responsible to the Owner from the time of the signing of the Construction Contract or from the beginning of the first work, whichever shall be earlier, for all injury or damage of any kind resulting from any negligent act or omission or breach, failure or other default regarding the work by the Contractor, Subcontractor, or anyone directly or indirectly employed by the Contractor or Subcontractor or anyone for whose acts they may be liable, regardless of who may be the owner of the property.
- V. Add §11.1.1.3 Each of the insurance coverage's required shall be issued by an insurer licensed by the Insurance Commissioner to transact the business of insurance in the State of Alabama for the applicable line of insurance, and such insurer (or for qualified selfinsured's or group self-insured's, a specific excess insurer providing statutory limits) must have a Best Policyholders Rating of "A-" or better and a financial size rating of Class V or larger.
- W. Add §11.1.1.4 Each policy shall be endorsed to provide that the insurance company agrees that the policy shall not be canceled, changed, allowed to lapse or allowed to expire for any reason until thirty (30) days after the Owner has received written notice by certified mail as evidenced by return receipt or until such time as other insurance coverage providing protection equal to protection called for in the Contract Documents shall have been received, accepted and acknowledged by the Owner. Such notice shall be valid only as to the Project as shall have been designated by Project Name and Number in said notice.
- X. Add §11.1.1.5 The Contractor shall procure the insurance coverage's identified below, or as otherwise required in the Contract Documents, at the Contractor's own expense, and to evidence that such insurance coverage's are in effect. The Contractor shall furnish all named insureds an insurance certificate(s) acceptable to the Owner and listing the Owner as the certificate holder. The insurance certificate(s) must be delivered to the Owner with the Construction Contract and Bonds for final approval and execution of the Construction Contract. The insurance certificate must provide the following:
 - 1. Name and address of authorized agent of the insurance company
 - 2. Name and address of insured
 - 3. Name of insurance company or companies
 - 4. Description of policies
 - 5. Policy Number(s)
 - 6. Policy Period(s)
 - 7. Limits of liability
 - 8. Name and address of Owner as certificate holder
 - 9. Project Name and Number, if any
 - 10. Signature of authorized agent of the insurance company
 - 11. Telephone number of authorized agent of the insurance company
 - 12. Mandatory thirty (30) day notice of cancellation / non-renewal / change
- Y. The Contractor agrees the insurance requirements herein as well as Owner'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.
- Z. Add §11.1.1.6 Additional Insureds: All Contractor's insurance policies shall name the Owner and Architect as additional insureds.
- AA. Add §11.1.1.7 Certificate of Insurance.

1. Contractor agrees to provide City a Certificate of Insurance evidencing the above coverages. If the Contractor receives a non-renewal or cancellation or other material change notice from an insurance carrier affording coverage required herein, Contractor agrees to notify the City immediately with specifics as to which coverage is no longer in compliance. The City shall have the right, but not the obligation, of prohibiting Contractor from entering the Work site until a new Certificate of Insurance is provided to the City evidencing the replacement coverage. The Contractor agrees the City reserves the right to withhold payment to Contractor until evidence of reinstated or replacement coverage is provided to the City. If the Contractor fails to maintain the insurance as set forth herein, the Contractor agrees the City shall have the right, but not the obligation, to purchase replacement insurance, which the Contractor agrees to reimburse any premiums or expenses incurred by the City.
 2. The Contractor agrees the Certificate(s) of Insurance shall:
 - a. Clearly indicate the City has been endorsed on the Commercial Umbrella/Excess Liability and Commercial General Liability policy as an Additional Insured.
 - b. Clearly indicate the project name and project number.
 - c. Clearly indicated Certificate Holder(s) as follows and forward originals to:

City of Orange Beach
Attn: City Clerk
P.O. Box 458
Orange Beach, AL 36561
Fax (251) 981-1442
- AB. Add §11.1.1.8 Insurance Coverages.
- AC. 11.1.1.8.1: Worker's Compensation and Employer's Liability Coverage
- AD. Workers' Compensation coverage shall be provided in accordance with the statutory coverage required in Alabama. A group insurer must submit a certificate of authority from the Alabama Department of Industrial Relations approving the group insurance plan. A self-insurer must submit a certificate from the Alabama Department of Industrial Relations stating that the Contractor qualifies to pay its own workers' compensation claims.
- AE. Employer's Liability Insurance limits shall be at least:
1. Bodily Injury by Accident -\$1,000,000.00 each accident
 2. Bodily Injury by Disease -\$1,000,000.00 each employee
- AF. 11.1.1.8.2 Commercial General Liability Insurance
1. Commercial General Liability Insurance ("CGL"), written on an ISO Occurrence Form (current edition of ISO CG 00 01 as of the date of Advertisement for Bids) or equivalent, shall include but need not be limited to coverage for bodily injury and property damage arising from premises and operations liability, products and completed operations liability, blasting and explosion, collapse of structures, underground damage, personal injury liability and contractual liability. The Commercial General Liability Insurance shall provide at minimum the following limits:
 - a. Coverage Limit
 - b. General Aggregate \$ 2,000,000.00 per Project.
 - c. Products, Completed Operations
 - d. Aggregate \$ 2,000,000.00 per Project
 - e. Personal and Advertising Injury \$1,000,000.00 per Occurrence
 - f. Each Occurrence \$ 1,000,000.00
 2. Additional Requirements for Commercial General Liability Insurance:
 - a. The policy shall name the Owner, City of Orange Beach, Architect and their agents, consultants and employees as additional insureds (the "Indemnitees"), and state that this coverage shall be primary insurance for the additional insureds. Evidence that Contractor's insurance is primary with respect to any coverages available to the Indemnitees shall be provided in the form of an endorsement to the Contractor's CGL

policy. Evidence that the Indemnitees have been named as additional insureds shall be provided by endorsements equivalent to ISO CG 2010 or CG 2033 and CG 2037.

b. The policy must include separate per project aggregate limits.

AG. 11.1.1.8.3 Commercial Business Automobile Liability Insurance

1. Commercial Business Automobile Liability Insurance shall include coverage for bodily injury and property damage arising from the operation of any owned, non-owned or hired automobile. The Commercial Business Automobile Liability Insurance Policy shall provide not less than \$1,000,000.00 Combined Single Limits for each occurrence.
2. The policy shall name the Owner, City of Orange Beach, Architect and their agents, consultants and employees as additional insured's

AH. 11.1.1.8.4 Commercial Umbrella Liability Insurance

1. Umbrella Liability Insurance shall provide coverage limits excess of the Commercial General Liability, Commercial Business Automobile Liability and the Employers' Liability coverage limits, on a follow-form basis, to satisfy the minimum limits set forth herein.
2. Minimum Combined Primary Commercial General Liability and Commercial/Excess Umbrella Limits of:
 - a. \$ 1,000,000.00 over primary insurance.

AI. 11.1.1.8.5 Builder's Risk Insurance

1. The Builder's Risk Policy shall cover the interests of the Owner, Contractor and Subcontractors in the Work. The policy amount shall be equal to 100% of the Contract Sum, plus the value of subsequent Change Orders and cost of materials supplied or installed by others, comprising total value for the Work at the site on a replacement cost basis without optional deductibles. The policy shall be maintained until final payment has been made as provided in Article 9.10 of the General Conditions or until no person or entity other than the Owner has an insurable interest in the property All deductibles shall be the sole responsibility of the Contractor

AJ. 11.1.1.8.6 Subcontractor's Insurance

1. Worker's Compensation and Employer's Liability Insurance. The Contractor shall require each Subcontractor to obtain and maintain statutory Workers' Compensation Insurance and adequate Employer's Liability Insurance covering all employees working on the jobsite.
2. Liability Insurance. The Contractor shall require each Subcontractor to obtain and maintain adequate Commercial General Liability and Automobile Liability Insurance coverages equal to those of the Prime Contractor. Such coverages shall be in effect at all times that a Subcontractor is performing Work under the Contract.
3. Enforcement Responsibility. The Contractor shall have responsibility to enforce its Subcontractors' compliance with these or similar insurance requirements; however, the Contractor shall, upon request, provide the Architect or Owner acceptable evidence of insurance for any Subcontractor.

AK. Add §11.1.1.8.7 The Contractor shall, at the Contractor's own expense provide insurance coverage for materials stored off the site after written approval of the Owner at the value established in the approval, and also for portions of the Work in transit until such materials are permanently attached to the Work.

1. The insurance required by Section 11.1.1.6.7 is not intended to cover machinery, tools or equipment owned or rented by the Contractor that are utilized in the performance of the Work but not incorporated into the permanent improvements. The Contractor shall, at the Contractor's own expense, provide insurance coverage for owned or rented machinery, tools or equipment, which shall be subject to the provisions of Property Insurance requirements.

AL. 11.1.1.8.8 Termination of Obligation to Insure

1. Unless otherwise expressly provided in the Contract Documents, the obligation to insure as provided herein shall continue as follows:
2. Products and Completed Operations. The obligation to carry Products and Completed Operations coverages specified for Commercial General Liability shall remain in effect for

at least the time period established by applicable state law for bringing actions based on defective construction or design claims.

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

AM. 11.1.1.8.9 Right to Revise or Reject

1. 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.

AN. 11.1.1.8.10 No Representation of Coverage Adequacy

1. 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.

AO. Add §11.1.2.1 The Contractor shall furnish bonds covering faithful performance of the Contract and payment of obligations arising thereunder. Bonds may be obtained through the Contractor's usual source and the cost thereof shall be included in the Contract Sum. The amount of each bond shall be equal to (100%) of the Contract Sum. Payment and Performance Bond shall be issued by an entity that i) has a Rating of A- or better; ii) is in a "Financial Size Category" of at least VII (\$50 to \$100 million); and iii) has an "Outlook" of either "Positive" or "Stable."

AP. Add §11.1.2.2 The Contractor shall deliver the required bonds to the Owner not later than fourteen (14) days following the date the Agreement is entered into, or if the Work is to be commenced prior thereto in response to a letter of intent, the Contractor shall, prior to the commencement of the Work, submit evidence satisfactory to the Owner that such bonds will be furnished.

AQ. Add §11.1.2.3 The Contractor shall require the attorney-in-fact, who executes the required bonds on behalf of the surety to affix thereto a certified and current copy of the power of attorney.

AR. Add §12.2.2.4 Prior to the expiration of one year from the date of Substantial Completion (correction period), the Architect and Owner will conduct and the Contractor shall attend a meeting with the Owner to review the facility operations and performance and inspect the construction.

AS. Add § 13.7 Alabama Immigration Law

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

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

AT. Add § 13.8 Alabama Boycott Law

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

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

AU. Add: §15.1.6.2.1 Calculation of rain days shall be determined as follows:

1. Obtain precipitation data from the National Oceanic and Atmospheric Administration (N.O.A.A.) for Orange Beach, Alabama.
2. A rain day is considered to be any day with a measured precipitation of more than 0.1 inch.
3. Determine the average number of days per month with a measured precipitation of more than 0.1 inch for the five-year period preceding the start of the project in question.
4. Compare the number of rain days during each month of the project contact time period to the monthly five-year average. The Contractor may be granted an extension for rain days during the contract period which exceeded the five year average. The number of days granted will vary for different types of projects, depending upon the amount of inside or outside work. Refer to the following table for various time extensions pertinent to typical project types. No time will be deducted from the contract period for months when rain days are less than the five-year average.

CLASS	TYPE OF PROJECT	NUMBE OF RAIN DAYS GRANTED PER EACH RAIN DAY BEYOND THE FIVE YEAR AVERAGE
I	Low slope (1:12 or less) roof replacement on existing building.	2 each
II	Sitework, paving, underground utilities.	3 each
III	New building, building demolition and steep roof replacement (greater than 1:12.)	1 each.
IV	Renovation of existing building with some outside work.	5 each.
V	Renovation of existing building with no outside work.	0

If time extensions are granted, they shall be included in the next subsequent change order.

Rain Day classification will be Class III unless otherwise modified by Contract Documents.

Reporting of rain days shall be included in each monthly schedule update.

AV. Add §15.1.6.2 Claims for increase in the Contract Time shall set forth in detail the circumstances that form the basis for the Claim, the date upon which each cause of delay began to affect the progress of the Work, the date upon which each cause of delay ceased to affect the progress of the Work and the number of days' increase in the Contract Time claimed as a consequence of each such cause of delay. The Contractor shall provide such supporting documentation as the Architect may require including, where appropriate, a revised construction schedule indicating all the activities affected by the circumstances forming the basis of the Claim.

AW. Add §15.1.6.3 The Contractor shall not be entitled to a separate increase in the Contract Time for each one of the number of causes of delay which may have concurrent or interrelated effects on the progress of the Work, or for concurrent delays due to the fault of the Contractor.

AX. Add §15.1.6.4 Inclement or adverse weather shall not be a prima facie reason for the granting of an extension of time, and the Contractor shall make every effort to continue work under prevailing conditions. The Owner may grant an extension of time if an unavoidable delay occurs as a result of inclement/severe/adverse weather and such shall then be classified as a "Delay Day". Any and all delay days/rain days granted by the Owner are and shall be non-compensable in any manner or form. The Contractor shall comply with the notice requirements concerning instances of inclement/severe/adverse weather before the Owner shall consider a time extension. Each day of inclement/severe/adverse weather shall be

considered a separate instance or event and as such, shall be subject to the notice requirement of Section 15.1.2.

AY. Add the following at the beginning of the first sentence in Paragraph 15.3.1:

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

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

PART 2 PRODUCTS - NOT USED

PART 3 EXECUTION - NOT USED

END OF SECTION

SECTION 00 7320.22

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)
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FORM OF OWNERSHIP:

- Individual Partnership Corporation Multi member LLC Single member LLC

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

OWNERSHIP INFORMATION:

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

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

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

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

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

NAME (PLEASE PRINT)	SIGNATURE
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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 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 Sportplex Renovation to Baseball Softball Complex, City of Orange Beach, Orange Beach, Alabama.
- B. Owner's Name: City of Orange Beach, Alabama.
4099 Orange Beach Blvd. Telephone: 251 981-6979
Orange Beach, Alabama 36561.
Ken Grimes, Jr., City Administrator.
Web Site: www.orangebeachal.gov.
Owner's Representative: Ken Grimes, Jr., City Administrator.
Telephone: 251-981-6806.
E-Mail: kgrimes@orangebeachal.gov / reberly@orangebeachal.gov.
Owner's Project Manager: Nick Klarman, Construction and Facilities Manager.
City of Orange Beach.
P. O. Box 458 | 4099 Orange Beach Blvd.
Orange Beach, AL 36561
C: 251.652.5060 | F: 251.981.6981
- C. Architect's Name: Davis Architects Inc.
Architect's Address: 120 23rd Street South, Birmingham, Alabama 35233.
Telephone: 205-322-7482.
 - 1. Architect's Project Manager: Jeff Manasco.
- D. Additional Project contact information is specified in Section - 00 0103 - Project Directory.
- E. The Project consists of the construction of renovations to baseball/softball complex for the City of Orange Beach.

1.02 CONTRACT DESCRIPTION

- A. Contract Type: A single prime contract based on a Stipulated Price as described in Document 00 5000 - Contracting Forms and Supplements.
- B. Time Allotted for Completion:
 - 1. It is anticipated that Contract will be awarded no later than June 17, 2020. Notice to Proceed will be issued on or about June 29, 2020 Mobilization and construction shall begin no later than July 3, 2020.
 - 2. The entire Work shall be Substantially Complete no later than January 15, 2021 by 5:00 PM on that day.
 - 3. See General Conditions and Supplementary Conditions for Liquidated Damages provisions.
- C. Drawings and Specifications: Drawings and Specifications are complementary, divisions and sections are arranged according to materials and functions and are not intended to be "trade" sections. These Specifications establish construction and material standards and techniques and do not necessarily cover all specific items of materials shown on the Drawings.
- D. Inspection of Job Site: Contractor acknowledges that he has visited the job site and examined the conditions for purposes of determining amount of work to be done.
 - 1. The contractor is expected to verify all dimensions and quantities necessary to complete project. The Contractor must contact the Architect to schedule site visit.
 - 2. All questions, clarifications, etc. should be addressed to Davis Architects, Attention Jeff Menasco, Project Manager or at e-mail address jmenasco@dadot.com.

- E. Submittals: All submittals shall be addressed to Davis Architects, Inc., 120 Twenty-Third Street South, Birmingham Alabama 35233, Attention Jeff Menasco or at e-mail address jmenasco@dadot.com.

1.03 SALES TAX AGREEMENT

- A. Owner is a tax-exempt entity and does not pay sales or use tax. See Document 01 2976.16 - Sales and Use Tax Savings Requirements. Obtain Certificate of Exemption from Alabama Department of Revenue (ADOR). See also 00 7323.22 - Application for Sales and Use Tax Certificate of Exemption.

1.04 DESCRIPTION OF ALTERATIONS WORK

- A. Scope of demolition and removal work is indicated on drawings and specified in Section 02 4100.
- B. Scope of alterations work is indicated on drawings.
- C. Electrical Power and Lighting: Rework existing electrical lines to avoid areas of new construction. 2 existing light poles indicated on Drawings to remain..
- D. Irrigation system: Field irrigation must remain active throughout construction. Re-route lines around areas of construction. Where necessary, provide temporary controllers. Retain existing controllers for Owner's use.
- E. Existing Backstop Netting System. 2 support poles indicated on Drawings to remain for use in new backstop netting system.
- F. Contractor shall remove and deliver the following to Owner prior to start of work: Relocate to new location as directed by Owner and re-install.
 - 1. Existing aluminum grandstands at baseball and at softball fields..

1.05 WORK BY OWNER

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

1.06 OWNER OCCUPANCY

- A. Time is of the essence of the Contract. In the event the Contractor shall, for any reason, fall behind schedule, he shall promptly put double shifts of labor on the Work and/or take such other steps as may be required to expedite the work to ensure that the Work shall be fully completed within the stated time and at no extra cost to the Owner.
- B. See Document 00 7300 - Supplemental General Conditions for Liquidated Damages provisions.
- C. Owner intends to occupy existing facilities surrounding the work area for the entire construction period. Adjacent areas outside construction site will be in use by the public.
- D. Owner intends to occupy the Project upon Substantial Completion.
- E. Cooperate with Owner to minimize conflict and to facilitate Owner's operations.
- F. Schedule the Work to accommodate Owner occupancy.
 - 1. Notify Owner not less than 72 hours in advance of activities that will affect Owner's operations.

1.07 CONTRACTOR USE OF SITE AND PREMISES

- A. Examination of the Premises:
 - 1. The Contractor acknowledges that he has examined the premises and satisfied himself as to the existing conditions under which he will be obliged to operate in performing his part of the Work and that will in any way affect the Work under this Contract. No allowance will be made subsequently in this connection on behalf of the Contractor for any error or negligence on his part.
 - 2. Contractor acknowledges that he has examined all surfaces on which, or against which, work is to be applied and shall notify the Architect in writing of any defects that he may discover which, in his opinion, would be detrimental to the proper installation or operation

of the Work. Commencing of work by Contractor denotes acceptance by Contractor of all conditions affecting the Work.

- B. Construction Operations: Limited to areas noted on Drawings.
 - 1. Locate and conduct construction activities in ways that will limit disturbance to site.
 - 2. On-Site Work Hours: Work shall be generally performed during normal business working hours of 7:00 a.m. to 6:00 p.m., Monday through Friday.
- C. Access and Protection:
 - 1. Access, General: Utilize approved route to and from site as required by Owner.
 - 2. Truck and equipment access: Provide adequate protection for curbs and sidewalks over which trucks and equipment pass to reach the job site. Comply with all regulations and requirements of governmental authorities having jurisdiction.
 - 3. Protection of existing site features to remain: Provide adequate protection for existing site features to remain.
 - 4. Maintain surrounding roads in a clean and safe condition. Clean all mud and debris from public streets and walks.
 - 5. Provide security fence around site of the work.
 - 6. Provide lockable fenced area for storage of materials and equipment.
- D. Alabama 811 - Call before you dig.
 - 1. To utilize AL 811 services and comply with Alabama Law excavators shall call Alabama 811 at least 2 full days beginning next business day, excluding weekends and holidays, prior to commencing work.
 - 2. Contact Alabama 811 by calling 1-800-292-8525, or #DIG which is a free call with certain wireless providers. Approved users may notify AL 811's members through the remote ticket entry program: call811.com.
 - 3. Locate request will be valid for 20 days.
- E. Arrange use of site and premises to allow:
 - 1. Owner occupancy.
 - 2. Work by Others.
 - 3. Work by Owner.
 - 4. Use of site and premises by the public.
- F. Provide access to and from site as required by law and by Owner:
 - 1. Emergency Building Exits During Construction: Keep all exits required by code open during construction period; provide temporary exit signs if exit routes are temporarily altered.
 - 2. Do not obstruct roadways, sidewalks, or other public ways without permit.
- G. Existing building spaces may not be used for storage.
- H. Utility Outages and Shutdown:
 - 1. Do not disrupt or shut down life safety systems, including but not limited to fire sprinklers and fire alarm system, without 7 days notice to Owner and authorities having jurisdiction.
 - 2. Existing Utility Interruptions: Do not interrupt utilities serving facilities occupied by Owner or others unless permitted under the following conditions and then only after providing temporary utility services according to requirements indicated:
 - 3. Notify Architect not less than two days in advance of proposed utility interruptions.
 - 4. Obtain Owner's written permission before proceeding with utility interruptions.
 - 5. Prevent accidental disruption of utility services to other facilities.

1.08 DRESS, CONDUCT AND DECORUM

- A. Shirts and other proper clothing are required on the job.
- B. Clothing, stickers, bumper stickers, license tags and any other device which contains obscene works, symbols or messages which are offensive are expressly prohibited.
- C. Cursing, vulgar, obscene, flirtatious language, gestures manners, etc. will not be tolerated.

- D. It is desired to eliminate unnecessary shouting and any other unnecessary noise which may disturb the activities of the Church or its neighbors.
- E. No smoking shall be allowed within buildings or within 25 feet of a building entrances, operable windows or outside air intakes.
- F. Use and presence of alcoholic beverages, illegal substances, and firearms are not permitted on site.
- G. It is the responsibility of the General Contractor to provide a drug free work place.
- H. The General Contractor will be asked to remove any worker from the site whose behavior is unacceptable.
- I. Each project worker is to remain in the area of his assignment. Areas which are not associated with the construction, renovation or maintenance contracts or agreements are not to be entered without permission.
- J. All Contractor's personnel shall wear hard hats for the duration of the project. Each employee must wear ID badges that bear the company name, employee name and employee photo.

1.09 WORK SEQUENCE

- A. As soon as practicable after grading activities have progressed and areas not to be used for further construction are complete, stabilize and seed banks and cuts and seed flat graded areas to maximize growth of ground cover during continuing construction activities.
- B. Coordinate construction schedule and operations with Architect.

1.10 CONSERVATION AND SALVAGE

- A. Carry out construction operations with the maximum possible consideration given to conservation of energy, water, and materials. Wherever possible, salvage materials and equipment involved in the performance of the Work, but not incorporated therein.

1.11 GOVERNING REGULATIONS, AUTHORITIES AND LABOR CONDITIONS

- A. Contact governing authorities having relation to Contractor's responsibilities for performing the Work for necessary information and decisions having a bearing on the Work of this Contract.
- B. Obtain all necessary permits and approvals from authorities having jurisdiction and pay all necessary permit fees.
 - 1. The City of Orange Beach will NOT require a building permit fee for this project. NOTE THAT A BUILDING PERMIT MUST BE OBTAINED.
- C. Comply fully with all applicable rules and regulations governing health and safety of employees and the general public, including Occupational Safety and Health Administration regulations and Department of Labor, Bureau of Labor Standards "Safety and Health Regulations for Construction" as may be applicable to this project.
- D. Sediment and drainage control: Comply fully with City requirements for control of runoff water and sediment from the site and construction operations. Maintain sediment barriers at all times until stabilization of the site, including cleaning of all vehicles leaving the site.

1.12 SPECIFICATIONS AND DRAWING CONVENTIONS

- A. Specification Content: The Specifications use certain conventions for the style of language and the intended meaning of certain terms, words, and phrases when used in particular situations. These conventions are as follows:
 - 1. Imperative mood and streamlined language are generally used in the Specifications. The words "shall," "shall be," or "shall comply with," depending on the context, are implied where a colon (:) is used within a sentence or phrase.
 - 2. Specification requirements are to be performed by Contractor unless specifically stated otherwise.
- B. Division 01 General Requirements: Requirements of Sections in Division 01 apply to the Work of all Sections in the Specifications.

- C. Drawing Coordination: Requirements for materials and products identified on Drawings are described in detail in the Specifications. One or more of the following are used on Drawings to identify materials and products:
1. Terminology: Materials and products are identified by the typical generic terms used in the individual Specifications Sections.
 2. Abbreviations: Materials and products are identified by abbreviations published as part of the U.S. National CAD Standard and scheduled on Drawing.

PART 2 PRODUCTS - NOT USED

PART 3 EXECUTION - NOT USED

END OF SECTION

SECTION 01 2000
PRICE AND PAYMENT PROCEDURES

PART 1 GENERAL

1.01 SECTION INCLUDES

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

1.02 RELATED REQUIREMENTS

- A. Section 00 5000 - Contracting Forms and Supplements: Forms to be used.
- B. Section 00 7200 - General Conditions: Additional requirements for progress payments, final payment, changes in the Work.
- C. Section 00 7300 - Supplementary Conditions: Percentage allowances for Contractor's overhead and profit.
- D. Section 01 2100 - Allowances: Payment procedures relating to allowances.

1.03 SCHEDULE OF VALUES

- A. Use Schedule of Values Form: AIA G703, edition stipulated in the Agreement.
- B. Electronic media printout including equivalent information will be considered in lieu of standard form specified; submit draft to Architect for approval.
- C. Forms filled out by hand will not be accepted.
- D. Submit Schedule of Values in duplicate within 15 days after date of Owner-Contractor Agreement.
- E. Format: Utilize the Table of Contents of this Project Manual. Identify each line item with number and title of the specification section. Identify site mobilization.
- F. Include separately from each line item, a direct proportional amount of Contractor's overhead and profit.
- G. Revise schedule to list approved Change Orders, with each Application For Payment.

1.04 APPLICATIONS FOR PROGRESS PAYMENTS (SEE SECTION 01 2900 FOR ADDITIONAL REQUIREMENTS.)

- A. Payment Period: Submit at intervals stipulated in the Agreement.
- B. Use Form AIA G702 and Form AIA G703, edition stipulated in the Agreement.
- C. Electronic media printout including equivalent information will be considered in lieu of standard form specified; submit sample to Architect for approval.
- D. Forms filled out by hand will not be accepted.
- E. For each item, provide a column for listing each of the following:
 - 1. Item Number.
 - 2. Description of work.
 - 3. Scheduled Values.
 - 4. Previous Applications.
 - 5. Work in Place and Stored Materials under this Application.
 - 6. Authorized Change Orders.
 - 7. Total Completed and Stored to Date of Application.
 - 8. Percentage of Completion.
 - 9. Balance to Finish.

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

1.05 MODIFICATION PROCEDURES

- A. Submit name of the individual authorized to receive change documents and who will be responsible for informing others in Contractor's employ or subcontractors of changes to Contract Documents.
- B. For minor changes not involving an adjustment to the Contract Price or Contract Time, Architect will issue instructions directly to Contractor.
- C. For other required changes, Architect will issue a document signed by Owner instructing Contractor to proceed with the change, for subsequent inclusion in a Change Order.
 1. The document will describe the required changes and will designate method of determining any change in Contract Price or Contract Time.
 2. Promptly execute the change.
- D. For changes for which advance pricing is desired, Architect will issue a document that includes a detailed description of a proposed change with supplementary or revised drawings and specifications, a change in Contract Time for executing the change with a stipulation of any overtime work required and the period of time during which the requested price will be considered valid. Contractor shall prepare and submit a fixed price quotation within 5 days.
- E. Computation of Change in Contract Amount: As specified in the Agreement and Conditions of the Contract.
 1. For change requested by Architect for work falling under a fixed price contract, the amount will be based on Contractor's price quotation.
 2. For change requested by Contractor, the amount will be based on the Contractor's request for a Change Order as approved by Architect.
 3. For change ordered by Architect without a quotation from Contractor, the amount will be determined by Architect based on the Contractor's substantiation of costs as specified for Time and Material work.
- F. Substantiation of Costs: Provide full information required for evaluation.
 1. On request, provide the following data:
 - a. Quantities of products, labor, and equipment.
 - b. Taxes, insurance, and bonds.
 - c. Overhead and profit.
 - d. Justification for any change in Contract Time.
 - e. Credit for deletions from Contract, similarly documented.
 2. Support each claim for additional costs with additional information:
 - a. Origin and date of claim.
 - b. Dates and times work was performed, and by whom.

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

1.06 APPLICATION FOR FINAL PAYMENT

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

PART 2 PRODUCTS - NOT USED

PART 3 EXECUTION - NOT USED

END OF SECTION

**SECTION 01 2100
ALLOWANCES**

PART 1 GENERAL

1.01 SECTION INCLUDES

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

1.02 CASH ALLOWANCES

- A. Costs Included in Cash Allowances: Cost of product to Contractor or subcontractor, less applicable trade discounts. Comply with Article 43 of General Conditions.
- B. Contractor's costs for receiving and handling at project site, labor, installation, overhead and profit, and similar costs related to allowance shall be included in Contract Sum and not part of allowance.
 - 1. Contractor overhead and profit is included in Base Bid and will be excluded on Change Orders associated with allowance.
- C. Excess Materials: Return unused materials purchased under an allowance to manufacturer or supplier for credit to Owner, after installation has been completed and accepted.
 - 1. If requested by Architect, retain and prepare unused material for storage by Owner. Deliver unused material to Owner's storage space as directed.
- D. Actual quantities shall be computed by field measurement. Allowance amounts shall be adjusted by actual amounts of work. Adjustments for more work or less work will be made by Change Order, prepared by Architect.
- E. Take all measurements and compute quantities. Measurements and quantities will be verified by Architect.
- F. Provide total of each allowance amount on space provided on Proposal Form.
- G. Include all allowance amounts in Base Bid.
- H. Architect Responsibilities:
 - 1. Consult with Contractor for consideration and selection of products, suppliers, and installers.
 - 2. Select products in consultation with Owner and transmit decision to Contractor.
 - 3. Prepare Change Order.
- I. Contractor Responsibilities:
 - 1. Assist Architect in selection of products, suppliers, and installers.
 - 2. Obtain proposals from suppliers and installers and offer recommendations.
 - 3. On notification of which products have been selected, execute purchase agreement with designated supplier and installer.
 - 4. Arrange for and process shop drawings, product data, and samples. Arrange for delivery.
 - 5. Promptly inspect products upon delivery for completeness, damage, and defects. Submit claims for transportation damage.
- J. Differences in costs will be adjusted by Change Order.

1.03 CONTINGENCY ALLOWANCE

- A. Contractor's costs for products, delivery, installation, labor, insurance, payroll, taxes, bonding, and equipment rental shall be included in Change Orders authorizing expenditure of funds from this Contingency Allowance.
 - 1. Overhead and profit shall be included in Base Bid.
- B. Funds will be drawn from the Contingency Allowance only by Change Order.
- C. At closeout of Contract, funds remaining in Contingency Allowance will be credited to Owner by Change Order.

1.04 ADJUSTMENT OF ALLOWANCES

- A. Allowance Adjustment: To adjust allowance amounts, prepare a Change Order proposal based on the difference between purchase amount and the allowance, multiplied by the final measurement of work-in-place where applicable. If applicable, include reasonable allowances for cutting losses, tolerances, mixing wastes, normal product imperfections and similar margins.
1. Include installation costs in purchase amount only where indicated as part of the allowance.
 2. If requested, prepare explanation and documentation to substantiate distribution of overhead costs and other margins claimed.
 3. Owner reserves the right to establish the quantity of work-in-place by independent quantity survey, measure or count.

1.05 ALLOWANCES SCHEDULE

- A. Allowance No. One: Builder's Risk Insurance.
1. Provide Builders' Risk Insurance and indicate 100% of the total deductible amount below. All unclaimed deductible amounts will be reimbursed to the Owner at project completion as a deductive change order to the contract. Contractor shall provide evidence from insurer of 100% deductible amount within 48 hours of bid opening.

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.
B. Document 00 5200 - Agreement Form: Incorporating monetary value of accepted Alternates.
C.

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 - Canopies over Grandstand and Related Structure:
1. Base Bid Item: Terminate structure at Press Box level.
2. Alternate Item:
a. Extend structure to press box roof level as indicated on structural drawings and provide custom tensioned fabric canopy as specified in Section 13 3100 - Fabric Structures and Drawing Number A104 and A104D. Provide high performance paint coating system on steel per Section 09 9600.
- B. Alternate No. Two - Batting Cage and Practice Facility:
1. Base Bid Item: Batting cage and Practice Facility will not be required.
2. Alternate Item:
a. Metal Building System as specified in Section 13 3419 - Metal Building Systems, and Batting Cages specified in Section 11 6833 Baseball Field Equipment, and Drawing Number A1#A, A1#B, A1#C, A1#D and A1#E including miscellaneous items indicated on Drawings.
- C. Alternate No. Three - New Field Fencing:
1. Base Bid Item: Existing field fencing to remain.
2. Alternate Item: Remove and properly dispose of existing field fencing and gates at both fields and install new fencing and gates at 6 foot and 8 foot heights throughout per Civil drawings and Section 32 3113 - Chain Link fences and Gates.
- D. Alternate No. Four - Privacy Screen:
1. Base Bid Item: No privacy screen will be required.
2. Alternate Item: Provide privacy screen at all new field fencing at 6 foot and 8 foot heights per Civil drawings and Section 32 3113 - Chain Link fences and Gates.
- E. Alternate No. Five - Regrade Field 2 Outfields:
1. Base Bid Item: No regrading or sod will be required.
2. Alternate Item: Regrade Field 2 outfields from existing 3 percent slope to 1.5 percent slope and add new sod. See Civil Drawings.

PART 2 PRODUCTS - NOT USED

PART 3 EXECUTION - NOT USED

END OF SECTION

SECTION 01 2500
SUBSTITUTION PROCEDURES

PART 1 - GENERAL

1.01 SUMMARY

- A. Section includes administrative and procedural requirements for substitutions after contract award.
- B. Related Requirements:
 - 1. Instructions to Bidders for substitution requests prior to bidding.
 - 2. Section 016000 "Product Requirements" for requirements for submitting comparable
 - 3. product submittals for products by listed manufacturers.
 - 4. Section 017100 "Sequence of Finish Installation" for requirements for submitting substitutions of finish materials not specified.

1.02 DEFINITIONS

- A. Substitutions: Changes in products, materials, equipment, and methods of construction from those required by the Contract Documents and proposed by Contractor.
 - 1. Substitutions for Cause: Changes proposed by Contractor that are required due to changed Project conditions, such as unavailability of product, regulatory changes, or unavailability of required warranty terms.
 - 2. Substitutions for Convenience: Changes proposed by Contractor or Owner that are not required in order to meet other Project requirements but may offer advantage to Contractor or Owner.
 - 3. Approval of an unnamed manufacturer offering products equal to the specified products is not considered a substitution.

1.03 ACTION SUBMITTALS

- A. Substitution Requests: Submit three copies of each request for consideration. Identify product or fabrication or installation method to be replaced. Include Specification Section number and title and Drawing numbers and titles.
- B. Product substitutions will only be considered in the event of the following:
 - 1. Specified product is no longer available
 - 2. The specified product is not appropriate for use, in the opinion of the Contractor.
 - a. Upon evaluation, the Architect will determine whether a product substitution is required.
 - 3. Substitution Request Form: Use CSI Form 13.1A (after contract execution) or other form approved by Project Manager or Architect.
 - 4. Documentation: Show compliance with requirements for substitutions and the following, as applicable:
 - a. Statement indicating why specified product or fabrication or installation cannot be provided, if applicable.
 - b. Coordination information, including a list of changes or revisions needed to other parts of the Work and to construction performed by Owner and separate contractors that will be necessary to accommodate proposed substitution.
 - c. Detailed comparison of significant qualities of proposed substitution with those of the Work specified. Include annotated copy of applicable Specification Section. Significant qualities may include attributes such as performance, weight, size, durability, visual effect, sustainable design characteristics, warranties, and specific features and requirements indicated. Indicate deviations, if any, from the Work specified.
 - d. Product Data, including drawings and descriptions of products and fabrication and installation procedures.
 - e. Samples, where applicable or requested.
 - f. Certificates and qualification data, where applicable or requested.

- g. List of similar installations for completed projects with project names and addresses and names and addresses of architects and owners.
 - h. Material test reports from a qualified testing agency indicating and interpreting test results for compliance with requirements indicated.
 - i. Research reports evidencing compliance with building code in effect for Project, from ICC-ES.
 - j. Detailed comparison of Contractor's construction schedule using proposed substitution with products specified for the Work, including effect on the overall Contract Time. If specified product or method of construction cannot be provided within the Contract Time, include letter from manufacturer, on manufacturer's letterhead, stating date of receipt of purchase order, lack of availability, or delays in delivery.
 - k. Cost information, including a proposal of change, if any, in the Contract Sum.
 - l. Contractor's certification that proposed substitution complies with requirements in the Contract Documents except as indicated in substitution request, is compatible with related materials, and is appropriate for applications indicated.
 - m. Contractor's waiver of rights to additional payment or time that may subsequently become necessary because of failure of proposed substitution to produce indicated results.
5. Architect's Action: If necessary, Architect will request additional information or documentation for evaluation within seven days of receipt of a request for substitution. Architect will notify Contractor of acceptance or rejection of proposed substitution within 15 days of receipt of request, or seven days of receipt of additional information or documentation, whichever is later.
- a. Forms of Acceptance: Change Order, Construction Change Directive, or Architect's Supplemental Instructions for minor changes in the Work.
 - b. Use product specified if Architect does not issue a decision on use of a proposed substitution within time allocated.

1.04 QUALITY ASSURANCE

- A. Compatibility of Substitutions: Investigate and document compatibility of proposed substitution with related products and materials. Engage a qualified testing agency to perform compatibility tests recommended by manufacturers.

1.05 PROCEDURES

- A. Coordination: Revise or adjust affected work as necessary to integrate work of the approved substitutions.

PART 2 - PRODUCTS

2.01 SUBSTITUTIONS

- A. Substitutions for Cause: Submit requests for substitution immediately on discovery of need for change, but not later than 15 days prior to time required for preparation and review of related submittals.
 - 1. Conditions: Architect will consider Contractor's request for substitution when the following conditions are satisfied:
 - a. Requested substitution is consistent with the Contract Documents and will produce indicated results.
 - b. Requested substitution provides sustainable design characteristics that specified product provided.
 - c. Requested substitution will not adversely affect Contractor's construction schedule.
 - d. Requested substitution has received necessary approvals of authorities having jurisdiction.
 - e. Requested substitution is compatible with other portions of the Work.
 - f. Requested substitution has been coordinated with other portions of the Work.
 - g. Requested substitution provides specified warranty.

- h. If requested substitution involves more than one contractor, requested substitution has been coordinated with other portions of the Work, is uniform and consistent, is compatible with other products, and is acceptable to all contractors involved.

- B. Substitutions for Convenience: Not allowed unless otherwise indicated.

PART 3 - EXECUTION (NOT USED)

END OF SECTION

SECTION 01 2600
CONTRACT MODIFICATION PROCEDURES

PART 1 - GENERAL

1.01 SUMMARY

- A. Section includes administrative and procedural requirements for handling and processing Contract modifications.

1.02 MINOR CHANGES IN THE WORK

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

1.03 PROPOSAL REQUESTS

- A. Owner-Initiated Proposal Requests: Architect will issue a detailed description of proposed changes in the Work that may require adjustment to the Contract Sum or the Contract Time. If necessary, the description will include supplemental or revised Drawings and Specifications.
 - 1. Work Change Proposal Requests issued by Architect are not instructions either to stop work in progress or to execute the proposed change.
 - 2. Within time specified in Proposal Request, submit a quotation estimating cost adjustments to the Contract Sum and the Contract Time necessary to execute the change.
 - a. Include a list of quantities of products required or eliminated and unit costs, with total amount of purchases and credits to be made. If requested, furnish survey data to substantiate quantities.
 - b. Indicate applicable taxes, delivery charges, equipment rental, and amounts of trade discounts.
 - c. Include costs of labor and supervision directly attributable to the change.
 - d. Include an updated Contractor's construction schedule that indicates the effect of the change, including, but not limited to, changes in activity duration, start and finish times, and activity relationship.
- B. Contractor-Initiated Work Change Proposals: If latent or changed conditions require modifications to the Contract, Contractor may initiate a claim by submitting a request for a change to Architect.
 - 1. Include a statement outlining reasons for the change and the effect of the change on the Work. Provide a complete description of the proposed change. Indicate the effect of the proposed change on the Contract Sum and the Contract Time.
 - 2. Include a list of quantities of products required or eliminated and unit costs, with total amount of purchases and credits to be made. If requested, furnish survey data to substantiate quantities.
 - 3. Indicate applicable taxes, delivery charges, equipment rental, and amounts of trade discounts.
 - 4. Include costs of labor and supervision directly attributable to the change.
 - 5. Include an updated Contractor's construction schedule that indicates the effect of the change, including, but not limited to, changes in activity duration, start and finish times, and activity relationship.
 - 6. Work Change Proposal Request Form: Use form acceptable to Architect.

1.04 ADMINISTRATIVE CHANGE ORDERS

- A. Allowance Adjustment: See Section 012100 "Allowances" for administrative procedures for preparation of Change Order Proposal for adjusting the Contract Sum to reflect actual costs of allowances.
- B. Unit-Price Adjustment: See Section 012200 "Unit Prices" for administrative procedures for preparation of Change Order Proposal for adjusting the Contract Sum to reflect measured scope of unit-price work.

1.05 CHANGE ORDER PROCEDURES

- A. On Owner's approval of a Work Changes Proposal Request, Architect will issue a Change Order for signatures of Owner and Contractor on form approved by the Architect.

1.06 CONSTRUCTION CHANGE DIRECTIVE

- A. Construction Change Directive: Architect may issue a Construction Change Directive on AIA Document G714/CMA. Construction Change Directive instructs Contractor to proceed with a change in the Work, for subsequent inclusion in a Change Order.
 - 1. Construction Change Directive contains a complete description of change in the Work. It also designates method to be followed to determine change in the Contract Sum or the Contract Time.
- B. Documentation: Maintain detailed records on a time and material basis of work required by the Construction Change Directive.
 - 1. After completion of change, submit an itemized account and supporting data necessary to substantiate cost and time adjustments to the Contract.

PART 2 - PRODUCTS (NOT USED)

PART 3 - EXECUTION (NOT USED)

END OF SECTION

SECTION 01 2900
PAYMENT PROCEDURES

PART 1 - GENERAL

1.01 SUMMARY

- A. Section includes administrative and procedural requirements necessary to prepare and process Applications for Payment.

1.02 RELATED REQUIREMENTS

- A. Section 00 5000 - Contracting Forms and Supplements: Forms to be used.
- B. Document 00 5200 - Agreement Form: Contract Sum, retainages, payment period, monetary values of unit prices.
- C. Document 00 7200 - General Conditions and Document 00 7300 - Supplementary Conditions: Additional requirements for progress payments, final payment, changes in the Work.
- D. Document 00 7300 - Supplementary Conditions: Percentage allowances for Contractor's overhead and profit.
- E. Section 01 2600 - Contract Modification Procedures.

1.03 SCHEDULE OF VALUES

- A. Coordination: Coordinate preparation of the schedule of values with preparation of Contractor's construction schedule.
 - 1. Coordinate line items in the schedule of values with other required administrative forms
 - 2. and schedules, including the following:
 - 3. Application for Payment forms with continuation sheets.
 - 4. Submit the schedule of values to Architect at earliest possible date but no later than seven days before the date scheduled for submittal of initial Applications for Payment.
- B. Format and Content: Use Project Manual table of contents as a guide to establish line items for the schedule of values. Provide at least one line item for each Specification Section, or as required by the Architect. Provide the following as a minimum:
 - 1. Mobilization.
 - 2. Temporary facilities.
 - 3. Hazardous materials abatement activities.
 - 4. Demolition.
 - 5. Rough grading.
 - 6. Closeout.
- C. Project Identification:
 - 1. Identification: Include the following Project identification on the schedule of values:
 - a. Project name and location.
 - b. Name of Architect.
 - c. Architect's project number.
 - d. Contractor's name and address.
 - e. Date of submittal.
 - 1) Arrange schedule of values consistent with format of AIA Document G703.
 - 2) Provide a breakdown of the Contract Sum in enough detail to facilitate continued evaluation of Applications for Payment and progress reports. Coordinate with Project Manual table of contents. Provide multiple line items for principal subcontract amounts in excess of five percent of the Contract Sum.
 - 3) Round amounts to nearest whole dollar; total shall equal the Contract Sum.
 - 4) Provide a separate line item in the schedule of values for each part of the Work where Applications for Payment may include materials or equipment purchased or fabricated and stored, but not yet installed.

- 5) Provide separate line items in the schedule of values for initial cost of materials, for each subsequent stage of completion, and for total installed value of that part of the Work.
- 6) Allowances: Provide a separate line item in the schedule of values for each allowance.
- 7) Each item in the schedule of values and Applications for Payment shall be complete. Include total cost and proportionate share of general overhead and profit for each item.
 - (a) Temporary facilities and other major cost items that are not direct cost of actual work-in-place may be shown either as separate line items in the schedule of values or distributed as general overhead expense, at Contractor's option.
- 8) Schedule Updating: Update and resubmit the schedule of values before the next Applications for Payment when Change Orders or Construction Change Directives result in a change in the Contract Sum.

1.04 APPLICATIONS FOR PAYMENT

- A. Each Application for Payment shall be consistent with previous applications and payments as certified by Architect and paid for by Owner.
 1. Initial Application for Payment, Application for Payment at time of Substantial Completion, and final Application for Payment involve additional requirements.
- B. Payment Application Times: The date for each progress payment is indicated in the Agreement between Owner and Contractor. The period of construction work covered by each Application for Payment is the period indicated in the Agreement.
- C. Application for Payment Forms: Use AIA Document G702/CMA and AIA Document G703 as form for Applications for Payment.
- D. Application Preparation: Complete every entry on form. Notarize and execute by a person authorized to sign legal documents on behalf of Contractor. Architect will return incomplete applications without action.
 1. Entries shall match data on the schedule of values and Contractor's construction schedule. Use updated schedules if revisions were made.
 2. Include amounts of Change Orders and Construction Change Directives issued before last day of construction period covered by application.
- E. Transmittal: Submit three signed and notarized original copies of each Application for Payment to Architect by a method ensuring receipt within 24 hours. One copy shall include waivers of lien and similar attachments if required.
 1. Transmit each copy with a transmittal form listing attachments and recording appropriate information about application.
- F. Attachments to Application for Payment: Provide the following with each Application. Application will not be considered complete without listed attachments.
 1. Photographs: Provide minimum 20 photographs per week illustrating progress of the Work.
 2. Daily Site Log: Provide daily log of total number of workers on site and of subcontractors actively working on site.
- G. Waivers of Mechanic's Lien: With each Application for Payment, submit waivers of mechanic's lien from entities lawfully entitled to file a mechanic's lien arising out of the Contract and related to the Work covered by the payment.
 1. Submit partial waivers on each item for amount requested in previous application, after deduction for retainage, on each item.
 2. When an application shows completion of an item, submit conditional final or full waivers.
 3. Owner reserves the right to designate which entities involved in the Work must submit waivers.
 4. Waiver Forms: Submit executed waivers of lien on forms acceptable to Owner.

- H. Initial Application for Payment: Administrative actions and submittals that must precede or coincide with submittal of first Application for Payment include the following:
 - 1. Schedule of values.
 - 2. Contractor's construction schedule.
 - 3. Schedule of unit prices.
 - 4. List of Contractor's staff assignments.
 - 5. Copies of authorizations and licenses from authorities having jurisdiction for performance of the Work.
 - 6. Initial progress report.
 - 7. Certificates of insurance and insurance policies.
- I. Application for Payment at Substantial Completion: After Architect issues the Certificate of Substantial Completion, submit an Application for Payment showing 100 percent completion for portion of the Work claimed as substantially complete.
 - 1. Include documentation supporting claim that the Work is substantially complete and a statement showing an accounting of changes to the Contract Sum.
- J. Final Payment Application: After completing Project closeout requirements, submit final Application for Payment with releases and supporting documentation not previously submitted and accepted, including, but not limited, to the following:
 - 1. Evidence of completion of Project closeout requirements.
 - 2. Updated final statement, accounting for final changes to the Contract Sum.
 - 3. AIA Document G706-1994, "Contractor's Affidavit of Payment of Debts and Claims."
 - 4. AIA Document G706A-1994, "Contractor's Affidavit of Release of Liens."
 - 5. AIA Document G707-1994, "Consent of Surety to Final Payment."
 - 6. Evidence that claims have been settled.

PART 2 - PRODUCTS (NOT USED)

PART 3 - EXECUTION (NOT USED)

END OF SECTION

SECTION 01 2976.16

TAX GUIDANCE REGARDING CONSTRUCTION RELATED PRODUCTS

TAX GUIDANCE FOR CONTRACTORS, SUBCONTRACTORS AND ALABAMA GOVERNMENTAL ENTITIES REGARDING CONSTRUCTION RELATED CONTRACTS: ALABAMA DEPARTMENT OF REVENUE, IS BOUND INTO THIS PROJECT MANUAL FOLLOWING THIS PAGE.

SEE SECTION 00 7323 - ADOR APPLICATION FOR SALES AND USE TAX CERTIFICATE OF EXEMPTION (FORM ST: EXC-01).

END OF SECTION



JULIE P. MAGEE
Commissioner

State of Alabama Department of Revenue

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Montgomery, Alabama 36132

MICHAEL E. MASON

Assistant Commissioner

JOE W. GARRETT, JR.

Deputy Commissioner

CURTIS E. STEWART

Deputy Commissioner

Alabama Department of Revenue NOTICE

Tax Guidance for Contractors, Subcontractors and Alabama Governmental Entities Regarding Construction-related Contracts

Legislative Act 2013-205 requires the Department of Revenue to issue Form STC-1, *Sales and Use Tax Certificate of Exemption for Government Entity Projects*, to all contractors and subcontractors working on qualifying governmental entity projects once the Form ST: EXC-01 is approved.

Each exempt entity, contractor and subcontractor must make application for qualification of the exemption using Form ST: EXC-01 for each tax-exempt project. The application is available on the department's website at <http://revenue.alabama.gov/salestax/ST-EXC-01.pdf>. Applications should be submitted directly to the Sales and Use Tax Division Central Office, P.O. Box 327710, Montgomery, AL 36132-7710.

The sales and use tax exemption provided for in Act 2013-205 applies to the purchase of building materials, construction materials and supplies, and other tangible personal property that become part of the structure pursuant to a qualifying contract entered into on or after January 1, 2014. Qualifying projects and contracts are those generally entered into with the following governmental entities, unless otherwise noted: the State of Alabama, a county or incorporated municipality of Alabama, an Alabama public school, or an Alabama industrial or economic development board or authority already exempt from sales and use taxes. **Please note that contracts entered into with the federal government and contracts pertaining to highway, road, or bridge construction or repair do not qualify for the exemption provided for in Act 2013-205.** [Reference: Sales and Use Tax Division Administrative Rule 810-6-3-.77 *Exemption for Certain Purchases by Contractors and Subcontractors in Conjunction with Construction Contracts with Certain Governmental Entities.*]

The Alabama Department of Revenue will assign each contractor and sub-contractor a consumers use tax account, if one is currently not in place, at the time the Form STC-1, *Sales and Use Tax Certificate of Exemption for Government Entity Projects*, is issued.

Contractors and sub-contractors for qualifying projects will be required to file monthly consumers use tax returns and report all exempt purchases for ongoing projects, as well as all taxable purchases on one return. These returns are required to be filed through the department's online tax return filing and payment portal, My Alabama Taxes (<https://myalabamataxes.alabama.gov>).

As another option for these types of contracts, as well as with other contracts entered into with other types of exempt entities, the Form ST:PAA1, *Purchasing Agent Appointment*, may be used. However, please be advised that the use of the Form ST:PAA1 option will require the exempt entity to be invoiced directly and pay for directly from their funds any construction and building material and supply purchases.

For additional information concerning this guidance, taxpayers should contact Sales and Use Tax Division representative Thomas Sims at 334-242-1574 or by email at Thomas.Sims@revenue.alabama.gov.

SECTION 01 3000
ADMINISTRATIVE REQUIREMENTS

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Preconstruction meeting.
- B. Site mobilization meeting.
- C. Progress meetings.
- D. Contractor's daily reports.
- E. Coordination drawings.
- F. Submittals for review, information, and project closeout.
- G. Number of copies of submittals.
- H. Submittal procedures.

1.02 RELATED REQUIREMENTS

- A. Section 00 7200 - General Conditions: Dates for applications for payment.
- B. Section 01 7000 - Execution and Closeout Requirements: Additional coordination requirements.
- C. Section 01 7800 - Closeout Submittals: Project record documents; operation and maintenance data; warranties and bonds.

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.
 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 01 3200 CONSTRUCTION PROGRESS DOCUMENTATION

3.05 DAILY CONSTRUCTION REPORTS

- A. Include only factual information. Do not include personal remarks or opinions regarding operations and/or personnel.
- B. Provide as attachment to Application for Payment.
- C. Prepare a daily construction report recording the following information concerning events at Project site and project progress:
 1. Date.
 2. High and low temperatures, and general weather conditions.
 3. List of subcontractors at Project site.
 4. Approximate count of personnel at Project site.
 5. Major equipment at Project site.
 6. Safety, environmental, or industrial relations incidents.
 7. Testing and/or inspections performed.
 8. Signature of Contractor's authorized representative.

3.06 PROGRESS PHOTOGRAPHS (SEE SECTION 01 3233 FOR ADDITIONAL REQUIREMENTS.)

- A. Submit photographs with each Application for Payment, taken at the rate of not less than 20 per week for the period of the Application for Payment.
- B. Illustrate progress of the Work.
- C. Maintain one set of all photographs at project site for reference; same copies as submitted, identified as such.

3.07 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.

3.08 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 compliance with information given and the design concept expressed in Contract Documents.
- C. Samples will be reviewed 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.

3.09 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.

3.10 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 in compliance with requirements of Section 01 7800 - Closeout Submittals:
 - 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.

END OF SECTION

SECTION 01 3100
PROJECT MANAGEMENT AND COORDINATION

PART 1 - GENERAL

1.01 SUMMARY

- A. Section includes administrative provisions for coordinating construction operations on Project
- B. including, but not limited to, the following:
 - 1. General coordination procedures.
 - 2. Requests for Information (RFIs).
 - 3. Project meetings.
- C. Each contractor shall participate in coordination requirements. Certain areas of responsibility are assigned to a specific contractor.

1.02 DEFINITIONS

- A. RFI: Request from Owner, Construction Manager, Architect, or Contractor seeking information required by or clarifications of the Contract Documents.

1.03 GENERAL COORDINATION PROCEDURES

- A. Prepare memoranda for distribution to each party involved, outlining special procedures required for coordination. Include such items as required notices, reports, and list of attendees at meetings.
- B. Administrative Procedures: Coordinate scheduling and timing of required administrative procedures with other construction activities to avoid conflicts and to ensure orderly progress of the Work. Such administrative activities include, but are not limited to, the following:
 - 1. Preparation of Contractor's construction schedule.
 - 2. Preparation of the schedule of values.
 - 3. Installation and removal of temporary facilities and controls.
 - 4. Progress meetings.
 - 5. Project closeout activities.

1.04 REQUESTS FOR INFORMATION (RFIS)

- A. General: Immediately on discovery of the need for additional information or interpretation of the Contract Documents, Contractor shall prepare and submit an RFI in the form specified.
- B. Content of the RFI: Include a detailed, legible description of item needing information or interpretation and the following:
 - 1. Project name.
 - 2. Project number.
 - 3. Date.
 - 4. Name of Contractor.
 - 5. Name of Architect.
 - 6. RFI number, numbered sequentially.
 - 7. RFI subject.
 - 8. Drawing number and detail references, as appropriate.
 - 9. Contractor's suggested resolution. If Contractor's solution(s) impacts the Contract Time or the Contract Sum, Contractor shall state impact in the RFI.
 - 10. Contractor's signature.
- C. RFI Forms: Form provided by Architect.
- D. Architect's and Construction Manager's Action: Architect will review each RFI, determine action required, and respond. Allow seven working days for Architect's response for each RFI. RFIs received by Architect or Construction Manager after 1:00 p.m. will be considered as received the following working day.
 - 1. Architect's action may include a request for additional information, in which case Architect's time for response will date from time of receipt of additional information.

2. Architect's action on RFIs that may result in a change to the Contract Time or the Contract Sum may be eligible for Contractor to submit Change Proposal according to Section 012600 "Contract Modification Procedures."
 - a. If Contractor believes the RFI response warrants change in the Contract Time or the Contract Sum, notify Architect in writing within 10 days of receipt of the RFI response.
- E. RFI Log: Prepare, maintain, and submit a tabular log of RFIs organized by the RFI number. Submit log at each project meeting. Include the following:
 1. Project name.
 2. Name and address of Contractor.
 3. Name and address of Architect.
 4. RFI number including RFIs that were dropped and not submitted.
 5. RFI description.
 6. Date the RFI was submitted.
 7. Date Architect's response was received.
- F. On receipt of Architect's action, update the RFI log and immediately distribute the RFI response to affected parties. Review response and notify Architect within seven days if Contractor disagrees with response.
 1. Identification of related Minor Change in the Work, Construction Change Directive, and Proposal Request, as appropriate.
 2. Identification of related Field Order, Work Change Directive, and Proposal Request, as appropriate.

1.05 PROJECT MEETINGS

- A. General: Architect will schedule and conduct meetings and conferences at Project site unless otherwise indicated.
 1. Attendees: Inform participants and others involved, and individuals whose presence is required, of date and time of each meeting. Notify Owner and Architect of scheduled meeting dates and times.
 2. Minutes: Entity responsible for conducting meeting will record significant discussions and agreements achieved. Distribute the meeting minutes to everyone concerned, including Owner and Architect, within three days of the meeting.
- B. Preconstruction Waste Management Conference: Architect will schedule a preconstruction waste management conference separately from other preconstruction conferences, at a time convenient to Architect and Contractor, but no later than 15 days after execution of the Agreement.
 1. Attendees: Owner, Architect, Contractor and its superintendent; major subcontractors; manufacturers; and other concerned parties shall attend the conference. All participants at the conference shall be familiar with Project and authorized to conclude matters relating to the Work.
 2. Review waste management goals for the Project and waste management plan.
- C. Preconstruction Conference: Architect will schedule and conduct a predemolition conference before starting demolition, at a time convenient to Owner and Architect, but no later than 15 days after execution of the Agreement.
 1. Attendees: Authorized representatives of Owner, Architect, and their consultants; Contractor and its superintendent; major subcontractors; and other concerned parties shall attend the conference. Participants at the conference shall be familiar with Project and authorized to conclude matters relating to the Work.
 2. Agenda: Discuss items of significance that could affect progress, including the following:
 - a. Tentative construction schedule.
 - b. Designation of key personnel and their duties.
 - c. Lines of communications.
 - d. Procedures for processing field decisions and Change Orders.
 - e. Procedures for RFIs.

- f. Procedures for processing Applications for Payment.
 - g. Distribution of the Contract Documents.
 - h. Preparation of record documents.
 - i. Work restrictions.
 - j. Working hours.
 - k. Responsibility for temporary facilities and controls.
 - l. Procedures for disruptions and shutdowns.
 - m. Parking availability.
 - n. Office, work, and storage areas.
 - o. First aid.
 - p. Minutes: Entity responsible for conducting meeting will record and distribute meeting minutes.
 - q. minutes.
- D. Project Closeout Conference: Architect will schedule and conduct a Project closeout conference, at a time convenient to Owner and Architect, but no later than 90 days prior to the scheduled date of Substantial Completion.
- 1. Conduct the conference to review requirements and responsibilities related to Project closeout.
 - 2. Attendees: Authorized representatives of Owner, Architect, and their consultants; Contractor and its superintendent; major subcontractors; and other concerned parties shall attend the meeting. Participants at the meeting shall be familiar with Project and authorized to conclude matters relating to the Work.
 - 3. Agenda: Discuss items of significance that could affect or delay Project closeout, including the following:
 - a. Preparation of record documents.
 - b. Requirements for preparing LEED documentation where applicable.
 - c. Procedures for processing Applications for Payment at Substantial Completion and for final payment.
 - d. Responsibility for removing temporary facilities and controls.
 - 4. Minutes: Entity conducting meeting will record and distribute meeting minutes.

PART 2 - PRODUCTS (NOT USED)

PART 3 - EXECUTION (NOT USED)

END OF SECTION

SECTION 01 3200
CONSTRUCTION PROGRESS DOCUMENTATION

PART 1 - GENERAL

1.01 SUMMARY

- A. Section includes administrative and procedural requirements for documenting the progress of
- B. construction during performance of the Work, including the following:
 - 1. Contractor's construction schedule.
 - 2. Daily construction reports.
 - 3. Site condition reports.

1.02 INFORMATIONAL SUBMITTALS

- A. Format for Submittals: Submit required submittals in the following format:
 - 1. Six paper copies.
- B. Contractor's Construction Schedule: Initial schedule, of size required to display entire schedule for entire construction period.
- C. Daily Construction Reports: Submit at weekly intervals.
- D. Site Condition Reports: Submit at time of discovery of differing conditions.

1.03 COORDINATION

- A. Coordinate Contractor's construction schedule with the schedule of values, progress reports, payment requests, and other required schedules and reports.

PART 2 - PRODUCTS

2.01 CONTRACTOR'S CONSTRUCTION SCHEDULE, GENERAL

- A. Time Frame: Extend schedule from date established for the Notice to Proceed to date of final completion.

2.02 CONTRACTOR'S CONSTRUCTION SCHEDULE (GANTT CHART)

- A. Gantt-Chart Schedule: Submit a comprehensive, fully developed, horizontal Gantt-chart-type, Contractor's Construction Schedule within 7 days of date established for the Notice to Proceed.
- B. Preparation: Indicate each significant construction activity separately. Identify first workday of each week with a continuous vertical line.
 - 1. For construction activities that require two months or longer to complete, indicate an estimated completion percentage in 10 percent increments within time bar.

2.03 REPORTS

- A. Daily Construction Reports: Prepare a daily construction report recording the following information concerning events at Project site:
 - 1. List of subcontractors at Project site.
 - 2. List of separate contractors at Project site.
 - 3. Approximate count of personnel at Project site.
 - 4. Equipment at Project site.
 - 5. Accidents.
 - 6. Meetings and significant decisions.
 - 7. Unusual events.
 - 8. Orders and requests of authorities having jurisdiction.
 - 9. Change Orders received and implemented.
 - 10. Construction Change Directives received and implemented.
 - 11. Services connected and disconnected.
- B. Site Condition Reports: Immediately on discovery of a difference between site conditions and the Contract Documents, prepare and submit a detailed report. Submit with a Request for

Information. Include a detailed description of the differing conditions, together with recommendations for changing the Contract Documents.

PART 3 - EXECUTION

3.01 CONTRACTOR'S CONSTRUCTION SCHEDULE

- A. Distribution: Distribute copies of approved schedule to Architect, Owner, separate contractors, and other parties identified by Contractor with a need-to-know schedule responsibility.

END OF SECTION

SECTION 01 3233
PHOTOGRAPHIC DOCUMENTATION

PART 1 - GENERAL

1.01 SUMMARY

- A. Section includes administrative and procedural requirements for the following:
 - 1. Predemolition photographs.
- B. Related Requirements:
 - 1. Section 017700 "Closeout Procedures" for submitting photographic documentation as Project Record Documents at Project closeout.
 - 2. Section 024116 "Structure Demolition" for photographic documentation before building demolition operations commence.

1.02 INFORMATIONAL SUBMITTALS

- A. Key Plan: Submit key plan of Project site and building with notation of vantage points marked for location and direction of each photograph.
- B. Digital Photographs: Submit unaltered, original, full-size image files with each Application for Payment. Provide minimum of 20 photographs per week.
 - 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.

PART 2 - PRODUCTS

2.01 PHOTOGRAPHIC MEDIA

- A. Digital Images: Provide images in JPG format, with minimum size of 8 megapixels.

PART 3 - EXECUTION

3.01 CONSTRUCTION PHOTOGRAPHS

- A. Photographer: Engage a qualified photographer to take construction photographs.
- B. General: Take photographs using the maximum range of depth of field, and that are in focus, to clearly show the Work. Photographs with blurry or out-of-focus areas will not be accepted.
 - 1. Maintain key plan with each set of construction photographs that identifies each photographic location.
- C. Digital Images: Submit digital images exactly as originally recorded in the digital camera, without alteration, manipulation, editing, or modifications using image-editing software.
 - 1. Date and Time: Include date and time in file name for each image.
- D. Preconstruction Photographs: Before commencement of demolition, take photographs of Project site and surrounding properties, including existing items to remain during construction, from different vantage points, as directed by Architect.
 - 1. Flag construction limits before taking construction photographs.
 - 2. Take 12 photographs to show existing conditions adjacent to property before starting the Work.
 - 3. Take 12 photographs of existing buildings either on or adjoining property to accurately record physical conditions at start of construction.
 - 4. Take additional photographs as required to record settlement or cracking of adjacent structures, pavements, and improvements.

END OF SECTION

**SECTION 01 3300
SUBMITTAL PROCEDURES**

PART 1 - GENERAL

1.01 SUMMARY

- A. Section includes administrative and procedural requirements for submitting Applications for Payment, schedules, and reports.

1.02 SUBMITTAL ADMINISTRATIVE REQUIREMENTS

- A. Coordination: Coordinate preparation and processing of submittals with performance of construction activities.

PART 2 - PRODUCTS

2.01 SUBMITTAL PROCEDURES

- A. General Submittal Procedure Requirements: Prepare and submit submittals required by individual Specification Sections.
 - 1. Informational Submittals: Submit one paper copy of each submittal unless otherwise indicated. Architect will not return copies.
- B. Contractor's Construction Schedule: Comply with requirements specified in Section 013200 - Construction Progress Documentation.
- C. Application for Payment and Schedule of Values: Comply with requirements specified in Section 012900 "Payment Procedures."
- D. Closeout Submittals: Comply with requirements specified in Section 017700 "Closeout Procedures."
- E. Qualification Data: Prepare written information that demonstrates capabilities and experience of firm or person. Include lists of completed projects with project names and addresses, contact information of architects and owners, and other information specified.
- F. Insurance Certificates and Bonds: Prepare written information indicating current status of insurance or bonding coverage. Include name of entity covered by insurance or bond, limits of coverage, amounts of deductibles, if any, and term of the coverage.

PART 3 - EXECUTION

3.01 CONTRACTOR'S REVIEW

- A. Project Closeout Submittals: See requirements in Section 017700 "Closeout Procedures."

3.02 ARCHITECT'S AND CONSTRUCTION MANAGER'S ACTION

- A. Informational Submittals: Architect and Construction Manager will review each submittal and will not return it, or will return it if it does not comply with requirements. Architect and Construction Manager will forward each submittal to appropriate party.
- B. Submittals not required by the Contract Documents may be returned by the Architect without action.

END OF SECTION

SECTION 01 4000
QUALITY REQUIREMENTS

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Submittals.
- B. Quality assurance.
- C. Testing and inspection agencies and services.
- D. Control of installation.
- E. Mock-ups.
- F. Special inspections required by code.
- G. 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 2100 - Allowances: Allowance for payment of testing services.
- D. Section 01 3000 - Administrative Requirements: Submittal procedures.
- E. Section 01 6000 - Product Requirements: Requirements for material and product quality.

1.03 REFERENCE STANDARDS

- A. ASTM C1021 - Standard Practice for Laboratories Engaged in Testing of Building Sealants; 2008 (Reapproved 2014).
- B. ASTM C1077 - Standard Practice for Agencies Testing Concrete and Concrete Aggregates for Use in Construction and Criteria for Testing Agency Evaluation; 2017.
- C. ASTM C1093 - Standard Practice for Accreditation of Testing Agencies for Masonry; 2015a, with Editorial Revision (2016).
- D. ASTM D3740 - Standard Practice for Minimum Requirements for Agencies Engaged in the Testing and/or Inspection of Soil and Rock as Used in Engineering Design and Construction; 2012a.
- E. ASTM E329 - Standard Specification for Agencies Engaged in Construction Inspection, Testing, or Special Inspection; 2014a.
- F. ASTM E543 - Standard Specification for Agencies Performing Nondestructive Testing; 2015.
- G. IAS AC89 - Accreditation Criteria for Testing Laboratories; 2010.

1.04 SUBMITTALS

- A. See Section 01 3000 - Administrative Requirements, for submittal procedures.
- B. 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 construction 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. 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.

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. Owner will employ services of an independent testing agency to perform certain specified testing; payment for cost of services will be derived from allowance specified in Section 01 2100; see Section 01 2100 and applicable sections for description of services included in allowance.
- B. As indicated in individual specification sections, Owner or Contractor shall employ and pay for services of an independent testing agency to perform other specified testing.
- C. Employment of agency in no way relieves Contractor of obligation to perform Work in accordance with requirements of Contract Documents.
- D. Inspection and Testing Agency Approval: Inspection and Testing Agency shall be approved in writing by Authority Having Jurisdiction as to compliance with applicable requirements.

PART 2 PRODUCTS - NOT USED

PART 3 EXECUTION

3.01 CONTROL OF INSTALLATION

- A. Monitor quality control over suppliers, manufacturers, products, services, site conditions, and workmanship, to produce work of specified quality.
- B. Comply with specified standards as minimum quality for the work except where more stringent tolerances, codes, or specified requirements indicate higher standards or more precise workmanship.
- C. Have work performed by persons qualified to produce required and specified quality.

3.02 TESTING AND INSPECTION

- A. See individual specification sections for testing required.
- B. Testing Agency Duties:
 - 1. Test samples of mixes submitted by Contractor.
 - 2. Provide qualified personnel at site. Cooperate with Architect and Contractor in performance of services.
 - 3. Perform specified sampling and testing of products in accordance with specified standards.
 - 4. Ascertain compliance of materials and mixes with requirements of Contract Documents.
 - 5. Promptly notify Architect and Contractor of observed irregularities or non-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.

3.03 SPECIAL INSPECTIONS - SEE SECTION 01 4100 - SPECIAL INSPECTIONS

3.04 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 4538

STRUCTURAL TESTS AND SPECIAL INSPECTIONS

PART 1 GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

- A. This Section includes administrative and procedural requirements required for compliance with the International Building Code, Chapter 17, Structural Tests and Special Inspections.
- B. Structural testing and special inspections services are required to verify compliance with requirements specified or indicated. These services do not relieve contractor of responsibility for compliance with other construction document requirements.
 - 1. Specific quality-assurance and control requirements for individual construction activities are specified in the Sections that specify those activities. Requirements in those Sections may also cover production of standard products.
 - 2. Specified tests, inspections, and related actions do not limit Contractor's other quality-assurance and control procedures that facilitate compliance with the construction document requirements.
 - 3. Requirements for contractor to provide quality-assurance and control services required by architect, owner, or authorities having jurisdiction are not limited by provisions of this section.
- C. The owner will engage one or more qualified special inspectors and/or testing agencies to conduct structural tests and special inspections specified in this section and related sections and as maybe specified in other divisions of these specifications.
- D. Related Sections include but are not limited to the following:
 - 1. 02 3000 EARTHWORK
 - 2. 03 3000 CAST-IN-PLACE CONCRETE
 - 3. 04 8100 UNIT MASONRY ASSEMBLIES
 - 4. 05 1200 STRUCTURAL STEEL

1.3 DEFINITIONS

- A. **Approved Agency:** An established and recognized agency regularly engaged in conducting tests or furnishing inspections services, when such agency has been approved by the building official.

- B. Construction Documents: Written, graphic and pictorial documents prepared or assembled for describing the design, location and physical characteristics of the elements of a project necessary for obtaining a building permit. Construction documents include all supplemental instructions, sketches, addenda, and revisions to the drawings and specifications issued by the registered design professional beyond those issued for a building permit.
- C. Shop Drawings/Submittal Data: Written, graphic and pictorial documents prepared and/or assembled by the contractor based on the Construction Documents.
- D. Structural Observation: Visual observation of the structural system by a representative of the registered design professional's office for general conformance to the approved construction documents. Structural observations are not considered part of the structural tests and special inspections and do not replace inspections and testing by the testing agency or special inspector.
- E. Special Inspector: A qualified person who demonstrating competence, to the satisfaction of the code enforcement official and registered design professional in responsible charge, for inspection of the particular type of construction or operation requiring special inspection. The special inspector shall be a licensed professional engineer or engineering intern or a qualified representative from the testing agency.
- F. Special Inspection, Continuous: The full-time observation of work requiring special inspection by an approved special inspector who is present in the area where the work is being performed.
- G. Special Inspection, Periodic: The part-time or intermittent observation of work requiring special inspection by an approved special inspector who is present in the area where the work has been or is being performed and at the completion of the work.
- H. Testing Agency: A qualified materials testing laboratory under the responsible charge of a licensed professional engineer, approved by the code enforcement official and the registered design professional in responsible charge, to measure, examine, test, calibrate, or otherwise determine the characteristics or performance of construction materials and verify confirmation with construction documents.

1.4 QUALITY ASSURANCE

- A. Testing Agency Qualifications:
 - 1. Minimum qualifications of inspection and testing agencies and their personnel shall comply with ASTM E329-03 Standard Specification for Agencies in the Testing and/or Inspection of Materials Used in Construction.
 - a. Inspectors and individuals performing tests shall be certified for the work being performed as outlined in the appendix of the ASTM E329. Certification by organizations other than those listed must be submitted to the building official for consideration before proceeding with work.
 - 2. In addition to these requirements, local jurisdiction may have additional requirements. It is the responsibility of the testing and inspection agencies to meet local requirements and comply with local procedures.

1.5 CONFLICTING REQUIREMENTS, REPORTS, AND TEST RESULTS

- A. General: If compliance with two or more standards is specified and the standards establish different or conflicting requirements for minimum quantities or quality levels, comply with the most stringent requirement. Refer uncertainties and requirements that are different, but apparently equal, to the registered design professional in responsible charge for a decision before proceeding.
- B. Minimum Quantity of Quality Levels: The quantity or quality level shown on specified shall be the minimum provided or performed. The actual installation may comply exactly with the minimum quantity or quality specified, or it may exceed the minimum within reasonable limits. To comply with these requirements, indicated numeric values are minimum or maximum, as appropriate, for the contest of requirements. Refer uncertainties to the registered design professional in responsible charge for a decision before proceeding.
- C. The special inspector's reports and testing agency's results shall have precedence over reports and test results provided by the contractor.
- D. Where a conflict exists between the construction documents and approved shop drawings/submittal data, the construction documents shall govern unless the shop drawings/submittal data are more restrictive. All conflicts shall be brought to the attention of the registered design professional in responsible charge.

1.6 SUBMITALLS BY SPECIAL INSPECTOR AND/OR TESTING AGENCY

- A. Special inspectors shall keep and distribute records of inspections. The special inspector shall furnish inspection reports to the building official, and to the registered design professional in responsible charge, contractor, architect, and owner. Reports shall indicate that work inspected was done in conformance to approved construction documents. Discrepancies shall be brought to the immediate attention of the contractor for correction. If the discrepancies are not corrected, the discrepancies shall be brought to the attention of the building official and to the registered design professional in responsible charge prior to the completion of that phase of the work. A final report documenting required special inspections and correction of any discrepancies noted in the inspections shall be submitted at a point in time agreed upon by the permit applicant and the building official prior to the start of work.
 - 1. Special inspection reports and test results shall include, but not be limited to, the following:
 - a. Date of inspection
 - b. Description of inspections or tests performed including location (reference grid lines, floors, elevations, etc.)
 - c. Statement noting that the work, material, and/or product conforms or does not conform to the construction document requirements.
 - 1) Name and signature of contractor's representative who was notified of work, material, and/or products that do not meet the construction document requirements.
 - d. Name and signature of special inspector and/or testing agency representative performing the work.

- B. Schedule of Non-Compliant Work: Each agent shall maintain a log of work that does not meet the requirements of the construction documents. Include reference to original inspection/test reports and subsequent dates of re-inspection/retesting.
- C. Reports and tests shall be submitted within 1 week of inspection of test. Schedule of Non-Compliant Work shall be updated daily and submitted at monthly intervals.
- D. Final Report of Special Inspections: Submitted by each agent listed in the schedule of Structural Testing and Special Inspections.

PART 2 PRODUCTS (not used)

PART 3 EXECUTION

3.1 CONTRACTOR'S RESPONSIBILITY

- A. The contractor shall coordinate the inspection and testing services with the progress of the work. The contractor shall provide sufficient notice to allow proper scheduling of all personnel. The contractor shall provide safe access for performing inspection and on site testing.
- B. The contractor shall submit schedules to the owner, registered design professionals and testing and inspecting agencies. Schedules will note milestones and durations of time for materials requiring structural tests and special inspections.
- C. Each contractor responsible for the construction of a seismic-force-resisting system, designated seismic system, or component listed in the quality assurance plan shall submit a written contractor's statement of responsibility to the building official and to the owner prior to the commencement of work in the system or component. The contractor's statement of responsibility shall contain the following:
 - 1. Acknowledgment of awareness of the special requirements contained in the quality assurance plan.
 - 2. Acknowledgment that control will be exercised to obtain conformance with the construction documents approved by the building official.
 - 3. Procedures for exercising control within the contractor's organization, the method and frequency of reporting and the distribution of the reports.
 - 4. Identification and qualifications of the person(s) exercising such control and their position(s) in the organization.
- D. Each contractor responsible for the construction of the main wind-force-resisting system or a wind-resisting component listed in the quality assurance plan shall submit a written statement of responsibility to the building official and the owner prior to the commencement of work on the system or component. The contractor's statement of responsibility shall contain the following:

1. Acknowledgment of awareness of the special requirements contained in the quality assurance plan.
 2. Acknowledgment that control will be exercised to obtain conformance with the construction documents approved by the building official.
 3. Procedures for exercising control within the contractor's organization, the method and frequency of reporting and the distribution of the reports.
 4. Identification and qualifications of the person(s) exercising such control and their position(s) in the organization.
- E. The contractor shall repair and/or replace work that does not meet the requirements of the construction documents.
1. Contractor shall engage an engineer/architect to prepare repair and/or replacement procedures.
 2. Engineer/architect shall be registered in the state in which the project is located. Engineer shall be acceptable to the registered design professional in responsible charge, code enforcement official, and owner.
 3. Procedures shall be submitted for review and acceptance by the registered design professional in responsible charge, code enforcement official, and owner before proceeding with corrective action.
- F. The contractor shall be responsible for costs of:
1. Re-testing and re-inspection of materials, work and/or products that do not meet the requirements of the construction documents and shop drawings/submittal data.
 2. Review of proposed repair and/or replacement procedures by the registered design professional in responsible charge and the inspectors and testing agencies.
 3. Repair or replacement of work that does not meet the requirements of the construction documents.

3.2 STRUCTURAL OBSERVATIONS

- A. Structural observations may be made periodically as determined by the registered design professional in responsible charge.

3.3 TESTING AND INSPECTION

- A. Testing and inspection shall be in accordance with the attached Schedule of Special Inspections.
- B. Reference related specifications for the minimum level of inspections and testing. Provide additional inspections and testing as necessary to determine compliance with the construction drawings.

PART 4 – SCHEDULES AND FORMS (ATTACHED)

- 4.01 STATEMENT OF SPECIAL INSPECTIONS.
- 4.02 SCHEDULE OF SPECIAL INSPECTIONS.
- 4.03 FINAL REPORT OF SPECIAL INSPECTIONS.

END OF SECTION 014538

Project Name: Orange Beach Sportsplex Renovation to Baseball/Softball Complex
Project Address: 4389 William Silvers Parkway – Orange Beach, Al 36561

During construction of the referenced project, it is intended that special inspection as outlined in Chapter 17 of the 2018 International Building Code be provided for by the owner. The following areas of work will require special inspection:

MATERIAL / ACTIVITY	FREQUENCY OF INSPECTION	INSPECTOR
A. Inspection of Steel Fabrication Process per 1704.2.5.1 (Not required if fabricator is registered and approved per Section 1704.2.5.1)	Periodic	Testing Agent
B. Inspection of Steel per 1705.2 (in accordance with quality assurance inspection requirements of AISC 360 & SDI QA/QC documentation).		
1. Inspection of welding:		
a. Prior to welding:		
1. Welding procedure specifications available	Continuous	Testing Agent
2. Manufacturer certifications for welding consumables available	Continuous	Testing Agent
3. Material identification (type/grade)	Periodic	Testing Agent
4. Welder identification system	Periodic	Testing Agent
5. Fit-up of groove welds (including joint geometry)	Periodic	Testing Agent
6. Configuration and finish of access holes	Periodic	Testing Agent
7. Fit-up of fillet welds	Periodic	Testing Agent
b. During welding:		
1. Use of qualified welders	Periodic	Testing Agent
2. Control and handling of welding consumables	Periodic	Testing Agent
3. No welding over cracked welds	Periodic	Testing Agent
4. Environmental conditions	Periodic	Testing Agent
5. Welding specification procedure followed	Periodic	Testing Agent
6. Welding Techniques	Periodic	Testing Agent
c. After welding:		
1. Welds cleaned	Periodic	Testing Agent
2. Size, length, and location of welds	Continuous	Testing Agent
3. Welds meet visual acceptance criteria	Continuous	Testing Agent
4. Arc strikes	Continuous	Testing Agent
5. K-area	Continuous	Testing Agent
6. Backing removed and weld tabs removed	Continuous	Testing Agent
7. Repair activities	Continuous	Testing Agent
8. Document acceptance or rejection of welded joint or member	Continuous	Testing Agent
2. Inspection of high-strength bolting:		
a. Prior to bolting:		
1. Manufacturer's certifications available	Continuous	Testing Agent
2. Fasteners marked in accordance with ASTM requirements	Periodic	Testing Agent
3. Proper fasteners selected for the joint detail	Periodic	Testing Agent
4. Proper bolting procedure for the joint detail	Periodic	Testing Agent
5. Connecting elements meet applicable requirements	Periodic	Testing Agent
6. Pre-installation verification testing by installation personnel observed and documented for fastener assemblies and methods used	Periodic	Testing Agent

7. Proper storage provided for bolts, nuts, washers, and other fastener components	Periodic	Testing Agent
b. During bolting:		
1. Fastener assemblies placed in all holes and washers (if required) are positioned as required	Periodic	Testing Agent
2. Joint brought to the snug-tight condition prior to the pretensioning operation	Periodic	Testing Agent
3. Fastener component not turned by the wrench prevented from rotating	Periodic	Testing Agent
4. Fasteners are pretensioned in accordance with the RCSC specification progressing systematically from the most rigid point toward the free edges	Periodic	Testing Agent
c. After bolting:		
1. Document acceptance or rejection of bolted connections	Continuous	Testing Agent
MATERIAL / ACTIVITY	FREQUENCY OF INSPECTION	INSPECTOR
C. Inspection of Concrete per 1705.3		
1. Inspect reinforcement, including prestressing tendons, and verify placement.	Periodic	Testing Agent
2. Reinforcing bar welding:		
a. Verify weldability of reinforcing bars other than ASTM A706.	Periodic	Testing Agent
b. Inspect single-pass fillet welds, maximum 5/16".	Periodic	Testing Agent
c. Inspect all other welds.	Continuous	Testing Agent
3. Inspect anchors cast in concrete.	Periodic	Testing Agent
4. Inspect anchors post-installed in hardened concrete members.		
a. Adhesive anchors installed in horizontally or upwardly inclined orientations to resist sustained tension loads.	Continuous	Testing Agent
b. Mechanical anchors and adhesive anchors not defined in 4.a.	Periodic	Testing Agent
5. Verify use of required design mix.	Periodic	Testing Agent
6. Prior to concrete placement, fabricate specimens for strength tests, perform slump and air content tests, and determine the temperature of the concrete.	Continuous	Testing Agent
7. Inspect concrete and shotcrete placement for proper application techniques.	Continuous	Testing Agent
8. Verify maintenance of specified curing temperature and techniques.	Periodic	Testing Agent
9. Inspect erection of precast concrete members.	Periodic	Testing Agent
10. Verify in-situ concrete strength, prior to stressing of tendons in post-tensioned concrete and prior to removal of shores and forms from beams and structural slabs.	Periodic	Testing Agent
11. Inspect formwork for shape, location, and dimensions of the concrete member being formed.	Periodic	Testing Agent
MATERIAL / ACTIVITY	FREQUENCY OF INSPECTION	INSPECTOR
D. Inspection of Masonry per 1705.4 (Level "2" in accordance with TMS 402 and TMS 602 quality assurance program requirements)		
1. Verify compliance with approved submittals	Periodic	Testing Agent
2. Verification of f'_m and f'_{aac} prior to construction except where specifically exempted by code.	Periodic	Testing Agent
3. Verification of slump flow and visual stability index (VSI) as delivered to the project site in accordance with specification article 1.5 B.1.b.3 for self-consolidating grout.	Continuous	Testing Agent

4. As masonry construction begins, verify that the following are in compliance:		
a. Proportions of site-prepared mortar.	Periodic	Testing Agent
b. Construction of mortar joints.	Periodic	Testing Agent
c. Location of reinforcement, connectors, and prestressing tendons and anchorages.	Periodic	Testing Agent
5. Prior to grouting, verify that the following are in compliance:		
a. Grout space.	Periodic	Testing Agent
b. Placement of reinforcement and connectors and prestressing tendons and anchorages.	Periodic	Testing Agent
c. Proportion of site-prepared grout and prestressing grout for bonded tendons.	Periodic	Testing Agent
d. Construction of mortar joints.	Periodic	Testing Agent
6. Verify during construction:		
a. Materials and procedures with the approved submittals	Periodic	Testing Agent
b. Placement of masonry units and mortar joint construction	Periodic	Testing Agent
c. Size and location of structural elements.	Periodic	Testing Agent
d. Type, size and location of anchors, including other details of anchorage of masonry to structural members, frames, or other construction.	Periodic	Testing Agent
e. Welding of reinforcement.	Continuous	Testing Agent
f. Preparation, construction, and protection of masonry during cold weather (temperature below 40°F) or hot weather (temperature above 90°F).	Periodic	Testing Agent
g. Placement of grout and prestressing grout for bonded tendons is in compliance.	Continuous	Testing Agent
h. Placement of AAC masonry units and construction of thin-bed mortar joints.	Continuous	Testing Agent
7. Observe preparation of grout specimens, mortar specimens, and/or prisms.	Periodic	Testing Agent
MATERIAL / ACTIVITY	FREQUENCY OF INSPECTION	INSPECTOR
E. Inspection of Soil Conditions per 1705.6		
1. Verify materials below shallow foundations are adequate to achieve the design bearing capacity.	Periodic	Testing Agent
2. Verify excavations are extended to proper depth and have reached proper material.	Periodic	Testing Agent
3. Perform classification and testing of compacted fill materials.	Periodic	Testing Agent
4. Verify use of proper materials, densities and lift thicknesses during placement and compaction of compacted fill.	Continuous	Testing Agent
5. Prior to placement of compacted fill, observe subgrade and verify that site has been prepared properly.	Periodic	Testing Agent
F. Inspection for Wind Resistance per 1705.11	-----	Testing Agent

Project Name: Orange Beach Sportsplex Renovation to Baseball/Softball Complex
Project Address: 4389 William Silvers Parkway – Orange Beach, AL 36561

During construction of the referenced project, it is intended that special inspection as outlined in Chapter 17 of the 2018 International Building Code be provided for by the owner. The following areas of work will require special inspection:

MATERIAL / ACTIVITY	FREQUENCY OF INSPECTION	INSPECTOR
A. Inspection of Steel Fabrication Process per 1704.2.5.1 (Not required if fabricator is registered and approved per Section 1704.2.5.1)	Periodic	Testing Agent
B. Inspection of Steel per 1705.2 (in accordance with quality assurance inspection requirements of AISC 360 & SDI QA/QC documentation).		
1. Inspection of welding:		
a. Prior to welding:		
1. Welding procedure specifications available	Continuous	Testing Agent
2. Manufacturer certifications for welding consumables available	Continuous	Testing Agent
3. Material identification (type/grade)	Periodic	Testing Agent
4. Welder identification system	Periodic	Testing Agent
5. Fit-up of groove welds (including joint geometry)	Periodic	Testing Agent
6. Configuration and finish of access holes	Periodic	Testing Agent
7. Fit-up of fillet welds	Periodic	Testing Agent
b. During welding:		
1. Use of qualified welders	Periodic	Testing Agent
2. Control and handling of welding consumables	Periodic	Testing Agent
3. No welding over cracked welds	Periodic	Testing Agent
4. Environmental conditions	Periodic	Testing Agent
5. Welding specification procedure followed	Periodic	Testing Agent
6. Welding Techniques	Periodic	Testing Agent
c. After welding:		
1. Welds cleaned	Periodic	Testing Agent
2. Size, length, and location of welds	Continuous	Testing Agent
3. Welds meet visual acceptance criteria	Continuous	Testing Agent
4. Arc strikes	Continuous	Testing Agent
5. K-area	Continuous	Testing Agent
6. Backing removed and weld tabs removed	Continuous	Testing Agent
7. Repair activities	Continuous	Testing Agent
8. Document acceptance or rejection of welded joint or member	Continuous	Testing Agent
2. Inspection of high-strength bolting:		
a. Prior to bolting:		
1. Manufacturer's certifications available	Continuous	Testing Agent
2. Fasteners marked in accordance with ASTM requirements	Periodic	Testing Agent
3. Proper fasteners selected for the joint detail	Periodic	Testing Agent
4. Proper bolting procedure for the joint detail	Periodic	Testing Agent
5. Connecting elements meet applicable requirements	Periodic	Testing Agent
6. Pre-installation verification testing by installation personnel observed and documented for fastener assemblies and methods used	Periodic	Testing Agent

7. Proper storage provided for bolts, nuts, washers, and other fastener components	Periodic	Testing Agent
b. During bolting:		
1. Fastener assemblies placed in all holes and washers (if required) are positioned as required	Periodic	Testing Agent
2. Joint brought to the snug-tight condition prior to the pretensioning operation	Periodic	Testing Agent
3. Fastener component not turned by the wrench prevented from rotating	Periodic	Testing Agent
4. Fasteners are pretensioned in accordance with the RCSC specification progressing systematically from the most rigid point toward the free edges	Periodic	Testing Agent
c. After bolting:		
1. Document acceptance or rejection of bolted connections	Continuous	Testing Agent
MATERIAL / ACTIVITY	FREQUENCY OF INSPECTION	INSPECTOR
C. Inspection of Concrete per 1705.3		
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a. Verify weldability of reinforcing bars other than ASTM A706.	Periodic	Testing Agent
b. Inspect single-pass fillet welds, maximum 5/16".	Periodic	Testing Agent
c. Inspect all other welds.	Continuous	Testing Agent
3. Inspect anchors cast in concrete.	Periodic	Testing Agent
4. Inspect anchors post-installed in hardened concrete members.		
a. Adhesive anchors installed in horizontally or upwardly inclined orientations to resist sustained tension loads.	Continuous	Testing Agent
b. Mechanical anchors and adhesive anchors not defined in 4.a.	Periodic	Testing Agent
5. Verify use of required design mix.	Periodic	Testing Agent
6. Prior to concrete placement, fabricate specimens for strength tests, perform slump and air content tests, and determine the temperature of the concrete.	Continuous	Testing Agent
7. Inspect concrete and shotcrete placement for proper application techniques.	Continuous	Testing Agent
8. Verify maintenance of specified curing temperature and techniques.	Periodic	Testing Agent
9. Inspect erection of precast concrete members.	Periodic	Testing Agent
10. Verify in-situ concrete strength, prior to stressing of tendons in post-tensioned concrete and prior to removal of shores and forms from beams and structural slabs.	Periodic	Testing Agent
11. Inspect formwork for shape, location, and dimensions of the concrete member being formed.	Periodic	Testing Agent
MATERIAL / ACTIVITY	FREQUENCY OF INSPECTION	INSPECTOR
D. Inspection of Masonry per 1705.4 (Level "2" in accordance with TMS 402 and TMS 602 quality assurance program requirements)		
1. Verify compliance with approved submittals	Periodic	Testing Agent
2. Verification of f'_m and f'_{aac} prior to construction except where specifically exempted by code.	Periodic	Testing Agent
3. Verification of slump flow and visual stability index (VSI) as delivered to the project site in accordance with specification article 1.5 B.1.b.3 for self-consolidating grout.	Continuous	Testing Agent

4. As masonry construction begins, verify that the following are in compliance:		
a. Proportions of site-prepared mortar.	Periodic	Testing Agent
b. Construction of mortar joints.	Periodic	Testing Agent
c. Location of reinforcement, connectors, and prestressing tendons and anchorages.	Periodic	Testing Agent
5. Prior to grouting, verify that the following are in compliance:		
a. Grout space.	Periodic	Testing Agent
b. Placement of reinforcement and connectors and prestressing tendons and anchorages.	Periodic	Testing Agent
c. Proportion of site-prepared grout and prestressing grout for bonded tendons.	Periodic	Testing Agent
d. Construction of mortar joints.	Periodic	Testing Agent
6. Verify during construction:		
a. Materials and procedures with the approved submittals	Periodic	Testing Agent
b. Placement of masonry units and mortar joint construction	Periodic	Testing Agent
c. Size and location of structural elements.	Periodic	Testing Agent
d. Type, size and location of anchors, including other details of anchorage of masonry to structural members, frames, or other construction.	Periodic	Testing Agent
e. Welding of reinforcement.	Continuous	Testing Agent
f. Preparation, construction, and protection of masonry during cold weather (temperature below 40°F) or hot weather (temperature above 90°F).	Periodic	Testing Agent
g. Placement of grout and prestressing grout for bonded tendons is in compliance.	Continuous	Testing Agent
h. Placement of AAC masonry units and construction of thin-bed mortar joints.	Continuous	Testing Agent
7. Observe preparation of grout specimens, mortar specimens, and/or prisms.	Periodic	Testing Agent
MATERIAL / ACTIVITY	FREQUENCY OF INSPECTION	INSPECTOR
E. Inspection of Soil Conditions per 1705.6		
1. Verify materials below shallow foundations are adequate to achieve the design bearing capacity.	Periodic	Testing Agent
2. Verify excavations are extended to proper depth and have reached proper material.	Periodic	Testing Agent
3. Perform classification and testing of compacted fill materials.	Periodic	Testing Agent
4. Verify use of proper materials, densities and lift thicknesses during placement and compaction of compacted fill.	Continuous	Testing Agent
5. Prior to placement of compacted fill, observe subgrade and verify that site has been prepared properly.	Periodic	Testing Agent
F. Inspection for Wind Resistance per 1705.11	-----	Testing Agent

SECTION 01 5000
TEMPORARY FACILITIES AND CONTROLS

PART 1 GENERAL

1.01 SECTION INCLUDES

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

1.02 REFERENCE STANDARDS

1.03 INFORMATIONAL SUBMITTALS

- A. Site Plan: Show temporary facilities, utility hookups, staging areas, and parking areas for construction personnel.
- B. Erosion- and Sedimentation-Control Plan: Show compliance with requirements of EPA Construction General Permit or authorities having jurisdiction, whichever is more stringent.

1.04 TEMPORARY UTILITIES

- A. Provide and pay for all electrical power, lighting, water, heating and cooling, and ventilation required for construction purposes.
- B. Existing facilities may not be used.
- C. New permanent facilities may not be used.
- D. Use trigger-operated nozzles for water hoses, to avoid waste of water.

1.05 TEMPORARY SANITARY FACILITIES

- A. Provide and maintain required facilities and enclosures. Provide at time of project mobilization.
- B. Maintain daily in clean and sanitary condition.
- C. At end of construction, return facilities to same or better condition as originally found.

1.06 BARRIERS

- A. Provide barriers to prevent unauthorized entry to construction areas, to prevent access to areas that could be hazardous to workers or the public, to allow for owner's use of site and to protect existing facilities and adjacent properties from damage from construction operations and demolition.
- B. Provide barricades and covered walkways required by governing authorities for public rights-of-way and for public access to existing building.
- C. Protect non-owned vehicular traffic, stored materials, site, and structures from damage.

1.07 FENCING

- A. Construction: Commercial grade chain link fence.
- B. Provide 6 foot high fence around construction site; equip with vehicular and pedestrian gates with locks.

1.08 SECURITY

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

1.09 SECURITY AND PROTECTION - FACILITIES INSTALLATION

- A. Protection of Existing Facilities: Protect existing vegetation, equipment, structures, utilities, and other improvements at Project site and on adjacent properties, except those indicated to be removed or altered. Repair damage to existing facilities.
- B. Environmental Protection: Provide protection, operate temporary facilities, and conduct construction as required to comply with environmental regulations and that minimize possible air, waterway, and subsoil contamination or pollution or other undesirable effects.
 - 1. Comply with work restrictions specified in Section 011000 "Summary."
 - 2. Temporary Erosion and Sedimentation Control: Provide measures to prevent soil erosion and discharge of soil-bearing water runoff and airborne dust to undisturbed areas and to adjacent properties and walkways, according to erosion- and sedimentation-control Drawings.
 - 3. Verify that flows of water redirected from construction areas or generated by construction activity do not enter or cross tree- or plant- protection zones.
 - 4. Inspect, repair, and maintain erosion- and sedimentation-control measures during construction until permanent vegetation has been established.
 - 5. Clean, repair, and restore adjoining properties and roads affected by erosion and
 - 6. sedimentation from Project site during the course of Project.
- C. Stormwater Control: Comply with requirements of authorities having jurisdiction. Provide barriers in and around excavations and subgrade construction to prevent flooding by runoff of stormwater from heavy rains.
- D. Site Enclosure Fence: Contractor shall secure all separate work areas with chain link fencing as follows: Before construction operations begin, furnish and install chain-link site enclosure fence in a manner that will prevent people and animals from easily entering site except by entrance gates.
 - 1. Extent of Fence: As required to enclose entire Project site or portion determined sufficient to accommodate construction operations.
 - 2. Maintain security by limiting number of keys and restricting distribution to authorized personnel. Furnish one set of keys to Owner.
 - 3. Maintain temporary site enclosure fence in place until completion of demolition contract, at which time the fence will become Owner's property for use during the building contract.
 - a. Barricades, Warning Signs, and Lights: Comply with requirements of authorities having jurisdiction for erecting structurally adequate barricades, including warning signs and lighting.
 - b. Temporary Egress: Maintain temporary egress from existing occupied facilities as indicated and as required by authorities having jurisdiction.
- E.

1.10 VEHICULAR ACCESS AND PARKING

- A. Comply with regulations relating to use of streets and sidewalks, access to emergency facilities, and access for emergency vehicles.
- B. Coordinate access and haul routes with governing authorities and Owner.
- C. Provide and maintain access to fire hydrants, free of obstructions.
- D. Provide means of removing mud from vehicle wheels before entering streets.
- E. Provide temporary parking areas to accommodate construction personnel. When site space is not adequate, provide additional off-site parking.

1.11 WASTE REMOVAL

- A. Provide waste removal facilities and services as required to maintain the site in clean and orderly condition.
- B. Provide containers with lids. Remove trash from site at least weekly.

- C. If materials to be recycled or re-used on the project must be stored on-site, provide suitable non-combustible containers; locate containers holding flammable material outside the structure unless otherwise approved by the authorities having jurisdiction.

1.12 REMOVAL OF UTILITIES, FACILITIES, AND CONTROLS

- A. Remove temporary utilities, equipment, facilities, materials, prior to Date of Substantial Completion inspection.
- B. Remove underground installations to a minimum depth of 2 feet. Grade site as indicated.
- C. Clean and repair damage caused by installation or use of temporary work.
- D. Restore existing facilities used during construction to original condition.
- E. Restore new permanent facilities used during construction to specified condition.

PART 2 PRODUCTS - NOT USED

PART 3 EXECUTION - NOT USED

END OF SECTION

SECTION 01 6000
PRODUCT REQUIREMENTS

PART 1 GENERAL

1.01 SECTION INCLUDES

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

1.02 RELATED REQUIREMENTS

- A. Section 01 1000 - Summary: Identification of Owner-supplied products.
- B. Section 01 2500 - Substitution Procedures: Substitutions made during procurement and/or construction phases.
- C. Section 01 4000 - Quality Requirements: Product quality monitoring.
- D. Section 01 7419 - Construction Waste Management and Disposal: Waste disposal requirements potentially affecting product selection, packaging and substitutions.

1.03 REFERENCE STANDARDS

- A. NEMA MG 1 - Motors and Generators; 2017.
- B. NFPA 70 - National Electrical Code; Most Recent Edition Adopted by Authority Having Jurisdiction, Including All Applicable Amendments and Supplements.

1.04 SUBMITTALS

- A. Proposed Products List: Submit list of major products proposed for use, with name of manufacturer, trade name, and model number of each product.
 - 1. Submit within 15 days after date of Agreement.
 - 2. For products specified only by reference standards, list applicable reference standards.
- B. Product Data Submittals: Submit manufacturer's standard published data. Mark each copy to identify applicable products, models, options, and other data. Supplement manufacturers' standard data to provide information specific to this Project.
- C. Shop Drawing Submittals: Prepared specifically for this Project; indicate utility and electrical characteristics, utility connection requirements, and location of utility outlets for service for functional equipment and appliances.
- D. Sample Submittals: Illustrate functional and aesthetic characteristics of the product, with integral parts and attachment devices. Coordinate sample submittals for interfacing work.
 - 1. For selection from standard finishes, submit samples of the full range of the manufacturer's standard colors, textures, and patterns.

PART 2 PRODUCTS

2.01 EXISTING PRODUCTS

- A. Do not use materials and equipment removed from existing premises unless specifically required or permitted by Contract Documents.
- B. Unforeseen historic items encountered remain the property of the Owner; notify Owner promptly upon discovery; protect, remove, handle, and store as directed by Owner.

- C. Existing materials and equipment indicated to be removed, but not to be re-used, relocated, reinstalled, delivered to the Owner, or otherwise indicated as to remain the property of the Owner, become the property of the Contractor; remove from site.

2.02 NEW PRODUCTS

- A. Provide new products unless specifically required or permitted by Contract Documents.
- B. Use of products having any of the following characteristics is not permitted:
 - 1. Containing lead, cadmium, or asbestos.
- C. Where other criteria are met, Contractor shall give preference to products that:
 - 1. Are extracted, harvested, and/or manufactured closer to the location of the project.
 - 2. Have longer documented life span under normal use.
 - 3. Result in less construction waste. See Section 01 7419
- D. Provide interchangeable components of the same manufacture for components being replaced.
- E. Motors: Refer to Section 22 0513 - Common Motor Requirements for Plumbing Equipment, NEMA MG 1 Type. Specific motor type is specified in individual specification sections.
- F. Motors: Refer to Section 23 0513 - Common Motor Requirements for HVAC Equipment, NEMA MG 1 Type. Specific motor type is specified in individual specification sections.
- G. Wiring Terminations: Provide terminal lugs to match branch circuit conductor quantities, sizes, and materials indicated. Size terminal lugs to NFPA 70, include lugs for terminal box.
- H. Cord and Plug: Provide minimum 6 foot cord and plug including grounding connector for connection to electric wiring system. Cord of longer length is specified in individual specification sections.

2.03 PRODUCT OPTIONS

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

2.04 MAINTENANCE MATERIALS

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

PART 3 EXECUTION

3.01 SUBSTITUTION LIMITATIONS - SEE SECTION 01 2500 - SUBSTITUTION PROCEDURES

- A. Instructions to Bidders specifies time restrictions for submitting requests for substitutions during the bidding period and the documents required. Comply with requirements specified in Section 00 2113.
- B. Submit substitution requests by completing the form in Section 00 5000 - Contracting Forms and Supplements; see this section for additional information and instructions. Use only this form; other forms of submission are unacceptable.

3.02 OWNER-SUPPLIED PRODUCTS

- A. See Section 01 1000 - Summary for identification of Owner-supplied products.
- B. Owner's Responsibilities:
 - 1. Arrange for and deliver Owner reviewed shop drawings, product data, and samples, to Contractor.
 - 2. Arrange and pay for product delivery to site.
 - 3. On delivery, inspect products jointly with Contractor.

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

3.03 TRANSPORTATION AND HANDLING

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

3.04 STORAGE AND PROTECTION

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

- N. Arrange storage of products to permit access for inspection. Periodically inspect to verify products are undamaged and are maintained in acceptable condition.

END OF SECTION

SECTION 01 7000
EXECUTION AND CLOSEOUT REQUIREMENTS

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Examination, preparation, and general installation procedures.
- B. Pre-installation meetings.
- C. Surveying for laying out the work.
- D. Cleaning and protection.

1.02 RELATED REQUIREMENTS

- A. Section 01 1000 - Summary: Limitations on working in existing building; continued occupancy; work sequence; identification of salvaged and relocated materials.
- B. Section 01 3000 - Administrative Requirements: Submittals procedures; coordination drawings.
- C. Section 01 7329 - Cutting and Patching.
- D. Section 01 7700 - Closeout Procedures: Substantial and Final Completion, Final cleaning.
- E. Section 01 7800 - Closeout Submittals: Project record documents, operation and maintenance data, warranties, and bonds.
- F. Section 02 4100 - Demolition: Demolition of whole structures and parts thereof; site utility demolition.
- G. Section 07 8400 - Firestopping.

1.03 REFERENCE STANDARDS

- A. NFPA 241 - Standard for Safeguarding Construction, Alteration, and Demolition Operations; 2013.

1.04 SUBMITTALS

- A. See Section 01 3000 - Administrative Requirements, for submittal procedures.
- B. Survey work: Submit name, address, and telephone number of Surveyor before starting survey work.
 - 1. On request, submit documentation verifying accuracy of survey work.
 - 2. Submit a copy of site drawing signed by the Land Surveyor, that the elevations and locations of the work are in conformance with Contract Documents.
 - 3. Submit surveys and survey logs for the project record.
- C. Demolition Plan: Submit demolition plan as specified by OSHA and local authorities.
 - 1. Indicate extent of demolition, removal sequence, bracing and shoring, and location and construction of barricades and fences. Include design drawings and calculations for bracing and shoring.
 - 2. Identify demolition firm and submit qualifications.
 - 3. Include a summary of safety procedures.
- D. Cutting and Patching: Submit written request in advance of cutting or alteration that affects:
 - 1. Structural integrity of any element of Project.
 - 2. Integrity of weather exposed or moisture resistant element.
 - 3. Efficiency, maintenance, or safety of any operational element.
 - 4. Visual qualities of sight exposed elements.
 - 5. Work of Owner or separate Contractor.
 - 6. Include in request:
 - a. Identification of Project.
 - b. Location and description of affected work.
 - c. Necessity for cutting or alteration.
 - d. Description of proposed work and products to be used.

- e. Alternatives to cutting and patching.
- f. Effect on work of Owner or separate Contractor.
- g. Written permission of affected separate Contractor.
- h. Date and time work will be executed.

E. Project Record Documents: Accurately record actual locations of capped and active utilities.

1.05 QUALIFICATIONS

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

1.06 PROJECT CONDITIONS

- A. Use of explosives is not permitted.
- B. Grade site to drain. Maintain excavations free of water. Provide, operate, and maintain pumping equipment.
- C. Protect site from puddling or running water. Provide water barriers as required to protect site from soil erosion.
- D. Ventilate enclosed areas to assist cure of materials, to dissipate humidity, and to prevent accumulation of dust, fumes, vapors, or gases.
- E. Dust Control: Execute work by methods to minimize raising dust from construction operations. Provide positive means to prevent air-borne dust from dispersing into atmosphere and over adjacent property.
 - 1. Provide dust-proof enclosures to prevent entry of dust generated outdoors.
 - 2. Provide dust-proof barriers between construction areas and areas continuing to be occupied by Owner.
- F. Erosion and Sediment Control: Plan and execute work by methods to control surface drainage from cuts and fills, from borrow and waste disposal areas. Prevent erosion and sedimentation.
 - 1. Minimize amount of bare soil exposed at one time.
 - 2. Provide temporary measures such as berms, dikes, and drains, to prevent water flow.
 - 3. Construct fill and waste areas by selective placement to avoid erosive surface silts or clays.
 - 4. Periodically inspect earthwork to detect evidence of erosion and sedimentation; promptly apply corrective measures.
- G. Noise Control: Provide methods, means, and facilities to minimize noise produced by construction operations.
 - 1. Outdoors: Limit conduct of especially noisy exterior work to _____.
 - 2. Indoors: Limit conduct of especially noisy interior work to _____.
- H. Pest and Rodent Control: Provide methods, means, and facilities to prevent pests and insects from damaging the work.
 - 1. Pest Control Service: Monthly treatments.

- I. Pollution Control: Provide methods, means, and facilities to prevent contamination of soil, water, and atmosphere from discharge of noxious, toxic substances, and pollutants produced by construction operations. Comply with federal, state, and local regulations.

1.07 COORDINATION

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

PART 2 PRODUCTS (NOT USED)

PART 3 EXECUTION

3.01 EXAMINATION

- A. Verify that existing site conditions and substrate surfaces are acceptable for subsequent work. Start of work means acceptance of existing conditions.
- B. Verify that existing substrate is capable of structural support or attachment of new work being applied or attached.
- C. Examine and verify specific conditions described in individual specification sections.
- D. Take field measurements before confirming product orders or beginning fabrication, to minimize waste due to over-ordering or misfabrication.
- E. Verify that utility services are available, of the correct characteristics, and in the correct locations.
- F. Prior to Cutting: Examine existing conditions prior to commencing work, including elements subject to damage or movement during cutting and patching. After uncovering existing work, assess conditions affecting performance of work. Beginning of cutting or patching means acceptance of existing conditions.

3.02 PREPARATION

- A. Clean substrate surfaces prior to applying next material or substance.
- B. Seal cracks or openings of substrate prior to applying next material or substance.
- C. Apply manufacturer required or recommended substrate primer, sealer, or conditioner prior to applying any new material or substance in contact or bond.

3.03 PREINSTALLATION MEETINGS

- A. When required in individual specification sections, convene a preinstallation meeting at the site prior to commencing work of the section.

- B. Require attendance of parties directly affecting, or affected by, work of the specific section including installer and manufacturer's representatives, fabricator and those having interface with the work.
- C. Notify Architect four days in advance of meeting date.
- D. Prepare agenda and preside at meeting:
 - 1. Review conditions of examination, preparation and installation procedures.
 - 2. Review coordination with related work.
 - 3. Contract Documents.
 - 4. Related Change Orders.
 - 5. Purchases.
 - 6. Deliveries.
 - 7. Submittals.
 - 8. Review of mockups.
 - 9. Possible conflicts.
 - 10. Compatibility problems.
 - 11. Time schedules.
 - 12. Weather limitations.
 - 13. Manufacturer's written recommendations.
 - 14. Warranty requirements.
 - 15. Compatibility of materials.
 - 16. Acceptability of substrates.
 - 17. Temporary facilities and controls.
 - 18. Space and access limitations.
 - 19. Regulations of authorities having jurisdiction.
 - 20. Testing and inspecting requirements.
 - 21. Required performance results.
 - 22. Protection of construction and personnel.
- E. Record minutes and distribute copies within two days after meeting to participants, with two copies to Architect, Owner, participants, and those affected by decisions made.
- F. Do not proceed with installation if the conference cannot be successfully concluded. Initiate whatever actions are necessary to resolve impediments to performance of the Work and reconvene the conference at earliest feasible date.

3.04 LAYING OUT THE WORK

- A. Verify locations of survey control points prior to starting work.
- B. Promptly notify Architect of any discrepancies discovered.
- C. Contractor shall locate and protect survey control and reference points.
- D. Protect survey control points prior to starting site work; preserve permanent reference points during construction.
- E. Promptly report to Architect the loss or destruction of any reference point or relocation required because of changes in grades or other reasons.
- F. Replace dislocated survey control points based on original survey control. Make no changes without prior written notice to Architect.
- G. Utilize recognized engineering survey practices.
- H. Establish a minimum of two permanent bench marks on site, referenced to established control points. Record locations, with horizontal and vertical data, on project record documents.
- I. Establish elevations, lines and levels. Locate and lay out by instrumentation and similar appropriate means:
 - 1. Site improvements including pavements; stakes for grading, fill and topsoil placement; utility locations, slopes, and invert elevations.

- J. Maintain a complete and accurate log of control and survey work as it progresses.

3.05 GENERAL INSTALLATION REQUIREMENTS

- A. In addition to compliance with regulatory requirements, conduct construction operations in compliance with NFPA 241, including applicable recommendations in Appendix A.

3.06 ALTERATIONS

- A. Drawings showing existing construction and utilities are based on casual field observation and existing record documents only.
 - 1. Verify that construction and utility arrangements are as indicated.
 - 2. Report discrepancies to Architect before disturbing existing installation.
 - 3. Beginning of alterations work constitutes acceptance of existing conditions.
- B. Remove existing work as indicated and as required to accomplish new work.
 - 1. Remove items indicated on drawings.
 - 2. Relocate items indicated on drawings.
- C. Protect existing work to remain.
 - 1. Prevent movement of structure; provide shoring and bracing if necessary.
 - 2. Perform cutting to accomplish removals neatly and as specified for cutting new work.
 - 3. Repair adjacent construction and finishes damaged during removal work.
- D. Remove demolition debris and abandoned items from alterations areas and dispose of off-site; do not burn or bury.
 - 1. asbestos containing non-friable resilient floor covering materials should be disposed of in accordance with any applicable state and local regulations.
- E. Comply with all other applicable requirements of this section.

3.07 CUTTING AND PATCHING

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

3.08 PROGRESS CLEANING

- A. Maintain areas free of waste materials, debris, and rubbish. Maintain site in a clean and orderly condition.
- B. Remove debris and rubbish from pipe chases, plenums, attics, crawl spaces, and other closed or remote spaces, prior to enclosing the space.
- C. Broom and vacuum clean interior areas prior to start of surface finishing, and continue cleaning to eliminate dust.
- D. Collect and remove waste materials, debris, and trash/rubbish from site periodically and dispose off-site; do not burn or bury.

3.09 PROTECTION OF INSTALLED WORK

- A. Protect installed work from damage by construction operations.
- B. Provide special protection where specified in individual specification sections.
- C. Prohibit traffic from landscaped areas.

3.10 FINAL CLEANING

- A. Execute final cleaning prior to final project assessment.
 - 1. Execute in accord with Section 01 7700 - Closeout Procedures.
- B. Clean site; sweep paved areas, rake clean landscaped surfaces.
- C. Remove waste, surplus materials, trash/rubbish, and construction facilities from the site; dispose of in legal manner; do not burn or bury.

END OF SECTION

**SECTION 01 7700
CLOSEOUT PROCEDURES**

PART 1 - GENERAL

1.01 SUMMARY

- A. Section includes administrative and procedural requirements for contract closeout, including, but not limited to, the following:
 - 1. Substantial Completion procedures.
 - 2. Final completion procedures.
 - 3. Final cleaning.
 - 4. Related Requirements:
 - a. Section 013233 "Photographic Documentation" for submitting final completion construction photographic documentation.

1.02 SUBSTANTIAL COMPLETION PROCEDURES

- A. Submittals Prior to Substantial Completion: Complete the following a minimum of 10 days prior to requesting inspection for determining date of Substantial Completion. List items below that are incomplete at time of request.
 - 1. Submit closeout submittals specified in other Division 01 Sections, including final completion construction photographic documentation, damage or settlement surveys, property surveys, and similar final record information.
 - 2. Procedures Prior to Substantial Completion: Complete the following a minimum of 10 days prior to requesting inspection for determining date of Substantial Completion. List items below that are incomplete at time of request.
 - a. Advise Owner of pending insurance changeover requirements.
 - b. Terminate and remove temporary facilities from Project site.
 - c. Complete final cleaning requirements.
 - 3. Inspection: Submit a written request for inspection to determine Substantial Completion a minimum of 10 days prior to date the work will be completed and ready for final inspection. On receipt of request, Architect will either proceed with inspection or notify Contractor of unfulfilled requirements. Architect will prepare the Certificate of Substantial Completion after inspection or will notify Contractor of items, either on Contractor's list or additional items identified by Architect, that must be completed or corrected before certificate will be issued.
 - a. Reinspection: Request reinspection when the Work identified in previous inspections as incomplete is completed or corrected.
 - b. Results of completed inspection will form the basis of requirements for final completion.

1.03 FINAL COMPLETION PROCEDURES

- A. Preliminary Procedures: Before requesting final inspection for determining final completion, complete the following:
 - 1. Submit a final Application for Payment according to Section 012900 "Payment Procedures."
 - 2. Certified List of Incomplete Items: Submit certified copy of Architect's Substantial Completion inspection list of items to be completed or corrected (punch list), endorsed and dated by Architect. Certified copy of the list shall state that each item has been completed or otherwise resolved for acceptance.
 - 3. Certificate of Insurance: Submit evidence of final, continuing insurance coverage complying with insurance requirements.
 - 4. Inspection: Submit a written request for final inspection to determine acceptance. On receipt of request, Architect will either proceed with inspection or notify Contractor of unfulfilled requirements. Architect will prepare a final Certificate for Payment after inspection or will notify Contractor of construction that must be completed or corrected before certificate will be issued.

PART 2 - PRODUCTS (NOT USED)

PART 3 - EXECUTION

3.01 FINAL CLEANING

- A. General: Perform final cleaning. Conduct cleaning and waste-removal operations to comply with local laws and ordinances and Federal and local environmental and antipollution regulations.
 - 1. 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 7900
DEMONSTRATION AND TRAINING

PART 1 GENERAL

1.01 SUMMARY

- A. Demonstration of products and systems where indicated in specific specification sections.
- B. Training of Owner personnel in operation and maintenance is required for:
 - 1. All software-operated systems.
 - 2. HVAC systems and equipment.
 - 3. Plumbing equipment.
 - 4. Electrical systems and equipment.
 - 5. Conveying systems.
 - 6. Landscape irrigation.
 - 7. Items specified in individual product Sections.
- C. Training of Owner personnel in care, cleaning, maintenance, and repair is required for:
 - 1. Roofing, waterproofing, and other weather-exposed or moisture protection products.
 - 2. Finishes, including flooring, wall finishes, ceiling finishes.
 - 3. Fixtures and fittings.
 - 4. Items specified in individual product Sections.

1.02 RELATED REQUIREMENTS

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

1.03 SUBMITTALS

- A. See Section 01 3000 - Administrative Requirements, for submittal procedures.
- B. Training Plan: Owner will designate personnel to be trained; tailor training to needs and skill-level of attendees.
 - 1. Submit to Architect for transmittal to Owner.
 - 2. Submit not less than four weeks prior to start of training.
 - 3. Revise and resubmit until acceptable.
 - 4. Provide an overall schedule showing all training sessions.
 - 5. Include at least the following for each training session:
 - a. Identification, date, time, and duration.
 - b. Description of products and/or systems to be covered.
 - c. Name of firm and person conducting training; include qualifications.
 - d. Intended audience, such as job description.
 - e. Objectives of training and suggested methods of ensuring adequate training.
 - f. Methods to be used, such as classroom lecture, live demonstrations, hands-on, etc.
 - g. Media to be used, such as slides, hand-outs, etc.
 - h. Training equipment required, such as projector, projection screen, etc., to be provided by Contractor.
- C. Training Manuals: Provide training manual for each attendee; allow for minimum of two attendees per training session.
 - 1. Include applicable portion of O&M manuals.
 - 2. Include copies of all hand-outs, slides, overheads, video presentations, etc., that are not included in O&M manuals.
 - 3. Provide one extra copy of each training manual to be included with operation and maintenance data.
- D. Training Reports:
 - 1. Identification of each training session, date, time, and duration.
 - 2. Sign-in sheet showing names and job titles of attendees.

3. List of attendee questions and written answers given, including copies of and references to supporting documentation required for clarification; include answers to questions that could not be answered in original training session.
- E. Video Recordings: Submit digital video recording of each demonstration and training session for Owner's subsequent use.
1. Format: DVD Disc.
 2. Label each disc and container with session identification and date.

1.04 QUALITY ASSURANCE

- A. Instructor Qualifications: Familiar with design, operation, maintenance and troubleshooting of the relevant products and systems.
1. Provide as instructors the most qualified trainer of those contractors and/or installers who actually supplied and installed the systems and equipment.
 2. Where a single person is not familiar with all aspects, provide specialists with necessary qualifications.

PART 2 PRODUCTS - NOT USED

PART 3 EXECUTION

3.01 DEMONSTRATION - GENERAL

- A. Demonstrations conducted during system start-up do not qualify as demonstrations for the purposes of this section, unless approved in advance by Owner.
- B. Demonstration may be combined with Owner personnel training if applicable.
- C. Operating Equipment and Systems: Demonstrate operation in all modes, including start-up, shut-down, seasonal changeover, emergency conditions, and troubleshooting, and maintenance procedures, including scheduled and preventive maintenance.
1. Perform demonstrations not less than two weeks prior to Substantial Completion.
 2. For equipment or systems requiring seasonal operation, perform demonstration for other season within six months.
- D. Non-Operating Products: Demonstrate cleaning, scheduled and preventive maintenance, and repair procedures.
1. Perform demonstrations not less than two weeks prior to Substantial Completion.

3.02 TRAINING - GENERAL

- A. Conduct training on-site unless otherwise indicated.
- B. Owner will provide classroom and seating at no cost to Contractor.
- C. Provide training in minimum two hour segments.
- D. Training schedule will be subject to availability of Owner's personnel to be trained; re-schedule training sessions as required by Owner; once schedule has been approved by Owner failure to conduct sessions according to schedule will be cause for Owner to charge Contractor for personnel "show-up" time.
- E. Review of Facility Policy on Operation and Maintenance Data: During training discuss:
1. The location of the O&M manuals and procedures for use and preservation; backup copies.
 2. Typical contents and organization of all manuals, including explanatory information, system narratives, and product specific information.
 3. Typical uses of the O&M manuals.
- F. Product- and System-Specific Training:
1. Review the applicable O&M manuals.
 2. For systems, provide an overview of system operation, design parameters and constraints, and operational strategies.

3. Review instructions for proper operation in all modes, including start-up, shut-down, seasonal changeover and emergency procedures, and for maintenance, including preventative maintenance.
 4. Provide hands-on training on all operational modes possible and preventive maintenance.
 5. Emphasize safe and proper operating requirements; discuss relevant health and safety issues and emergency procedures.
 6. Discuss common troubleshooting problems and solutions.
 7. Discuss any peculiarities of equipment installation or operation.
 8. Discuss warranties and guarantees, including procedures necessary to avoid voiding coverage.
 9. Review recommended tools and spare parts inventory suggestions of manufacturers.
 10. Review spare parts and tools required to be furnished by Contractor.
 11. Review spare parts suppliers and sources and procurement procedures.
- G. Be prepared to answer questions raised by training attendees; if unable to answer during training session, provide written response within three days.

END OF SECTION

**SECTION 02 4100
DEMOLITION**

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Selective demolition of built site elements.
- B. Selective demolition of building elements for alteration purposes.

1.02 RELATED REQUIREMENTS

- A. Section 01 1000 - Summary: Limitations on Contractor's use of site and premises.
- B. Section 01 1000 - Summary: Description of items to be salvaged or removed for re-use by Contractor.
- C. Section 01 5000 - Temporary Facilities and Controls: Site fences, security, protective barriers, and waste removal.
- D. Section 01 6000 - Product Requirements: Handling and storage of items removed for salvage and relocation.
- E. Section 01 7000 - Execution and Closeout Requirements: Project conditions; protection of bench marks, survey control points, and existing construction to remain; reinstallation of removed products; temporary bracing and shoring.
- F. Section 31 2323 - Fill: Fill material for filling holes, pits, and excavations generated as a result of removal operations.

1.03 REFERENCE STANDARDS

- A. 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. Site Plan: Showing:
 - 1. Areas for temporary construction and field offices.
 - 2. 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. Project Record Documents: Accurately record actual locations of capped and active utilities and subsurface construction.

1.05 QUALITY ASSURANCE

- A. Demolition Firm Qualifications: Company specializing in the type of work required.
 - 1. Minimum of five years of documented experience.

PART 2 PRODUCTS

2.01 MATERIALS

- A. Fill Material: As specified in Section 31 2323 - Fill.

PART 3 EXECUTION

3.01 SCOPE

- A. Remove paving and curbs as required to accomplish new work.
- B. Within areas of new construction, remove indicated walls and footings completely.
- C. Remove CMU low walls and footings between dugouts.

- D. Remove concrete slabs on grade as indicated on drawings. Remove concrete walks where indicated and as necessary for new construction.
- E. Remove in-ground electrical vaults.
- F. Remove other items indicated, for salvage and relocation.

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. 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.
- F. 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.
- G. 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.
- H. 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.

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.
- B. Remove existing work as indicated and as required to accomplish new work.
 - 1. Remove items indicated on drawings.
 - 2.
- C. Protect existing work to remain.
 - 1. Prevent movement of structure; provide shoring and bracing if necessary.
 - 2. Perform cutting to accomplish removals neatly and as specified for cutting new work.
 - 3. Repair adjacent construction and finishes damaged during removal work.
 - 4. Patch as specified for patching new work.

3.05 DEBRIS AND WASTE REMOVAL

- A. Remove debris, junk, and trash from site.
- B. Leave site in clean condition, ready for subsequent work.
- C. 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.
 - 7. Permeability-Reducing Admixture: ASTM C 494/C 494M, Type S, hydrophilic, permeability-reducing crystalline admixture.
 - a. Xypex; C-500.
 - b. BASF; Masterlife 300D.
 - c. Sika; WT-215 P

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 bulk-heads 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, restraightening, 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 restraightening 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

ORANGE BEACH BASEBALL/SOFTBALL FIELD RENOVATIONS
CITY OF ORANGE BEACH
ORANGE BEACH, ALABAMA

May 4, 2020
DAI 3916

SECTION 03 3511
CONCRETE FLOOR FINISHES

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Surface treatments for concrete floors and slabs.

1.02 RELATED REQUIREMENTS

- A. Section 03 3000 - Cast-in-Place Concrete: Finishing of concrete surface to tolerance; floating, troweling, and similar operations; curing.
- B. Section 03 3543.13 Polished and Dyed Concrete Finishing.

1.03 ADMINISTRATIVE REQUIREMENTS

- A. Coordinate the work with concrete floor placement and concrete floor curing.

1.04 SUBMITTALS

- A. See Section 01 3000 - Administrative Requirements, for submittal procedures.
- B. Product Data: Manufacturer's published data on each finishing product, including information on compatibility of different products and limitations.
- C. Maintenance Data: Provide data on maintenance and renewal of applied finishes.

1.05 MOCK-UP

- A. Mock-Up Size: 10 feet square.
- B. Locate where directed.
- C. Mock-up may remain as part of the work.

1.06 DELIVERY, STORAGE, AND HANDLING

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

1.07 FIELD CONDITIONS

- A. Maintain light level equivalent to a minimum 200 W light source at 8 feet above the floor surface over each 20 foot square area of floor being finished.
- B. Do not finish floors until interior heating system is operational.
- C. Maintain ambient temperature of 50 degrees F minimum.

PART 2 PRODUCTS

2.01 CONCRETE FLOOR FINISH APPLICATIONS

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

2.02 DENSIFIERS AND HARDENERS

- A. Liquid Densifier/Hardener: Penetrating chemical compound that reacts with concrete, filling the pores and dustproofing; for application to concrete after set.
 - 1. Composition: Lithium silicate.
 - 2. Products:
 - a. ARDEX Engineered Cements; ARDEX PC-50: www.ardexamericas.com/#sle.
 - b. Dayton Superior Corporation; Pentra-Hard® Guard: www.daytonsuperior.com/#sle.
 - c. Euclid Chemical Company; EUCO DIAMOND HARD: www.euclidchemical.com/#sle.
 - d. Kaufman Products Inc; SureHard LS: www.kaufmanproducts.net/#sle.
 - e. L&M Construction Chemicals, Inc, a subsidiary of Laticrete International, Inc; LiON HARD: www.lmcc.com/#sle.
 - f. Nox-Crete Products Group; Duro-Nox LS: www.nox-crete.com/#sle.
 - g. PROSOCO, Inc; Consolideck LS: www.prosoco.com/consolideck/#sle.
 - h. SpecChem, LLC; LithSeal SC: www.specchemllc.com/#sle.

- i. W. R. Meadows, Inc; Liqui-Hard Ultra: www.wrmeadows.com/#sle.
- j. Substitutions: See Section 01 6000 - Product Requirements.

PART 3 EXECUTION

3.01 EXAMINATION

- A. Verify that floor surfaces are acceptable to receive the work of this section.
- B. Verify that flaws in concrete have been patched and joints filled with methods and materials suitable for further finishes.

3.02 GENERAL

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

3.03 COATING APPLICATION

- A. Verify that surface is free of previous coatings, sealers, curing compounds, water repellents, laitance, efflorescence, fats, oils, grease, wax, soluble salts, residues from cleaning agents, and other impediments to adhesion.
- B. Verify that water vapor emission from concrete and relative humidity in concrete are within limits established by coating manufacturer.
- C. Protect adjacent non-coated areas from drips, overflow, and overspray; immediately remove excess material.
- D. Apply coatings in accordance with manufacturer's instructions, matching approved mock-ups for color, special effects, sealing and workmanship.

END OF SECTION

SECTION 03 4500
PRECAST ARCHITECTURAL CONCRETE

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Architectural precast concrete archway panel.
- B. Supports, anchors, and attachments.
- C. Grouting under panels.

1.02 RELATED REQUIREMENTS

- A. Section 03 3000 - Cast-in-Place Concrete: Admixtures.
- B. Section 07 9200 - Joint Sealants: Sealing perimeter and intermediate joints.

1.03 REFERENCE STANDARDS

- A. ACI 301 - Specifications for Structural Concrete; 2010 (Errata 2012).
- B. ACI 318 - Building Code Requirements for Structural Concrete and Commentary; 2011.
- C. ASHRAE (FUND) - ASHRAE Handbook - Fundamentals; 2013.
- D. ASHRAE Std 90.1 - Energy Standard for Buildings Except Low-Rise Residential Buildings; 2013, Including All Addenda.
- E. ASTM A36/A36M - Standard Specification for Carbon Structural Steel; 2014.
- F. ASTM A123/A123M - Standard Specification for Zinc (Hot-Dip Galvanized) Coatings on Iron and Steel Products; 2017.
- G. ASTM A153/A153M - Standard Specification for Zinc Coating (Hot-Dip) on Iron and Steel Hardware; 2016a.
- H. ASTM A307 - Standard Specification for Carbon Steel Bolts, Studs, and Threaded Rod 60 000 PSI Tensile Strength; 2014 (Editorial 2017).
- I. ASTM A563 - Standard Specification for Carbon and Alloy Steel Nuts; 2015.
- J. ASTM A563M - Standard Specification for Carbon and Alloy Steel Nuts [Metric]; 2007.
- K. ASTM A615/A615M - Standard Specification for Deformed and Plain Carbon-Steel Bars for Concrete Reinforcement; 2018, with Editorial Revision (2018).
- L. ASTM A1064/A1064M - Standard Specification for Carbon-Steel Wire and Welded Wire Reinforcement, Plain and Deformed, for Concrete; 2017.
- M. ASTM C1602/C1602M - Standard Specification for Mixing Water Used in the Production of Hydraulic Cement Concrete; 2012.
- N. ASTM C33/C33M - Standard Specification for Concrete Aggregates; 2013.
- O. ASTM C150/C150M - Standard Specification for Portland Cement; 2018.
- P. ASTM C260/C260M - Standard Specification for Air-Entraining Admixtures for Concrete; 2010a.
- Q. ASTM C618 - Standard Specification for Coal Fly Ash and Raw or Calcined Natural Pozzolan for Use in Concrete; 2015.
- R. ASTM C979/C979M - Standard Specification for Pigments for Integrally Colored Concrete; 2016.
- S. ASTM C989/C989M - Standard Specification for Slag Cement for Use in Concrete and Mortars; 2014.
- T. ASTM C1240 - Standard Specification for Silica Fume Used in Cementitious Mixtures; 2014.
- U. AWS D1.1/D1.1M - Structural Welding Code - Steel; 2015, with Errata (2016).
- V. AWS D1.4/D1.4M - Structural Welding Code - Reinforcing Steel; 2011.

- W. IAS AC157 - Accreditation Criteria for Fabricator Inspection Programs for Reinforced and Precast/Prestressed Concrete; 2010.
- X. PCI MNL-117 - Manual for Quality Control for Plants and Production of Architectural Precast Concrete Products; 2007.
- Y. PCI MNL-120 - PCI Design Handbook - Precast and Prestressed Concrete; 2010, Seventh Edition.
- Z. PCI MNL-122 - Architectural Precast Concrete; 2007, Third Edition.
- AA. PCI MNL-123 - Design and Typical Details of Connections for Precast and Prestressed Concrete; 1988, Second Edition.
- AB. PCI MNL-135 - Tolerance Manual for Precast and Prestressed Concrete Construction; 2000.

1.04 ADMINISTRATIVE REQUIREMENTS

- A. Coordination: Coordinate connection devices including supports, anchors and connection devices with supporting structural framework.
- B. Preinstallation Meeting: Convene one week prior to commencing work of this section.

1.05 SUBMITTALS

- A. See Section 01 3000 - Administrative Requirements, for submittal procedures.
- B. Product Data: Manufacturer's information on accessory products, including pigments, admixtures, inserts, plates, etc.
- C. Shop Drawings: Indicate layout, unit locations, configuration, unit identification marks, reinforcement, integral insulation, insulated panel system connectors, connection details, support items, location of lifting devices, dimensions, openings, and relationship to adjacent materials. Provide erection drawings.
 - 1. Include details of mix designs.
 - 2. Include structural design calculations.
- D. Samples: Submit two sample panels, 16 by 16 inch in size, illustrating surface finish, color and texture.
- E. Fabricator's Qualification Statement: Provide documentation showing precast concrete fabricator is accredited under IAS AC157.
- F. Integrally Insulated Panel System Design Data:
 - 1. Thermal Resistance: Submit calculations complying with ASHRAE Std 90.1 I-P, isothermal planes method, and demonstrating thermal resistance of integrally insulated panel system.
 - 2. Dew Point: Submit calculations complying with ASHRAE (FUND). Demonstrate condensation prevention, prevention of frost or ice formation on panels surfaces, and inner wall condensation potential of _____ ounce per day per square foot or less.
 - 3. Thermal Bowing and Crack Mitigation: Submit drawing details and written procedures for mitigation and repair of bowing and cracking in insulated concrete panels without full-thickness concrete sections or metallic connectors between wythes.
- G. Maintenance Data: Indicate surface cleaning instructions.

1.06 QUALITY ASSURANCE

- A. Design Engineer Qualifications: Design precast concrete units under direct supervision of a Professional Structural Engineer experienced in design of precast concrete and licensed in the State in which the Project is located.
- B. Fabricator Qualifications:
 - 1. Firm having at least 5 years of documented experience in production of precast concrete of the type required.
 - 2. Plant certified under Precast/Prestressed Concrete Institute Plant Certification Program; product group and category A1 - Architectural Precast Concrete.

3. Plant certified under Architectural Precast Association Plant Certification Program for production of architectural precast concrete.
 4. Fabricator Qualifications: Precast concrete fabricator accredited by IAS according to IAS AC157.
- C. Welder Qualifications: Qualified within previous 12 months in accordance with AWS D1.1/D1.1M and AWS D1.4/D1.4M.

1.07 DELIVERY, STORAGE, AND HANDLING

- A. Handling: Lift and support precast units only from support points.
- B. Blocking and Lateral Support During Transport and Storage: Use materials that are clean, non-staining, and non-harmful to exposed surfaces. Provide temporary lateral support to prevent bowing and warping.
- C. Protect units to prevent staining, chipping, or spalling of concrete.
- D. Mark units with date of production in location that will be concealed after installation.

PART 2 PRODUCTS

2.01 MANUFACTURERS

- A. Architectural Precast Concrete:
 1. Any manufacturer holding a PCI Group A Plant Certification for the types of products specified; see www.pci.org/#sle.

2.02 PRECAST UNITS, GENERAL

- A. Precast Architectural Concrete Units: Comply with PCI MNL-120, PCI MNL-122, PCI MNL-123, PCI MNL-135, and ACI 318.
 1. Concrete Face Mix: Minimum 5000 psi, 28 day strength, air entrained to 5 to 7 percent; comply with ACI 301.
 2. Design Loads: Static loads, anticipated dynamic loading, including positive and negative wind loads, thermal movement loads, and erection forces as defined by applicable code.
 3. Calculate structural properties of units in accordance with ACI 318.
 4. Accommodate construction tolerances, deflection of building structural members, and clearances of intended openings.
 5. Provide connections that accommodate building movement and thermal movement and adjust to misalignment of structure without unit distortion or damage.
- B. Finish Type A: Ensure exposed-to-view finish surfaces of precast units are uniform in color and appearance. Match color and texture of standard cast stone units specified in Section 04 2000 - Unit Masonry and custom cast stone units specified in Section 04 7200 - Cast Stone Masonry.

2.03 REINFORCEMENT

- A. Reinforcing Steel: ASTM A615/A615M, Grade 40 (40,000 psi).
 1. Deformed billet-steel bars.
 2. Unfinished.
- B. Steel Welded Wire Reinforcement (WWR): Plain type, ASTM A1064/A1064M.
 1. Form: Flat Sheets.
 2. WWR Style: 6 by 12-W12 by W5.

2.04 CONCRETE MATERIALS

- A. Cement: ASTM C150/C150M, Type I - Normal Portland type.
- B. Other Cementitious Materials:
 1. Fly Ash or Natural Pozzolans: Comply with ASTM C618.
 2. Ground Granulated Blast Furnace Slag: ASTM C989/C989M.
 3. Silica Fume: Comply with ASTM C1240.
- C. Fine and Coarse Structural Aggregates: ASTM C33/C33M.

- D. Color Additives: Pure, concentrated mineral pigments specifically intended for mixing into concrete and complying with ASTM C979/C979M.
 - 1. Concentration: Base dosage rates on weight of Portland cement, fly ash, silica fume, and other cementitious materials but not aggregate or sand.
 - 2. Color(s): To match Architect's sample(s) when incorporated into specified mix design(s).
- E. Water: ASTM C1602/C1602M; clean, potable, and not detrimental to concrete.
- F. Air Entrainment Admixture: ASTM C260/C260M.
- G. Grout:
 - 1. Non-shrink, non-metallic, minimum 10,000 psi, 28 day strength.

2.05 FORM LINERS

- A. Material: Glass fiber reinforced polyester, Acrylonitrile butadiene styrene, Polyvinyl chloride, Polystyrene, or Polyurethane.
- B. Configuration: As indicated on Drawings.

2.06 SUPPORT DEVICES

- A. Connecting and Support Devices; Anchors and Inserts: ASTM A36/A36M steel; hot-dip galvanized in accordance with ASTM A153/A153M.
 - 1. Clean surfaces of rust, scale, grease, and foreign matter.
 - 2. Galvanize after fabrication in accordance with requirements of ASTM A123/A123M.
- B. Bolts, Nuts, and Washers: ASTM A307 heavy hex bolts, Type A, hot-dip galvanized, with matching ASTM A563 (ASTM A563M) nuts and matching washers.
- C. Primer: Zinc rich type.

2.07 ACCESSORIES

- A. Bearing Pads: Provide one of the following bearing pads for architectural precast concrete units [as recommended by precast concrete fabricator for application]:
 - 1. Elastomeric Pads: AASHTO M 251, plain, vulcanized, 100 percent polychloroprene (neoprene) elastomer, molded to size or cut from a molded sheet, 50 to 70 Shore A durometer according to ASTM D 2240, minimum tensile strength 2250 psi (15.5 MPa) per ASTM D 412.
 - 2. Random-Oriented, Fiber-Reinforced Elastomeric Pads: Preformed, randomly oriented synthetic fibers set in elastomer. Surface hardness of 70 to 90 Shore A durometer according to ASTM D 2240. Capable of supporting a compressive stress of 3000 psi (20.7 MPa) with no cracking, splitting, or delaminating in the internal portions of the pad.
 - 3. High-Density Plastic: Multimonomer, nonleaching, plastic strip capable of supporting loads with no visible overall expansion.

2.08 FABRICATION

- A. Fabricate in compliance with PCI MNL-117 and PCI MNL-135.
- B. Maintain plant records and quality control program during production of precast units. Make records available upon request.
- C. Use rigid molds, constructed to maintain precast unit uniform in shape, size, and finish.
- D. Use form liners in accordance with manufacturer's instructions.
- E. Place thin brick in form liner in accordance with manufacturer's instructions. Mix bricks from several cartons for uniform distribution of color variations.
- F. Maintain consistent quality during manufacture.
- G. Fabricate connecting devices, plates, angles, items fit to steel framing members, inserts, bolts, and accessories. Fabricate to permit initial placement and final attachment.
- H. Embed reinforcing steel, anchors, inserts plates, angles, and other cast-in items.
- I. Locate hoisting devices to permit removal after erection.

- J. Cure units to develop concrete quality, and to minimize appearance blemishes such as non-uniformity, staining, or surface cracking.
- K. Minor patching in plant is acceptable, providing structural adequacy and appearance of units is not impaired.

2.09 FABRICATION TOLERANCES

- A. Comply with PCI MNL-117 and PCI MNL-135, except as specifically amended below.
 - 1. Maximum Variation From Nominal Face Dimensions: Plus or minus 3/32 in.
 - 2. Maximum Variation From Square or Designated Skew: Plus or minus 1/8 inch in 10 feet.
 - 3. Maximum Variation from Thickness: Plus or minus 1/8 in.
 - 4. Maximum Misalignment of Anchors, Inserts, Openings: Plus or minus 1/8 inch.
 - 5. Maximum Bowing of Members: Plus or minus length/360.

2.10 SOURCE QUALITY CONTROL

- A. Provide testing and analysis of concrete mix.
- B. Quality-Control Testing: Test and inspect precast concrete according to PCI MNL 117 requirements. If using self-consolidating concrete also test and inspect according to PCI TR-6 "Interim Guidelines for the Use of Self-Consolidating Concrete" and ASTM C 1611/C 1611M, ASTM C 1712, ASTM C 1610/1610M, and ASTM C 1621/C 1621M.

PART 3 EXECUTION

3.01 EXAMINATION

- A. Verify that building structure, anchors, devices, and openings are ready to receive work of this section.

3.02 PREPARATION

- A. Provide for erection procedures and induced loads during erection. Maintain temporary bracing in place until final support is provided.

3.03 ERECTION

- A. Erect units without damage to shape or finish. Replace or repair damaged panels.
- B. Erect units level and plumb within allowable tolerances.
- C. Align and maintain uniform horizontal and vertical joints as erection progresses.
- D. When units require adjustment beyond design or tolerance criteria, discontinue affected work; advise Architect.
- E. Weld units in place. Perform welding in accordance with AWS D1.1/D1.1M.
- F. Provide non-combustible shields during welding operations.
- G. Touch-up field welds and scratched or damaged primed painted surfaces.
- H. Set vertical units dry, without grout, attaining joint dimension with lead or plastic spacers. Pack grout to base of unit.
- I. Exposed Joint Dimension: 1/2 inch. Adjust units so that joint dimensions are within tolerances.

3.04 TOLERANCES

- A. Erect members level and plumb within allowable tolerances. Comply with PCI MNL-135, except as specifically amended below.
 - 1. Plan Location from Building Grid Datum: Plus or minus 3/8 in.
 - 2. Top Elevation from Nominal Top Elevation: Plus or minus 3/8 inch.
 - 3. Maximum Plumb Variation Over Height of Structure or 100 ft (whichever is less): Plus or minus 1/2 inch.
 - 4. Exposed Joint Dimension: Plus or minus 3/16 inch.
 - 5. Maximum Jog in Alignment of Matching Faces or Edges: Plus or minus 3/16 inch.

6. Differential Bowing or Camber as Erected Between Similar Adjacent Members: Plus or minus 3/16 inch.

END OF SECTION

SECTION 04 2000
UNIT MASONRY

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Concrete block.
- B. Concrete building brick.
- C. Mortar and grout.
- D. Reinforcement and anchorage.
- E. Flashings.
- F. 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.
- G. Section 09 9600 - High Performance Coatings: Masonry finish.

1.03 REFERENCE STANDARDS

- A. ASTM A153/A153M - Standard Specification for Zinc Coating (Hot-Dip) on Iron and Steel Hardware; 2016a.
- B. ASTM A615/A615M - Standard Specification for Deformed and Plain Carbon-Steel Bars for Concrete Reinforcement; 2018, with Editorial Revision (2018).
- C. ASTM A641/A641M - Standard Specification for Zinc-Coated (Galvanized) Carbon Steel Wire; 2009a (Reapproved 2014).
- D. ASTM A666 - Standard Specification for Annealed or Cold-Worked Austenitic Stainless Steel Sheet, Strip, Plate, and Flat Bar; 2015.
- E. ASTM A951/A951M - Standard Specification for Steel Wire for Masonry Joint Reinforcement; 2016.
- 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; 2016.
- H. ASTM C67/C67M - Standard Test Methods for Sampling and Testing Brick and Structural Clay Tile; 2018.
- I. ASTM C90 - Standard Specification for Loadbearing Concrete Masonry Units; 2016.
- J. ASTM C140/C140M - Standard Test Methods of Sampling and Testing Concrete Masonry Units and Related Units; 2016.
- K. ASTM C144 - Standard Specification for Aggregate for Masonry Mortar; 2011.
- L. ASTM C150/C150M - Standard Specification for Portland Cement; 2018.
- M. ASTM C207 - Standard Specification for Hydrated Lime for Masonry Purposes; 2006 (Reapproved 2011).
- N. ASTM C216 - Standard Specification for Facing Brick (Solid Masonry Units Made From Clay or Shale); 2016.

- O. ASTM C270 - Standard Specification for Mortar for Unit Masonry; 2014a.
- 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; 2016a.
- S. ASTM C1634 - Standard Specification for Concrete Facing Brick; 2016.
- T. ASTM C1714/C1714M - Standard Specification for Preblended Dry Mortar Mix for Unit Masonry; 2016.
- U. ASTM D226/D226M - Standard Specification for Asphalt-Saturated Organic Felt Used in Roofing and Waterproofing; 2009.
- V. BIA Technical Notes No. 7 - Water Penetration Resistance – Design and Detailing; 2005.
- W. BIA Technical Notes No. 13 - Ceramic Glazed Brick Exterior Walls; 2017.
- X. BIA Technical Notes No. 28B - Brick Veneer/Steel Stud Walls; 2005.
- Y. BIA Technical Notes No. 46 - Maintenance of Brick Masonry; 2005.
- Z. TMS 402/602 - Building Code Requirements and Specification for Masonry Structures; 2016.
- AA. 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.

1.06 QUALITY ASSURANCE

- A. Comply with provisions of TMS 402/602, except where exceeded by requirements of 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. 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 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. Color: Manufacturer's standard gray, suitable for paint finish.
 - e. Special Shapes: Provide non-standard blocks configured for corners, lintels, headers, control joint edges,, and other detailed conditions.
 - f. Provide integral water repellant at exterior exposed masonry assemblies.
 - g. Manufacturer: Decra-Stone Split Face as manufactured by Div 2-4.
 - h. Other acceptable manufacturers:
 - 1) Acme Block and Brick: www.acmeblockandbrick.com.
 - 2) Block USA, Birmingham, Alabama: www.specblockusa.com.
 - 3) Saturn Materials LLC, Columbus Ms: www.saturnmaterials.com.
 - 4) Substitutions: See Section 01600 - 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.

2.02 BRICK UNITS

- A. Manufacturers:
1. Acme Brick: www.brick.com.
 2. Belden Brick: www.beldenbrick.com/#sle.
 3. Endicott Clay Products Co: www.endicott.com/#sle.
 4. General Shale Brick: www.generalshale.com/#sle.
 5. Meridian Brick LLC: www.meridianbrick.com/#sle.
 6. Substitutions: See section 01 6000 - Product Requirements.
- B. Facing Brick: ASTM C 216, Type FBS, Grade SW.
1. Unit Compressive Strength: Provide units with minimum average net-area compressive strength of 3000 psi (20.7 MPa) when tested per ASTM C 67.
 2. Initial Rate of Absorption: Less than 20 g/30 sq. in. (20 g/194 sq. cm) per minute when tested per ASTM C 67.
 3. Efflorescence: Provide brick that has been tested according to ASTM C 67 and is rated "not effloresced."

4. Provide units without cores or frogs and with exposed surfaces finished for ends of sills and caps and for similar applications that would otherwise expose unfinished brick surfaces
5. Color: Brick to receive paint finish.
6. Nominal size: Modular, 3-5/8 by 2-1/4 by 7-5/8 inches or as otherwise indicated on Drawings..
7. Special Shapes:
8. Special shapes: Molded units as required by conditions indicated, unless standard units can be sawn to produce equivalent effect.
 - a. Provide special shapes for applications where stretcher units cannot accommodate special conditions, including those at corners, movement joints, bond beams, sashes, and lintels.

2.03 MORTAR AND GROUT MATERIALS

- A. Provide factory-blended premixed masonry mortars and colored masonry mortars. Field blended mortars will not be allowed.
- B. Provided 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. Packaged Dry Material for Mortar for Unit Masonry: Premixed Portland cement, hydrated lime, and sand; complying with ASTM C1714/C1714M and capable of producing mortar of the specified strength in accordance with ASTM C270 with the addition of water only.
 1. Type: Type N.
 2. Color: Mineral pigments added as required to produce approved color sample.
 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.
 - b. SpecMix; Portland Lime and Sand Masonry Mortar; IWR Mortar: www.specmix.com.
 - c. Holcim; Rainbow Mortamix Custom Color Cement/Lime Masonry Mortar: www.holcim.us.
 - d. Substitutions: See Section 01 6000 - Product Requirements.

2.04 REINFORCEMENT AND ANCHORAGE

- A. Manufacturers:
 1. Blok-Lok Limited: www.blok-lok.com/#sle.
 2. Hohmann & Barnard, Inc: www.h-b.com/sle.
 3. WIRE-BOND www.wirebond.com/#sle.

4. Substitutions: See Section 01 6000 - Product Requirements.
- B. Reinforcing Steel: ASTM A615/A615M, Grade 60 (60,000 psi), deformed billet bars; uncoated.
- C. Joint Reinforcement: Use ladder type joint reinforcement where vertical reinforcement is involved and truss type elsewhere, unless otherwise indicated.
- D. Single Wythe Joint Reinforcement: ASTM A951/A951M.
 1. Type: Truss or ladder.
 2. Material: ASTM A1064/A1064M steel wire, mill galvanized to ASTM A641/A641M, Class 3.
 3. Size: 0.1483 inch side rods with 0.1483 inch cross rods; width as required to provide not less than 5/8 inch of mortar coverage on each exposure.
- E. Adjustable Multiple Wythe Joint Reinforcement: ASTM A951/A951M.
 1. Type: Truss, with adjustable ties or tabs spaced at 16 in on center.
 2. Material: ASTM A1064/A1064M steel wire, hot dip galvanized after fabrication to ASTM A153/A153M, Class B.
 3. Size: 0.1875 inch side rods with 0.1483 inch cross rods and adjustable components of 0.1875 inch wire, width of components as required to provide not less than 5/8 inch of mortar coverage from each masonry face.
 4. Vertical adjustment: Not more than 1 1/4 inches.
- F. Strap Anchors: Bent steel shapes, 1-1/2 inch width, 0.105 inch thick, 24 inch length, with 1-1/2 inch long, 90 degree bend at each end to form a U or Z shape or with cross pins, hot dip galvanized to ASTM A153/A153M, Class B.
- G. Flexible Anchors: 2-piece anchors that permit differential movement between masonry and building frame, sized to provide not less than 5/8 inch of mortar coverage from masonry face.
 1. 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.
- H. Two-Piece Wall Ties: Formed steel wire, 0.1875 inch thick, adjustable, eye and pintle type, hot dip galvanized to ASTM A 153/A 153M, Class B, sized to provide not less than 5/8 inch of mortar coverage from masonry face and to allow vertical adjustment of up to 1-1/4 in.
- I. 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.

2.05 FLASHINGS

- A. Copper/Polymer Film or Fabric Flashing: 3 oz/sq ft copper sheet laminated between two sheets of polymer or fiberglass fiber-reinforced film.
 1. Manufacturers:
 - a. Advanced Building Products, Inc.; Copper Sealtite 2000: www.advancedbuildingproducts.com/#sle.
 - b. York Manufacturing, Inc; Multi-Flash 500 Series: www.yorkmfg.com/#sle.
 - 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.

2.06 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.
 - b. Dur-O-Wal; Product D/A 2005: www.dur-o-wal.com.
 - c. Hohmann & Barnard, Inc; RS Series: www.h-b.com.
 - d. WIRE-BOND; Rubber Control Joint: 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.
 - b. Hohmann & Barnard, Inc: www.h-b.com.
 - c. WIRE-BOND; _____: www.wirebond.com/#sle.
 - d. Substitutions: See Section 01 6000 - Product Requirements.
- C. Cavity Mortar Control: Semi-rigid polyethylene or polyester mesh panels, sized to thickness of wall cavity, and designed to prevent mortar droppings from clogging weeps and cavity vents and allow proper cavity drainage.
 - 1. Mortar Diverter: Semi-rigid mesh designed for installation at flashing locations.
 - a. Manufacturers:
 - 1) Advanced Building Products Inc; Mortar Break: www.advancedflashing.com/#sle.
 - 2) Mortar Net USA, Ltd: 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. Weeps:
- G. Type: Molded PVC grilles, insect resistant.
 - 1. Color(s): As selected by Architect from manufacturer's full range.
 - 2. Manufacturers:
 - a. Blok-Lok Limited; Cellvent: www.blok-lok.com.
 - b. Dur-O-Wal; Product D/A 1005: www.dur-o-wal.com.
 - c. Hohmann & Barnard, Inc; Quadrovent: www.h-b.com.
 - d. Mortar Net USA, Ltd; Product Cellvent: www.mortarnet.com.
 - e. Substitutions: See Section 01 6000 - Product Requirements.

2.07 MORTAR AND GROUT MIXING

- 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. Mixing: Use mechanical batch mixer and comply with referenced standards.

PART 3 EXECUTION

3.01 EXAMINATION

- A. Verify that field conditions are acceptable and are ready to receive masonry.

- B. Verify that related items provided under other sections are properly sized and located.
- C. Verify that built-in items are in proper location, and ready for roughing into masonry work.

3.02 PREPARATION

- A. Direct and coordinate placement of metal anchors supplied for installation under other sections.
- B. Provide temporary bracing during installation of masonry work. Maintain in place until building structure provides permanent bracing.

3.03 COLD AND HOT WEATHER REQUIREMENTS

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

3.04 COURSING

- A. Establish lines, levels, and coursing indicated. Protect from displacement.
- B. Maintain masonry courses to uniform dimension. Form vertical and horizontal joints of uniform thickness.
- C. Concrete Masonry Units:
 - 1. Bond: Running.
 - 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 solid masonry units in full bed of mortar, with full head joints, uniformly jointed with other work.
- B. Lay hollow masonry units with face shell bedding on head and bed joints.
- C. Buttering corners of joints or excessive furrowing of mortar joints is not permitted.
- D. Remove excess mortar and mortar smears as work progresses.
- E. Interlock intersections and external corners, except for units laid in stack bond.
- F. Do not shift or tap masonry units after mortar has achieved initial set. Where adjustment must be made, remove mortar and replace.
- G. Perform job site cutting of masonry units with proper tools to provide straight, clean, unchipped edges. Prevent broken masonry unit corners or edges.
- H. 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 on top of 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, SINGLE WYTHE MASONRY, AND CAVITY WALL MASONRY

- A. Unless otherwise indicated on drawings or specified under specific wall type, install horizontal joint reinforcement 16 inches on center.
- B. Place masonry joint reinforcement in first and second horizontal joints above and below openings. Extend minimum 16 inches each side of opening.
- C. Place continuous joint reinforcement in first and second joint below top of walls.
- D. Lap joint reinforcement ends minimum 6 inches.
- E. Reinforce stack bonded unit joint corners and intersections with strap anchors 16 inches on center.
- F. Fasten anchors to structural framing and embed in masonry joints as masonry is laid. Unless otherwise indicated on drawings or closer spacing is indicated under specific wall type, space anchors at maximum of 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 flashing ends at least 1 inch, minimum, to form watertight pan at non-masonry construction.
 - 2. Remove or cover protrusions or sharp edges that could puncture flashings.
 - 3. Seal lapped ends and penetrations of flashing before covering with mortar.
- B. Extend metal flashings through exterior face of masonry and terminate in an angled drip with hemmed edge. Install joint sealer below drip edge to prevent moisture migration under flashing.
- C. Extend plastic, laminated, EPDM, and polymer coated copper flashings to within 1/2 inch of exterior face of masonry and adhere to top of stainless steel angled drip with hemmed edge.
- 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 BUILT-IN WORK

- A. As work progresses, install built-in metal door frames and glazed frames and other items to be built into the work and furnished under other sections.
- B. Install built-in items plumb, level, and true to line.
- C. Bed anchors of metal door and glazed frames in adjacent mortar joints. Fill frame voids solid with grout.
 - 1. Fill adjacent masonry cores with grout minimum 12 inches from framed openings.

- D. Do not build into masonry construction organic materials that are subject to deterioration.

3.18 TOLERANCES

- A. Maximum Variation from Alignment of Columns: 1/4 inch.
- B. Maximum Variation From Unit to Adjacent Unit: 1/16 inch.
- C. Maximum Variation from Plane of Wall: 1/4 inch in 10 ft and 1/2 inch in 20 ft or more.
- D. Maximum Variation from Plumb: 1/4 inch per story non-cumulative; 1/2 inch in two stories or more.
- E. Maximum Variation from Level Coursing: 1/8 inch in 3 ft and 1/4 inch in 10 ft; 1/2 inch in 30 ft.
- F. Maximum Variation of Mortar Joint Thickness: Head joint, minus 1/4 inch, plus 3/8 inch.
- G. Maximum Variation from Cross Sectional Thickness of Walls: 1/4 inch.

3.19 CUTTING AND FITTING

- A. Cut and fit for chases, pipes, conduit, sleeves, and grounds. Coordinate with other sections of work to provide correct size, shape, and location.
- B. Obtain approval prior to cutting or fitting masonry work not indicated or where appearance or strength of masonry work may be impaired.

3.20 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/C67M 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 compliance with requirements of this specification.
- D. Mortar Tests: Test each type of mortar in accordance with ASTM C780, testing with same frequency as masonry samples.

3.21 CLEANING

- A. Remove excess mortar and mortar droppings.
- B. Replace defective mortar. Match adjacent work.
- C. Clean soiled surfaces with cleaning solution. Strictly comply with manufacturer directions and cleaning recommendations. Clean masonry work daily.
- D. Use non-metallic tools in cleaning operations.
- E. Do not use pressure washers to clean masonry work.

3.22 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 1200
STRUCTURAL STEEL FRAMING

PART 1 GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

- A. This Section includes the following:
 - 1. Structural steel.
 - 2. Grout.
- B. Related Sections include the following:
 - 1. Division 01 Section "Quality Requirements" for independent testing agency procedures and administrative requirements.
 - 2. Division 05 Section "Steel Decking" for field installation of shear connectors.
 - 3. Division 05 Section "Metal Fabrications" for steel lintels or shelf angles not attached to structural-steel frame not defined as structural steel.
 - 4. Division 13 Section "Metal Building Systems" for structural steel.

1.3 DEFINITIONS

- A. Structural Steel: Elements of structural-steel frame, as classified by AISC's "Code of Standard Practice for Steel Buildings and Bridges," that support design loads.

1.4 PERFORMANCE REQUIREMENTS

- A. Select and complete connections using schematic details indicated and AISC's "Manual of Steel Construction, Load and Resistance Factor Design," Volume 2, Part 9.
 - 1. Engineering Responsibility: Fabricator's responsibilities include using a qualified professional engineer to prepare structural analysis data for structural-steel connections.
- B. Construction: Type 2, simple framing.

1.5 SUBMITTALS

- A. Product Data: For each type of product indicated.
- B. Shop Drawings: Show fabrication of structural-steel components.

1. Include details of cuts, connections, splices, camber, holes, and other pertinent data.
2. Include embedment drawings.
3. Indicate welds by standard AWS symbols, distinguishing between shop and field welds, and show size, length, and type of each weld.
4. Indicate type, size, and length of bolts, distinguishing between shop and field bolts. Identify pretensioned and slip-critical high-strength bolted connections.
5. For structural-steel connections indicated to comply with design loads, include structural analysis data prepared by the qualified professional engineer responsible for their preparation.

- C. Welding certificates.
- D. Source quality-control test reports.

1.6 QUALITY ASSURANCE

- A. Fabricator Qualifications: A qualified fabricator who participates in the AISC Quality Certification Program and is designated an AISC-Certified Plant, Category Sbd. Or as an alternative:

The special inspection agency shall perform a shop audit of the structural steel fabricator at the facility where the load bearing members for this project are being fabricated. The special inspection agency will verify that the fabricator maintains detailed fabrication and quality control procedures that provide a basis for inspection control of the workmanship and the fabricator's ability to conform to the approved documents and referenced standards. The special inspection agency shall review the procedures for completeness and adequacy relative to the code requirements for the fabricator's scope of work. The special inspection agency shall be present in the shop during fabrication of the structural steel load bearing members for this project. It is the responsibility of the structural steel fabricator to coordinate the audit in a manner to provide the special inspection agency with a reasonable amount of time to schedule any and all required visits. All costs incurred by the audit shall be the responsibility of the structural steel fabricator and not the owner.

- B. Welding: Qualify procedures and personnel according to AWS D1.1, "Structural Welding Code--Steel."
- C. Comply with applicable provisions of the following specifications and documents:
1. AISC's "Code of Standard Practice for Steel Buildings and Bridges."
 2. AISC's "Seismic Provisions for Structural Steel Buildings" and "Supplement No. 2."
 3. AISC's "Load and Resistance Factor Design Specification for Structural Steel Buildings."
 4. AISC's "Specification for the Design of Steel Hollow Structural Sections."
 5. AISC's "Specification for Load and Resistance Factor Design of Single-Angle Members."
 6. RCSC's "Specification for Structural Joints Using ASTM A 325 or A 490 Bolts."

1.7 DELIVERY, STORAGE, AND HANDLING

- A. Store materials to permit easy access for inspection and identification. Keep steel members off ground and spaced by using pallets, dunnage, or other supports and spacers. Protect steel members and packaged materials from erosion and deterioration.
1. Store fasteners in a protected place. Clean and relubricate bolts and nuts that become dry or rusty before use.

2. Do not store materials on structure in a manner that might cause distortion, damage, or overload to members or supporting structures. Repair or replace damaged materials or structures as directed.

1.8 COORDINATION

- A. Furnish anchorage items to be embedded in or attached to other construction without delaying the Work. Provide setting diagrams, sheet metal templates, instructions, and directions for installation.

PART 2 PRODUCTS

2.1 STRUCTURAL-STEEL MATERIALS

- A. W-Shapes: ASTM A 992/A 992M, Grade 50.
- B. Channels, Angles, M, S-Shapes: ASTM A 36/A 36M.
- C. Plate and Bar: ASTM A 36/A 36M.
- D. Steel Pipe: ASTM A 53/A 53M, Type E or S, Grade B.
 1. Weight Class: Standard, Extra strong, Double-extra strong.
 2. Finish: Black.
- E. Steel Castings: ASTM A 216/A 216M, Grade WCB with supplementary requirement S11.
- F. Steel Forgings: ASTM A 668/A 668M.
- G. Welding Electrodes: Comply with AWS requirements.

2.2 BOLTS, CONNECTORS, AND ANCHORS

- A. High-Strength Bolts, Nuts, and Washers: ASTM A 325 (ASTM A 325M), Type 1, heavy hex steel structural bolts; ASTM A 563 (ASTM A 563M) heavy hex carbon-steel nuts; and ASTM F 436 (ASTM F 436M) hardened carbon-steel washers.
 1. Finish: Plain.
- B. Shear Connectors: ASTM A 108, Grades 1015 through 1020, headed-stud type, cold-finished carbon steel; AWS D1.1, Type B.
- C. Unheaded Anchor Rods: ASTM A 307, Grade A (ASTM F 568M, Property Class 4.6).
 1. Configuration: Hooked.
 2. Nuts: ASTM A 563 (ASTM A 563M) heavy hex carbon steel.
 3. Plate Washers: ASTM A 36/A 36M carbon steel.
 4. Washers: ASTM F 436 (ASTM F 436M) hardened carbon steel.
 5. Finish: Plain.

2.3 PRIMER

- A. Primer: Fabricator's standard lead- and chromate-free, nonasphaltic, rust-inhibiting primer.
- B. Galvanizing Repair Paint: ASTM A 780.

2.4 GROUT

- A. Cement Grout: Portland cement, ASTM C 150, Type I; and clean, natural sand, ASTM C 404, Size No. 2. Mix at ratio of 1 part cement to 2-1/2 parts sand, by volume, with minimum water required for placement and hydration.

2.5 FABRICATION

- A. Structural Steel: Fabricate and assemble in shop to greatest extent possible. Fabricate according to AISC's "Code of Standard Practice for Steel Buildings and Bridges" and AISC's "Load and Resistance Factor Design Specification for Structural Steel Buildings."
 - 1. Camber structural-steel members where indicated.
 - 2. Identify high-strength structural steel according to ASTM A 6/ A 6M and maintain markings until structural steel has been erected.
 - 3. Mark and match-mark materials for field assembly.
 - 4. Complete structural-steel assemblies, including welding of units, before starting shop-priming operations.
- B. Thermal Cutting: Perform thermal cutting by machine to greatest extent possible.
 - 1. Plane thermally cut edges to be welded to comply with requirements in AWS D1.1.
- C. Bolt Holes: Cut, drill, mechanically thermal cut, or punch standard bolt holes perpendicular to metal surfaces.
- D. Finishing: Accurately finish ends of columns and other members transmitting bearing loads.
- E. Cleaning: Clean and prepare steel surfaces that are to remain unpainted according to SSPC-SP 3, "Power Tool Cleaning."
- F. Shear Connectors: Prepare steel surfaces as recommended by manufacturer of shear connectors. Use automatic end welding of headed-stud shear connectors according to AWS D1.1 and manufacturer's written instructions.
- G. Holes: Provide holes required for securing other work to structural steel and for passage of other work through steel framing members.
 - 1. Cut, drill, or punch holes perpendicular to steel surfaces. Do not thermally cut bolt holes or enlarge holes by burning.
 - 2. Base-Plate Holes: Cut, drill, mechanically thermal cut, or punch holes perpendicular to steel surfaces.
 - 3. Weld threaded nuts to framing and other specialty items indicated to receive other work.

2.6 SHOP CONNECTIONS

- A. High-Strength Bolts: Shop install high-strength bolts according to RCSC's "Specification for Structural Joints Using ASTM A 325 or A 490 Bolts" for type of bolt and type of joint specified.
 - 1. Joint Type: Snug tightened.
- B. Weld Connections: Comply with AWS D1.1 for welding procedure specifications, tolerances, appearance, and quality of welds and for methods used in correcting welding work.
 - 1. Remove backing bars or runoff tabs, back gouge, and grind steel smooth.
 - 2. Assemble and weld built-up sections by methods that will maintain true alignment of axes without exceeding tolerances of AISC's "Code of Standard Practice for Steel Buildings and Bridges" for mill material.

2.7 SHOP PRIMING

- A. Shop prime steel surfaces except the following:
 - 1. Surfaces embedded in concrete or mortar. Extend priming of partially embedded members to a depth of 2 inches (50 mm).
 - 2. Surfaces to be field welded.
 - 3. Surfaces to be high-strength bolted with slip-critical connections.
 - 4. Surfaces to receive sprayed fire-resistive materials.
 - 5. Galvanized surfaces.
- B. Surface Preparation: Clean surfaces to be painted. Remove loose rust and mill scale and spatter, slag, or flux deposits. Prepare surfaces according to the following specifications and standards:
 - 1. SSPC-SP 3, "Power Tool Cleaning."
- C. Priming: Immediately after surface preparation, apply primer according to manufacturer's written instructions and at rate recommended by SSPC to provide a dry film thickness of not less than 1.5 mils (0.038 mm). Use priming methods that result in full coverage of joints, corners, edges, and exposed surfaces.
 - 1. Stripe paint corners, crevices, bolts, welds, and sharp edges.
 - 2. Apply two coats of shop paint to inaccessible surfaces after assembly or erection. Change color of second coat to distinguish it from first.
- D. Painting: Apply a 1-coat, nonasphaltic primer complying with SSPC-PS Guide 7.00, "Painting System Guide 7.00: Guide for Selecting One-Coat Shop Painting Systems," to provide a dry film thickness of not less than 1.5 mils (0.038 mm).

2.8 GALVANIZING

- A. Hot-Dip Galvanized Finish: Apply zinc coating by the hot-dip process to structural steel according to ASTM A 123/ A 123M.
 - 1. Fill vent holes and grind smooth after galvanizing.

2. Galvanize lintels, shelf angles attached to structural-steel frame and located in exterior walls.

2.9 SOURCE QUALITY CONTROL

- A. If fabricator is not AISC certified, owner will engage an independent testing and inspecting agency to perform shop tests and inspections and prepare test reports.
 1. Provide testing agency with access to places where structural-steel work is being fabricated or produced to perform tests and inspections.
- B. Correct deficiencies in Work that test reports and inspections indicate does not comply with the Contract Documents.
- C. Bolted Connections: Shop-bolted connections will be tested and inspected according to RCSC's "Specification for Structural Joints Using ASTM A 325 or A 490 Bolts."
- D. Welded Connections: In addition to visual inspection, shop-welded connections will be tested and inspected according to AWS D1.1 and the following inspection procedures, at testing agency's option:
 1. Liquid Penetrant Inspection: ASTM E 165.
 2. Magnetic Particle Inspection: ASTM E 709; performed on root pass and on finished weld. Cracks or zones of incomplete fusion or penetration will not be accepted.
 3. Ultrasonic Inspection: ASTM E 164.
 4. Radiographic Inspection: ASTM E 94.
- E. In addition to visual inspection, shop-welded shear connectors will be tested and inspected according to requirements in AWS D1.1 for stud welding and as follows:
 1. Bend tests will be performed if visual inspections reveal either a less-than- continuous 360-degree flash or welding repairs to any shear connector.
 2. Tests will be conducted on additional shear connectors if weld fracture occurs on shear connectors already tested, according to requirements in AWS D1.1.

PART 3 EXECUTION

3.1 EXAMINATION

- A. Verify elevations of concrete- and masonry-bearing surfaces and locations of anchor rods, bearing plates, and other embedments, with steel erector present, for compliance with requirements.
- B. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 PREPARATION

- A. Provide temporary shores, guys, braces, and other supports during erection to keep structural steel secure, plumb, and in alignment against temporary construction loads and loads equal in intensity to design loads. Remove temporary supports when permanent structural steel, connections, and bracing are in place, unless otherwise indicated.

1. Do not remove temporary shoring supporting composite deck construction until cast-in-place concrete has attained its design compressive strength.

3.3 ERECTION

- A. Set structural steel accurately in locations and to elevations indicated and according to AISC's "Code of Standard Practice for Steel Buildings and Bridges" and "Load and Resistance Factor Design Specification for Structural Steel Buildings."
- B. Base and Bearing Plates: Clean concrete- and masonry-bearing surfaces of bond-reducing materials, and roughen surfaces prior to setting base and bearing plates. Clean bottom surface of base and bearing plates.
 1. Set base and bearing plates for structural members on wedges, shims, or setting nuts as required.
 2. Weld plate washers to top of base plate.
 3. Snug-tighten anchor rods after supported members have been positioned and plumbed. Do not remove wedges or shims but, if protruding, cut off flush with edge of base or bearing plate before packing with grout.
 4. Promptly pack grout solidly between bearing surfaces and base or bearing plates so no voids remain. Neatly finish exposed surfaces; protect grout and allow to cure.
- C. Maintain erection tolerances of structural steel and architecturally exposed structural steel within AISC's "Code of Standard Practice for Steel Buildings and Bridges."
- D. Align and adjust various members forming part of complete frame or structure before permanently fastening. Before assembly, clean bearing surfaces and other surfaces that will be in permanent contact with members. Perform necessary adjustments to compensate for discrepancies in elevations and alignment.
 1. Level and plumb individual members of structure.
 2. Make allowances for difference between temperature at time of erection and mean temperature when structure is completed and in service.
- E. Splice members only where indicated.
- F. Remove erection bolts on welded, architecturally exposed structural steel; fill holes with plug welds; and grind smooth at exposed surfaces.
- G. Do not use thermal cutting during erection.
- H. Do not enlarge unfair holes in members by burning or using drift pins. Ream holes that must be enlarged to admit bolts.
- I. Shear Connectors: Prepare steel surfaces as recommended by manufacturer of shear connectors. Use automatic end welding of headed-stud shear connectors according to AWS D1.1 and manufacturer's written instructions.

3.4 FIELD CONNECTIONS

- A. High-Strength Bolts: Install high-strength bolts according to RCSC's "Specification for Structural Joints Using ASTM A 325 or A 490 Bolts" for type of bolt and type of joint specified.

1. Joint Type: Snug tightened.

B. Weld Connections: Comply with AWS D1.1 for welding procedure specifications, tolerances, appearance, and quality of welds and for methods used in correcting welding work.

1. Comply with AISC's "Code of Standard Practice for Steel Buildings and Bridges" and "Load and Resistance Factor Design Specification for Structural Steel Buildings" for bearing, adequacy of temporary connections, alignment, and removal of paint on surfaces adjacent to field welds.
2. Remove backing bars or runoff tabs, back gouge, and grind steel smooth.
3. Assemble and weld built-up sections by methods that will maintain true alignment of axes without exceeding tolerances of AISC's "Code of Standard Practice for Steel Buildings and Bridges" for mill material.

3.5 FIELD QUALITY CONTROL

A. Testing Agency: Owner will engage a qualified independent testing and inspecting agency to inspect field welds and high-strength bolted connections.

B. Bolted Connections: Shop-bolted connections will be tested and inspected according to RCSC's "Specification for Structural Joints Using ASTM A 325 or A 490 Bolts."

C. Welded Connections: Field welds will be visually inspected according to AWS D1.1.

1. In addition to visual inspection, field welds will be tested according to AWS D1.1 and the following inspection procedures, at testing agency's option:

- a. Liquid Penetrant Inspection: ASTM E 165.
- b. Magnetic Particle Inspection: ASTM E 709; performed on root pass and on finished weld. Cracks or zones of incomplete fusion or penetration will not be accepted.
- c. Ultrasonic Inspection: ASTM E 164.
- d. Radiographic Inspection: ASTM E 94.

D. In addition to visual inspection, test and inspect field-welded shear connectors according to requirements in AWS D1.1 for stud welding and as follows:

1. Perform bend tests if visual inspections reveal either a less-than-continuous 360-degree flash or welding repairs to any shear connector.
2. Conduct tests on additional shear connectors if weld fracture occurs on shear connectors already tested, according to requirements in AWS D1.1.

E. Correct deficiencies in Work that test reports and inspections indicate does not comply with the Contract Documents.

3.6 REPAIRS AND PROTECTION

A. Repair damaged galvanized coatings on galvanized items with galvanized repair paint according to ASTM A 780 and manufacturer's written instructions.

B. Touchup Painting: After installation, promptly clean, prepare, and prime or reprime field connections, rust spots, and abraded surfaces of prime-painted joists and accessories, bearing plates, and abutting structural steel.

1. Clean and prepare surfaces by SSPC-SP 2 hand-tool cleaning or SSPC-SP 3 power-tool cleaning.
 2. Apply a compatible primer of same type as shop primer used on adjacent surfaces.
- C. Touchup Painting: Cleaning and touchup painting are specified in Division 09 painting Sections.

END OF SECTION 051200

SECTION 05 4000
COLD-FORMED METAL FRAMING

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Formed steel stud exterior wall framing.
- B. Exterior wall board insulation and sheathing.
- C. Formed steel joist and purlin framing and bridging.

1.02 RELATED REQUIREMENTS

- A. Section Section 05 1200 - Structural Steel Framing: Structural building framing.
- B. Section 04 2001 - Masonry Veneer: Veneer masonry supported by wall stud metal framing.
- C. Section 06 1000 - Rough Carpentry: Wood blocking and miscellaneous framing.
- D. Section 07 2100 - THERMAL INSULATION: Insulation within framing members.
- E. Section 07 2500 - Weather Barriers: Weather barrier over sheathing.
- F. Section 07 9200 - Joint Sealants.
- G. Section 09 2116 - Gypsum Board Assemblies: Lightweight, non-load bearing metal stud framing.
- H. Section 07 9005 - Joint Sealers.
- I. Section 09 2400 - Cement Plastering.
- J. Section 09 5100 - Acoustical Ceilings: Ceiling suspension system.

1.03 REFERENCE STANDARDS

- A. AISI S100-12 - North American Specification for the Design of Cold-Formed Steel Structural Members; 2012.
- B. AISI SG02-1 - North American Specification for the Design of Cold-Formed Steel Structural Members; American Iron and Steel Institute; 2001 with 2004 supplement. (replaced SG-971)
- C. ASTM A153/A153M - Standard Specification for Zinc Coating (Hot-Dip) on Iron and Steel Hardware; 2016a.
- D. ASTM A653/A653M - Standard Specification for Steel Sheet, Zinc-Coated (Galvanized) or Zinc-Iron Alloy-Coated (Galvannealed) by the Hot-Dip Process; 2018.
- E. ASTM C955 - Standard Specification for Cold-Formed Steel Structural Framing Members; 2018.
- F. ASTM C1007 - Standard Specification for Installation of Load Bearing (Transverse and Axial) Steel Studs and Related Accessories; 2011a (Reapproved 2015).
- G. ASTM C1177/C1177M - Standard Specification for Glass Mat Gypsum Substrate for Use as Sheathing; 2013.
- H. ASTM D3273 - Standard Test Method for Resistance to Growth of Mold on the Surface of Interior Coatings in an Environmental Chamber; 2016.
- I. AWS D1.1/D1.1M - Structural Welding Code - Steel; 2015, with Errata (2016).
- J. PS 1 - Structural Plywood; 2009.
- K. SSPC-Paint 15 - Steel Joist Shop Primer/Metal Building Primer; 1999 (Ed. 2004).
- L. SSPC-Paint 20 - Zinc-Rich Primers (Type I, "Inorganic," and Type II, "Organic"); 2002 (Ed. 2004).

1.04 ADMINISTRATIVE REQUIREMENTS

- A. Coordinate with work of other sections that is to be installed in or adjacent to the metal framing system, including but not limited to structural anchors, cladding anchors, utilities, insulation, and firestopping.
 - 1. Verify that wall deflection limitation is acceptable to cladding manufacturer(s).

1.05 SUBMITTALS

- A. See Section 01 3000 - Administrative Requirements, for submittal procedures.
- B. Product Data: Provide data on standard framing members; describe materials and finish, product criteria, limitations.
- C. Product Data: Provide manufacturer's data on factory-made framing connectors, showing compliance with requirements.
- D. Shop Drawings: Indicate component details, framed openings, bearing, anchorage, loading, welds, type and location of fasteners, and deflection of systems, and accessories or items required of related work.
 - 1. Indicate stud layout.
 - 2. Describe method for securing studs to tracks and for bolted framing connections.
 - 3. Design data:
 - a. Shop drawings signed and sealed by a professional structural engineer.
 - 4. Calculations for loadings and stresses of specially fabricated framing, signed and sealed by a professional structural engineer.
 - 5. Details and calculations for factory-made framing connectors, signed and sealed by a professional structural engineer.
- E. Manufacturer's Installation Instructions: Indicate special procedures, conditions requiring special attention .
- F. Designer's Qualification Statement.
- G. Manufacturer's Qualification Statement.

1.06 QUALITY ASSURANCE

- A. Designer Qualifications: Design framing system under direct supervision of a Professional Structural Engineer experienced in design of this work and licensed in the State in which the Project is located.
- B. Manufacturer Qualifications: Company specializing in manufacturing the types of products specified in this section, and with minimum five years of documented experience.
- C. Installer Qualifications: Company specializing in performing the work of this section with minimum five years documented experience and approved by manufacturer.

1.07 MOCK-UP

- A. Mock-up sheet will be issued during construction. Coordinate mock-up construction to provide complete systems including indicated substrate(s), masonry finishes, mortar and accessories, air barriers, flashings, sealants and all other applicable systems to provide complete assemblies.
- B. Provide mock-up of exterior framed wall, including components specified elsewhere, such as insulation, window frame, door frame, exterior wall finish, and interior wall finish.
- C. Mock-Up Size: As instructed by Architect during construction.
- D. Location: As directed.
- E. Mock-up may not remain as part of the Work.

PART 2 PRODUCTS

2.01 MANUFACTURERS

- A. Metal Framing:

1. CEMCO: www.cemcosteel.com.
 2. ClarkDietrich Building Systems: www.clarkdietrich.com.
 3. Marino: www.marinoware.com.
 4. The Steel Network, Inc: www.SteelNetwork.com.
 5. Substitutions: See Section 01 6000 - Product Requirements.
- B. Framing Connectors and Accessories:
1. Same manufacturer as metal framing.
 2. Simpson Strong Tie; ____: www.strongtie.com/#sle.
 3. Substitutions: See Section 01 6000 - Product Requirements.

2.02 FRAMING SYSTEM

- A. Design Requirements: Provide completed framing system having the following characteristics:
1. Design: Calculate structural characteristics of cold-formed steel framing members according to AISI S100-12.
 2. Structural Performance: Design, engineer, fabricate, and erect to withstand specified design loads for project conditions within required limits.
 3. Design Loads: In accordance with applicable codes.
 4. Live load deflection meeting the following, unless otherwise indicated:
 - a. Floors: Maximum vertical deflection under live load of 1/480 of span.
 - b. Roofs: Maximum vertical deflection under live load of 1/240 of span.
 - c. Exterior Walls: Maximum horizontal deflection under wind load of 1/360 of span.
 - d. Design non-axial loadbearing framing to accommodate not less than 1/2 in vertical deflection.
 5. Able to tolerate movement of components without damage, failure of joint seals, undue stress on fasteners, or other detrimental effects when subject to seasonal or cyclic day/night temperature ranges.
 6. Able to accommodate construction tolerances, deflection of building structural members, and clearances of intended openings.

2.03 FRAMING MATERIALS

- A. Studs and Track: ASTM C955; studs formed to channel, "C", or "Sigma" shape with punched web; U-shaped track in matching nominal width and compatible height.
1. Gage and Depth: As required to meet specified performance levels.
 2. Galvanized in accordance with ASTM A653/A653M, G90/Z275 coating.
- B. Joists and Purlins: Fabricated from ASTM A653/A653M steel sheet, with G90/Z275 hot dipped galvanized coating.
1. Base Metal: Structural Steel (SS), Grade 33/230.
 2. Gage and Depth: As required to meet specified performance levels.
- C. Framing Connectors: Factory-made, formed steel sheet.
1. Material: ASTM A653/A653M SS Grade 33 and 40 (minimum), with G90/Z275 hot dipped galvanized coating for base metal thickness less than 10 gage, 0.1345 inch, and factory punched holes and slots.
 2. Structural Performance: Maintain load and movement capacity required by applicable code, when evaluated in accordance with AISI S100-12.
 3. Movement Connections: Provide mechanical anchorage devices that accommodate movement using slotted holes, shouldered screws or screws and anti-friction or stepped bushings, while maintaining structural performance of framing. Provide movement connections where indicated on drawings.
 - a. Where top of stud wall terminates below structural floor or roof, connect studs to structure in manner allowing vertical and horizontal movement of slab without affecting studs; allow for minimum movement of 1/2 inch.
 - b. Provide top track with long leg track and head of wall movement connectors; minimum track length of 10 feet.

4. Fixed Connections: Provide non-movement connections for tie-down to foundation, floor-to-floor tie-down, roof-to-wall tie-down, joist hangers, gusset plates, and stiffeners.
5. Wall Stud Bridging Connections: Provide mechanical load-transferring devices that accommodate wind load torsion and weak axis buckling induced by axial compression loads. Provide bridging connections where indicated on the drawings.

2.04 FASTENERS

- A. Self-Drilling, Self-Tapping Screws, Bolts, Nuts and Washers: Hot dip galvanized per ASTM A153/A153M.
- B. Anchorage Devices: Powder actuated.
- C. Welding: Comply with AWS D1.1/D1.1M.

2.05 WALL SHEATHING

- A. Wall Sheathing: Plywood; PS 1, Grade C-D, Exposure I.
- B. Exterior Sheathing Board: Sizes to minimize joints in place; ends square cut.
 1. Application: Exterior sheathing, unless otherwise indicated.
 2. Mold Resistance: Score of 10, when tested in accordance with ASTM D3273.
 3. Glass Mat Faced Sheathing: Glass mat faced gypsum substrate as defined in ASTM C1177/C1177M.
 4. At Assemblies Indicated with Fire-Rating: Use type required by indicated tested assembly; if no tested assembly is indicated, use Type X board, UL or WH listed.
 5. Core Type: Regular and Type X, as indicated.
 6. Type X Thickness: 5/8 inch.
 7. Regular Board Thickness: 5/8 inch.
 8. Edges: Square.
 9. Glass Mat Faced Products:
 - a. American Gypsum Company; M-Glass Exterior Sheathing Type X.
 - b. American Gypsum Company; M-Glass Exterior Sheathing.
 - c. Continental Building Products; Weather Defense Platinum Exterior Sheathing.
 - d. Continental Building Products; Weather Defense Platinum Sheathing Type X.
 - e. Georgia-Pacific Gypsum; DensGlass Sheathing.
 - f. Georgia-Pacific Gypsum; DensGlass Fireguard Sheathing.
 - g. National Gypsum Company; Gold Bond eXP Sheathing.
 - h. Substitutions: See Section 01 6000 - Product Requirements.

2.06 ACCESSORIES

- A. Bracing, Furring, Bridging: Formed sheet steel, thickness determined for conditions encountered; finish to match framing components.
- B. Shop and Touch-Up Primer: SSPC-Paint 15, complying with VOC limitations of authorities having jurisdiction.
- C. Touch-Up Primer for Galvanized Surfaces: SSPC-Paint 20, Type I - Inorganic, complying with VOC limitations of authorities having jurisdiction.
- D. Water-Resistive Barrier: As specified in Section 07 2500.

PART 3 EXECUTION

3.01 EXAMINATION

- A. Verify that substrate surfaces are ready to receive work.
- B. Verify field measurements and adjust installation as required.

3.02 INSTALLATION OF STUDS

- A. Install components in accordance with manufacturers' instructions and ASTM C1007 requirements.

- B. Align floor and ceiling tracks; locate to wall layout. Secure in place with fasteners at maximum 24 inches on center. Coordinate installation of sealant with floor and ceiling tracks.
- C. Place studs at 16 inches on center; not more than 2 inches from abutting walls and at each side of openings. Connect studs to tracks using fastener or welding method.
- D. Construct corners using minimum of three studs. Install double studs at wall openings, door and window jambs.
- E. Install load bearing studs full length in one piece. Splicing of studs is not permitted.
- F. Install load bearing studs, brace, and reinforce to develop full strength and achieve design requirements.
- G. Coordinate placement of insulation in multiple stud spaces made inaccessible after erection.
- H. Install intermediate studs above and below openings to align with wall stud spacing.
- I. Provide deflection allowance in stud track, directly below horizontal building framing at non-load bearing framing.
- J. Attach cross studs to studs for attachment of fixtures anchored to walls.
- K. Install framing between studs for attachment of mechanical and electrical items, and to prevent stud rotation.
- L. Touch-up field welds and damaged galvanized surfaces with primer.

3.03 INSTALLATION OF JOISTS AND PURLINS

- A. Install framing components in accordance with manufacturer's instructions.
- B. Make provisions for erection stresses. Provide temporary alignment and bracing.

3.04 INSTALLATION OF WALL SHEATHING

- A. Install wall sheathing with long dimension perpendicular to wall studs, with ends over firm bearing and staggered, using self-tapping screws.

3.05 TOLERANCES

- A. Maximum Variation from True Position: 1/8 inch.
- B. Maximum Variation of any Member from Plane: 1/8 inch.

END OF SECTION

SECTION 05 5000
METAL FABRICATIONS

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Shop fabricated steel and aluminum items.
- B. Downspout boots.

1.02 RELATED REQUIREMENTS

- A. Section 03 3000 - Cast-in-Place Concrete: Placement of metal fabrications in concrete.
- B. Section 04 2000 - Unit Masonry: Placement of metal fabrications in masonry.
- C. Section 05 5213 - Pipe and Tube Railings.
- D. Section 09 9113 - Exterior Painting: Paint finish.
- E. Section 09 9123 - Interior Painting: Paint finish.

1.03 REFERENCE STANDARDS

- A. ASTM A36/A36M - Standard Specification for Carbon Structural Steel; 2014.
- B. ASTM A48/A48M - Standard Specification for Gray Iron Castings; 2003 (Reapproved 2012).
- C. ASTM A53/A53M - Standard Specification for Pipe, Steel, Black and Hot-Dipped, Zinc-Coated, Welded and Seamless; 2012.
- D. ASTM A123/A123M - Standard Specification for Zinc (Hot-Dip Galvanized) Coatings on Iron and Steel Products; 2017.
- E. ASTM A283/A283M - Standard Specification for Low and Intermediate Tensile Strength Carbon Steel Plates; 2013.
- F. ASTM A501/A501M - Standard Specification for Hot-Formed Welded and Seamless Carbon Steel Structural Tubing; 2014.
- G. ASTM B209 - Standard Specification for Aluminum and Aluminum-Alloy Sheet and Plate; 2014.
- H. ASTM B209M - Standard Specification for Aluminum and Aluminum-Alloy Sheet and Plate (Metric); 2014.
- I. ASTM B210 - Standard Specification for Aluminum and Aluminum-Alloy Drawn Seamless Tubes; 2012.
- J. ASTM B210M - Standard Specification for Aluminum and Aluminum-Alloy Drawn Seamless Tubes (Metric); 2012.
- K. ASTM B211 - Standard Specification for Aluminum and Aluminum-Alloy Rolled or Cold Finished Bar, Rod, and Wire; 2012.
- L. ASTM B211M - Standard Specification for Aluminum and Aluminum-Alloy Rolled or Cold-Finished Bar, Rod, and Wire (Metric); 2012.
- M. ASTM B221 - Standard Specification for Aluminum and Aluminum-Alloy Extruded Bars, Rods, Wire, Profiles, and Tubes; 2014.
- N. ASTM B221M - Standard Specification for Aluminum and Aluminum-Alloy Extruded Bars, Rods, Wire, Profiles, and Tubes (Metric); 2013.
- O. ASTM F3125/F3125M - Standard Specification for High Strength Structural Bolts, Steel and Alloy Steel, Heat Treated, 120 ksi (830 MPa) and 150 ksi (1040 MPa) Minimum Tensile Strength, Inch and Metric Dimensions; 2015a.
- P. AWS A2.4 - Standard Symbols for Welding, Brazing, and Nondestructive Examination; 2012.
- Q. AWS D1.1/D1.1M - Structural Welding Code - Steel; 2015, with Errata (2016).
- R. AWS D1.2/D1.2M - Structural Welding Code - Aluminum; 2008.

- S. IAS AC172 - Accreditation Criteria for Fabricator Inspection Programs for Structural Steel; International Accreditation Service, Inc; 2017.
- T. SSPC-Paint 15 - Steel Joist Shop Primer/Metal Building Primer; 1999 (Ed. 2004).
- U. SSPC-Paint 20 - Zinc-Rich Primers (Type I, "Inorganic," and Type II, "Organic"); 2002 (Ed. 2004).
- V. SSPC-SP 2 - Hand Tool Cleaning; 1982 (Ed. 2004).

1.04 SUBMITTALS

- A. See Section 01 3000 - Administrative Requirements, for submittal procedures.
- B. Shop Drawings: Indicate profiles, sizes, connection attachments, reinforcing, anchorage, size and type of fasteners, and accessories. Include erection drawings, elevations, and details where applicable.
 - 1. Indicate welded connections using standard AWS A2.4 welding symbols. Indicate net weld lengths.
- C. Welders' Certificates: Submit certification for welders employed on the project, verifying AWS qualification within the previous 12 months.
- D. Fabricator's Qualification Statement: Provide documentation showing steel fabricator is accredited under IAS AC172.

1.05 QUALITY ASSURANCE

- A. Design load-bearing elements under direct supervision of a Professional structural Engineer experienced in design of this Work and licensed in the State in which the Project is located.
- B. Fabricator Qualifications: A qualified steel fabricator that is accredited by IAS AC172.

PART 2 PRODUCTS

2.01 MATERIALS - STEEL

- A. Steel Sections: ASTM A36/A36M.
- B. Steel Tubing: ASTM A501/A501M hot-formed structural tubing.
- C. Plates: ASTM A283/A283M.
- D. Pipe: ASTM A53/A53M, Grade B Schedule 40, black finish.
- E. Bolts, Nuts, and Washers: ASTM F3125/F3125M, Type 1, plain.
- F. Welding Materials: AWS D1.1/D1.1M; type required for materials being welded.
- G. Shop and Touch-Up Primer: SSPC-Paint 15, complying with VOC limitations of authorities having jurisdiction.
- H. Touch-Up Primer for Galvanized Surfaces: SSPC-Paint 20, Type I - Inorganic, complying with VOC limitations of authorities having jurisdiction.

2.02 MATERIALS - ALUMINUM

- A. Extruded Aluminum: ASTM B221 (ASTM B221M), 6063 alloy, T6 temper.
- B. Sheet Aluminum: ASTM B209 (ASTM B209M), 5052 alloy, H32 or H22 temper.
- C. Aluminum-Alloy Drawn Seamless Tubes: ASTM B210 (ASTM B210M), 6063 alloy, T6 temper.
- D. Aluminum-Alloy Bars: ASTM B211 (ASTM B211M), 6061 alloy, T6 temper.
- E. Bolts, Nuts, and Washers: Stainless steel.
- F. Welding Materials: AWS D1.2/D1.2M; type required for materials being welded.

2.03 FABRICATION

- A. Fit and shop assemble items in largest practical sections, for delivery to site.
- B. Fabricate items with joints tightly fitted and secured.
- C. Continuously seal joined members by continuous welds.

- D. Grind exposed joints flush and smooth with adjacent finish surface. Make exposed joints butt tight, flush, and hairline. Ease exposed edges to small uniform radius.
- E. Exposed Mechanical Fastenings: Flush countersunk screws or bolts; unobtrusively located; consistent with design of component, except where specifically noted otherwise.
- F. Supply components required for anchorage of fabrications. Fabricate anchors and related components of same material and finish as fabrication, except where specifically noted otherwise.

2.04 FABRICATED ITEMS

- A. Bollards: Steel pipe, concrete filled, crowned cap, as detailed; galvanized finish.
- B. Ledge Angles, Shelf Angles, Channels, and Plates Not Attached to Structural Framing: For support of metal decking; galvanized finish.
- C. Lintels: As detailed; galvanized finish.
- D. Door Frames for Overhead Door Openings and Wall Openings: Channel sections; prime paint finish.

2.05 DOWNSPOUT BOOTS

- A. Downspout Boots: Smooth interior without boxed corners or choke points; include integral lug slots, integral cleanout, cleanout cover, and tamper proof fasteners.
 - 1. Configuration: Offset.
 - 2. Material: Cast iron; ASTM A48/A48M; casting thickness 3/8 inch (9.5 mm), minimum.
 - 3. Finish: Manufacturer's standard factory applied powder coat finish.
 - 4. Color: To be selected by Architect from manufacturer's standard range.
 - 5. Accessories: Manufacturer's standard stainless steel fasteners, stainless steel building wall anchors, integral neoprene gaskets, and rubber coupling.
 - 6. Manufacturers:
 - a. Downspoutboots.com, a division of J. R. Hoe & Sons: www.downspoutboots.com.
 - b. Neenah Foundry, a division of Neenah Enterprises, Inc: www.nfco.com.
 - c. Barry Pattern and Foundry: www.barrycraft.com.
 - d. Substitutions: See Section 01 6000 - Product Requirements.

2.06 FINISHES - STEEL

- A. Prime paint steel items.
 - 1. Exceptions: Galvanize items to be embedded in concrete or masonry and other items as indicated on Drawings.
 - 2. Exceptions: Do not prime surfaces in direct contact with concrete, where field welding is required, and items to be covered with sprayed fireproofing.
- B. Prepare surfaces to be primed in accordance with SSPC-SP2.
- C. Clean surfaces of rust, scale, grease, and foreign matter prior to finishing.
- D. Prime Painting: One coat.
- E. Galvanizing of Structural Steel Members: Galvanize after fabrication to ASTM A123/A123M requirements.
- F. Galvanizing of Non-structural Items: Galvanize after fabrication to ASTM A123/A123M requirements.

2.07 FABRICATION TOLERANCES

- A. Squareness: 1/8 inch maximum difference in diagonal measurements.
- B. Maximum Offset Between Faces: 1/16 inch.
- C. Maximum Misalignment of Adjacent Members: 1/16 inch.
- D. Maximum Bow: 1/8 inch in 48 inches.
- E. Maximum Deviation From Plane: 1/16 inch in 48 inches.

PART 3 EXECUTION

3.01 EXAMINATION

- A. Verify that field conditions are acceptable and are ready to receive work.

3.02 PREPARATION

- A. Clean and strip primed steel items to bare metal where site welding is required.
- B. Supply setting templates to the appropriate entities for steel items required to be cast into concrete or embedded in masonry.

3.03 INSTALLATION

- A. Install items plumb and level, accurately fitted, free from distortion or defects.
- B. Provide for erection loads, and for sufficient temporary bracing to maintain true alignment until completion of erection and installation of permanent attachments.
- C. Field weld components as indicated on drawings.
- D. Perform field welding in accordance with AWS D1.1/D1.1M.
- E. Obtain approval prior to site cutting or making adjustments not scheduled.
- F. After erection, prime welds, abrasions, and surfaces not shop primed or galvanized, except surfaces to be in contact with concrete.

3.04 TOLERANCES

- A. Maximum Variation From Plumb: 1/4 inch per story, non-cumulative.
- B. Maximum Offset From True Alignment: 1/4 inch.
- C. Maximum Out-of-Position: 1/4 inch.

END OF SECTION

SECTION 05 5213
PIPE AND TUBE RAILINGS

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Wall mounted handrails.
- B. Free-standing railings at steps.

1.02 RELATED REQUIREMENTS

- A. Section 03 3000 - Cast-in-Place Concrete: Placement of anchors in concrete.
- B. Section 04 2000 - Unit Masonry: Placement of anchors in masonry.
- C. Section 09 2116 - Gypsum Board Assemblies: Placement of backing plates in stud wall construction.
- D. Section 09 9113 - Exterior Painting: Paint finish.
- E. Section 09 9123 - Interior Painting: Paint finish.

1.03 REFERENCE STANDARDS

- A. AISC 201 - AISC Certification Program for Structural Steel Fabricators, Standard for Steel Building Structures; 2006.
- B. ASTM A53/A53M - Standard Specification for Pipe, Steel, Black and Hot-Dipped, Zinc-Coated, Welded and Seamless; 2012.
- C. ASTM A123/A123M - Standard Specification for Zinc (Hot-Dip Galvanized) Coatings on Iron and Steel Products; 2017.
- D. ASTM A500/A500M - Standard Specification for Cold-Formed Welded and Seamless Carbon Steel Structural Tubing in Rounds and Shapes; 2013.
- E. ASTM A501/A501M - Standard Specification for Hot-Formed Welded and Seamless Carbon Steel Structural Tubing; 2014.
- F. ASTM E935 - Standard Test Methods for Performance of Permanent Metal Railing Systems and Rails for Buildings; 2013, with Editorial Revision.
- G. AWS A2.4 - Standard Symbols for Welding, Brazing, and Nondestructive Examination; 2012.
- H. SSPC-Paint 15 - Steel Joist Shop Primer/Metal Building Primer; 1999 (Ed. 2004).
- I. SSPC-Paint 20 - Zinc-Rich Primers (Type I, "Inorganic," and Type II, "Organic"); 2002 (Ed. 2004).

1.04 SUBMITTALS

- A. See Section 01 3000 - Administrative Requirements, for submittal procedures.
- B. Shop Drawings: Indicate profiles, sizes, connection attachments, anchorage, size and type of fasteners, and accessories.
 - 1. Indicate welded connections using standard AWS A2.4 welding symbols. Indicate net weld lengths.
 - 2. Include the design engineer's seal and signature on each sheet of shop drawings.
- C. Samples: Submit two, 12 inch long samples of handrail. Submit two samples of elbow, wall bracket, and end stop.
- D. Designer's Qualification Statement.
- E. Fabricator's Qualification Statement.

1.05 QUALITY ASSURANCE

- A. Structural Designer Qualifications: Professional Structural Engineer experienced in design of this work and licensed in the State in which the Project is located, or personnel under direct supervision of such an engineer.

- B. Welder Qualifications: Show certification of welders employed on the Work, verifying AWS qualification within the previous 12 months.
- C. Fabricator Qualifications:
 - 1. A qualified steel fabricator that is certified by the American Institute for Steel Construction (AISC) under AISC 201.

PART 2 PRODUCTS

2.01 RAILINGS - GENERAL REQUIREMENTS

- A. Design, fabricate, and test railing assemblies in accordance with the most stringent requirements of applicable local code.
- B. Distributed Loads: Design railing assembly, wall rails, and attachments to resist distributed force of 75 pounds per linear foot applied to the top of the assembly and in any direction, without damage or permanent set. Test in accordance with ASTM E 935.
- C. Concentrated Loads: Design railing assembly, wall rails, and attachments to resist a concentrated force of 200 pounds applied at any point on the top of the assembly and in any direction, without damage or permanent set. Test in accordance with ASTM E 935.
- D. Design railing assembly, wall rails, and attachments to resist lateral force of 75 lbs at any point without damage or permanent set. Test in accordance with ASTM E 935.
- E. Allow for expansion and contraction of members and building movement without damage to connections or members.
- F. Dimensions: See drawings for configurations and heights.
 - 1. Top Rails and Wall Rails: 1-1/4 inches diameter, round.
 - 2. Intermediate Rails: 1-1/4 inches diameter, round.
 - 3. Posts: 1-1/2 inches diameter, round.
 - 4. Balusters: 3/4 inch square solid bar.
- G. Provide anchors and other components as required to attach to structure, made of same materials as railing components unless otherwise indicated; where exposed fasteners are unavoidable provide flush countersunk fasteners.
- H. Provide slip-on non-weld mechanical fittings to join lengths, seal open ends, and conceal exposed mounting bolts and nuts, including but not limited to elbows, T-shapes, splice connectors, flanges, escutcheons, and wall brackets.

2.02 STEEL RAILING SYSTEM

- A. Steel Tube: ASTM A500/A500M, Grade B cold-formed structural tubing.
- B. Steel Pipe: ASTM A 53/A 53M, Grade B Schedule 40, black finish.
- C. Non-Weld Mechanical Fittings: Slip-on, galvanized malleable iron castings, for Schedule 40 pipe, with flush setscrews for tightening by standard hex wrench, no bolts or screw fasteners.
- D. Fittings: Elbows, T-shapes, wall brackets, escutcheons; cast steel.
- E. Mounting:
 - 1. Mount self-supporting railings in pipe sleeves oversized 3/4" I.D. See Drawings.
 - 2. Mounting in existing concrete: Core drill and grout in place. See Drawings.
- F. Exposed Fasteners: Flush countersunk screws or bolts; consistent with design of railing.
- G. Straight Splice Connectors: Steel concealed spigots.
- H. Galvanizing: In accordance with requirements of ASTM A123/A123M.
 - 1. Touch-Up Primer for Galvanized Surfaces: SSPC-Paint 20, Type I - Inorganic.
- I. Shop and Touch-Up Primer: SSPC-Paint 15, complying with VOC limitations of authorities having jurisdiction.
- J. Apply one coat of bituminous paint to concealed aluminum and steel surfaces in contact with cementitious or dissimilar materials.

2.03 GROUT AND ANCHORING CEMENT

- A. Nonshrink, Nonmetallic Grout: Premixed, factory packaged, nonstaining, noncorrosive nongaseous grout complying with ASTM C 1107. Provide grout specifically recommended by manufacturer for interior and exterior applications.

2.04 FABRICATION

- A. Accurately form components to suit specific project conditions and for proper connection to building structure.
- B. Fit and shop assemble components in largest practical sizes for delivery to site.
- C. Fabricate components with joints tightly fitted and secured. Provide spigots and sleeves to accommodate site assembly and installation.
- D. Provide anchors and plates required for connecting railings to structure.
- E. Exposed Mechanical Fastenings: Provide flush countersunk screws or bolts; unobtrusively located; consistent with design of component, except where specifically noted otherwise.
- F. Supply components required for anchorage of fabrications. Fabricate anchors and related components of same material and finish as fabrication, except where specifically noted otherwise.
- G. Exterior Components: Continuously seal joined pieces by continuous welds. Drill condensate drainage holes at bottom of members at locations that will not encourage water intrusion.
- H. Interior Components: Continuously seal joined pieces by continuous welds.
- I. Grind exposed joints flush and smooth with adjacent finish surface. Make exposed joints butt tight, flush, and hairline. Ease exposed edges to small uniform radius.
- J. Accurately form components to suit specific project conditions and for proper connection to building structure.
- K. Accommodate for expansion and contraction of members and building movement without damage to connections or members.

PART 3 EXECUTION

3.01 EXAMINATION

- A. Verify that field conditions are acceptable and are ready to receive work.

3.02 PREPARATION

- A. Clean and strip primed steel items to bare metal where site welding is required.
- B. Supply items required to be cast into concrete or embedded in masonry with setting templates, for installation as work of other sections.
- C. Apply one coat of bituminous paint to concealed aluminum or steel surfaces that will be in contact with cementitious or dissimilar materials.
 - 1. Coat portion to be embedded with bituminous paint to a point 3/8 inches above finish concrete. Seal inside and outside of pipe. After setting in grout, seal around pipe with urethane sealant, color to match paint.

3.03 INSTALLATION

- A. Install in accordance with manufacturer's instructions.
- B. Install components plumb and level, accurately fitted, free from distortion or defects, with tight joints.
- C. Anchor railings securely to structure.
 - 1. Anchor using methods indicated on drawings.
- D. Field weld anchors as indicated on drawings. Touch-up welds with primer. Grind welds smooth.

- E. Conceal anchor bolts and screws whenever possible. Where not concealed, use flush countersunk fastenings.
- F. Assemble with spigots and sleeves to accommodate tight joints and secure installation.
- G. Existing Concrete: Core-drill holes not less than 6 inches (150 mm) deep and 3/4 inch (20 mm) larger than outside diameter of post for installing posts in concrete. Clean holes of loose material, insert posts and fill annular space between post and concrete with grout, mixed and placed to comply with anchoring material manufacturer's written instructions.

3.04 TOLERANCES

- A. Maximum Variation From Plumb: 1/4 inch per floor level, non-cumulative.
- B. Maximum Offset From True Alignment: 1/4 inch.
- C. Maximum Out-of-Position: 1/4 inch.

END OF SECTION

**SECTION 06 1000
ROUGH CARPENTRY**

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Preservative treated wood materials.
- B. Fire retardant treated wood materials.
- C. Fire retardant treated wood plywood interior finish.
- D. Communications and electrical room mounting boards.
- E. Concealed wood blocking, nailers, and supports.
- F. Miscellaneous wood nailers, furring, and grounds.

1.02 REFERENCE STANDARDS

- A. ASTM A153/A153M - Standard Specification for Zinc Coating (Hot-Dip) on Iron and Steel Hardware; 2016a.
- B. ASTM A653/A653M - Standard Specification for Steel Sheet, Zinc-Coated (Galvanized) or Zinc-Iron Alloy-Coated (Galvannealed) by the Hot-Dip Process; 2018.
- C. ASTM C557 - Standard Specification for Adhesives for Fastening Gypsum Wallboard to Wood Framing; 2003 (Reapproved 2017).
- D. ASTM D2898 - Standard Test Methods for Accelerated Weathering of Fire-Retardant-Treated Wood for Fire Testing; 2010 (Reapproved 2017).
- E. ASTM D3498 - Standard Specification for Adhesives for Field-Gluing Wood Structural Panels (Plywood or Oriented Strand Board) to Wood Based Floor System Framing; 2018a.
- F. ASTM E84 - Standard Test Method for Surface Burning Characteristics of Building Materials; 2018b.
- G. AWPA U1 - Use Category System: User Specification for Treated Wood; 2017.
- H. PS 1 - Structural Plywood; 2009.
- I. PS 20 - American Softwood Lumber Standard; 2015.
- J. SPIB (GR) - Grading Rules; 2014.

1.03 SUBMITTALS

- A. See Section 01 3000 - Administrative Requirements, for submittal procedures.
- B. Product Data: Provide technical data on wood preservative materials, application instructions, and fire retardant treatments.
- C. Manufacturer's Certificate: Certify that wood products supplied for rough carpentry meet or exceed specified requirements.
- D. Warranty: Submit manufacturer warranty and ensure that forms have been completed in Owner's name and registered with manufacturer.

1.04 DELIVERY, STORAGE, AND HANDLING

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

1.05 WARRANTY

- A. See Section 01 7800 - Closeout Submittals, for additional warranty requirements.
- B. Correct defective Work within a five year period after Date of Substantial Completion.

PART 2 PRODUCTS

2.01 GENERAL REQUIREMENTS

- A. Dimension Lumber: Comply with PS 20 and requirements of specified grading agencies.
 - 1. Species: Southern Pine, unless otherwise indicated.
 - 2. If no species is specified, provide any species graded by the agency specified; if no grading agency is specified, provide lumber graded by any grading agency meeting the specified requirements.
 - 3. Grading Agency: Any grading agency whose rules are approved by the Board of Review, American Lumber Standard Committee (www.alsc.org) and who provides grading service for the species and grade specified; provide lumber stamped with grade mark unless otherwise indicated.
 - 4. Lumber of other species or grades is acceptable provided structural and appearance characteristics are equivalent to or better than products specified.

2.02 DIMENSION LUMBER FOR CONCEALED APPLICATIONS

- A. Grading Agency: Southern Pine Inspection Bureau, Inc; SPIB (GR).
- B. Sizes: Nominal sizes as indicated on drawings, S4S.
- C. Moisture Content: S-dry or MC19.
- D. Miscellaneous Framing, Blocking, Nailers, Grounds, and Furring:
 - 1. Lumber: S4S, No. 2 or Standard Grade.
 - 2. Boards: Standard or No. 3.

2.03 CONSTRUCTION PANELS

- A. Softwood Plywood, Exposed to View: Face species suitable for paint finish, rotary cut, veneer core; PS 1 Grade A/C, exterior exposure class, 3/4 inch thick.
 - 1. Grading: Certified by the American Plywood Association.
- B. Communications and Electrical Room Mounting Boards: PS 1 A-D plywood, or medium density fiberboard; 3/4 inch thick; flame spread index of 25 or less, smoke developed index of 450 or less, when tested in accordance with ASTM E84.

2.04 ACCESSORIES

- A. Fasteners and Anchors:
 - 1. Metal and Finish: Hot-dipped galvanized steel complying with ASTM A153/A153M for high humidity and preservative-treated wood locations, unfinished steel elsewhere.
 - 2. Drywall Screws: Bugle head, hardened steel, power driven type, length three times thickness of sheathing.
- B. Die-Stamped Connectors: Hot dipped galvanized steel, sized to suit framing conditions.
 - 1. For contact with preservative treated wood in exposed locations, provide minimum G185 galvanizing complying with ASTM A653/A653M.
- C. Sill Gasket on Top of Foundation Wall: 1/4 inch thick, plate width, closed cell plastic foam from continuous rolls.
- D. Construction Adhesives: Adhesives complying with ASTM C557 or ASTM D3498.
 - 1. Manufacturers:
 - a. Franklin International, Inc; Titebond Fast Set Polyurethane Construction Adhesive: www.titebond.com/#sle.
 - b. Substitutions: See Section 01 6000 - Product Requirements.
- E. Water-Resistive Barrier: As specified in Section 07 2500.
- F. Building Paper: Water resistant Kraft paper.

2.05 FACTORY WOOD TREATMENT

- A. Treated Lumber and Plywood: Comply with requirements of AWPA U1 - Use Category System for wood treatments determined by use categories, expected service conditions, and specific applications.
 - 1. Fire-Retardant Treated Wood: Mark each piece of wood with producer's stamp indicating compliance with specified requirements.
 - 2. Preservative-Treated Wood: Provide lumber and plywood marked or stamped by an ALSC-accredited testing agency, certifying level and type of treatment in accordance with AWPA standards.
- B. Fire Retardant Treatment:
 - 1. Exterior Type: AWPA U1, Category UCFB, Commodity Specification H, chemically treated and pressure impregnated; capable of providing a maximum flame spread index of 25 when tested in accordance with ASTM E84, with no evidence of significant combustion when test is extended for an additional 20 minutes both before and after accelerated weathering test performed in accordance with ASTM D2898.
 - a. Kiln dry wood after treatment to a maximum moisture content of 19 percent for lumber and 15 percent for plywood.
 - b. Do not use treated wood in direct contact with the ground.
 - 2. Interior Type A: AWPA U1, Use Category UCFA, Commodity Specification H, low temperature (low hygroscopic) type, chemically treated and pressure impregnated; capable of providing a maximum flame spread index of 25 when tested in accordance with ASTM E84, with no evidence of significant combustion when test is extended for an additional 20 minutes.
 - a. Kiln dry wood after treatment to a maximum moisture content of 19 percent for lumber and 15 percent for plywood.
 - b. All interior rough carpentry items are to be fire retardant treated.
 - c. Treat rough carpentry items as indicated .
 - d. Do not use treated wood in applications exposed to weather or where the wood may become wet.
- C. Preservative Treatment:
 - 1. Manufacturers:
 - a. Lonza Group; Wolman E: www.wolmanizedwood.com/#sle.
 - b. Koppers Performance Chemicals, Inc; Naturewood ACQ: www.koppersperformancechemicals.com/#sle.
 - c. Viance, LLC; Preserve ACQ: www.treatedwood.com/#sle.
 - 2. Preservative Pressure Treatment of Lumber in Contact with Soil: AWPA U1, Use Category UC4A, Commodity Specification A using waterborne preservative to 0.31 lb/cu ft retention.
 - a. Preservative for Field Application to Cut Surfaces: As recommended by manufacturer of factory treatment chemicals for brush-application in the field.
 - b. 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. Where wood framing bears on cementitious foundations, install full width sill flashing continuous over top of foundation, lap ends of flashing minimum of 4 inches and seal.
- B. Install sill gasket under sill plate of framed walls bearing on foundations; puncture gasket cleanly to fit tightly around protruding anchor bolts.
- C. Coordinate installation of rough carpentry members specified in other sections.

3.02 INSTALLATION - GENERAL

- A. Select material sizes to minimize waste.

- B. Reuse scrap to the greatest extent possible; clearly separate scrap for use on site as accessory components, including: shims, bracing, and blocking.
- C. Where treated wood is used on interior, provide temporary ventilation during and immediately after installation sufficient to remove indoor air contaminants.

3.03 BLOCKING, NAILERS, AND SUPPORTS

- A. Provide framing and blocking members as indicated or as required to support finishes, fixtures, specialty items, and trim.
- B. In framed assemblies that have concealed spaces, provide solid wood fireblocking as required by applicable local code, to close concealed draft openings between floors and between top story and roof/attic space; other material acceptable to code authorities may be used in lieu of solid wood blocking.
- C. In 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.

3.04 INSTALLATION OF CONSTRUCTION PANELS

- A. Wall Sheathing: Secure with long dimension perpendicular to wall studs, with ends over firm bearing and staggered, using nails, screws, or staples.
- B. Communications and Electrical Room Mounting Boards: Secure with screws to studs with edges over firm bearing; space fasteners at maximum 24 inches on center on all edges and into studs in field of board.
 - 1. At fire-rated walls, install board over wall board indicated as part of the fire-rated assembly.
 - 2. Where boards are indicated as full floor-to-ceiling height, install with long edge of board parallel to studs.
 - 3. Install adjacent boards without gaps.

3.05 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.

3.06 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.

3.07 CLEANING

- A. Waste Disposal: Comply with the requirements of Section 01 7419 - Construction Waste Management and Disposal.
 - 1. Comply with applicable regulations.
 - 2. Do not burn scrap on project site.
 - 3. Do not burn scraps that have been pressure treated.
 - 4. Do not send materials treated with pentachlorophenol, CCA, or ACA to co-generation facilities or "waste-to-energy" facilities.
- B. Do not leave any wood, shavings, sawdust, etc. on the ground or buried in fill.

- C. Prevent sawdust and wood shavings from entering the storm drainage system.

END OF SECTION

SECTION 07 1300
SHEET WATERPROOFING

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Sheet Waterproofing:
 - 1. Self-adhered modified bituminous sheet membrane.
 - 2. Self-adhered HDPE sheet membrane.

1.02 RELATED REQUIREMENTS

- A. Section 03 3000 - Cast-in-Place Concrete: Concrete substrate.

1.03 PRICE AND PAYMENT PROCEDURES

- A. Alternates: See Section 01 2300 - Alternates, for product alternatives affecting this section.
 - 1. Self-Adhered HDPE Sheet Membrane Waterproofing is a part of Alternate No. 2. It is required beneath concrete slab at batting cages.

1.04 REFERENCE STANDARDS

- A. ASTM D412 - Standard Test Methods for Vulcanized Rubber and Thermoplastic Elastomers--Tension; 2016.
- B. ASTM D570 - Standard Test Method for Water Absorption of Plastics; 1998 (Reapproved 2018).
- C. ASTM D882 - Standard Test Method for Tensile Properties of Thin Plastic Sheeting; 2018.
- D. ASTM D903 - Standard Test Method for Peel or Stripping Strength of Adhesive Bonds; 1998 (Reapproved 2017).
- E. ASTM D1876 - Standard Test Method for Peel Resistance of Adhesives (T-Peel Test); 2008, with Editorial Revision (2015).
- F. ASTM D1970/D1970M - Standard Specification for Self-Adhering Polymer Modified Bituminous Sheet Materials Used as Steep Roofing Underlayment for Ice Dam Protection; 2019.
- G. ASTM D5295/D5295M - Standard Guide for Preparation of Concrete Surfaces for Adhered (Bonded) Membrane Waterproofing Systems; 2018.
- H. ASTM D5385/D5385M - Standard Test Method for Hydrostatic Pressure Resistance of Waterproofing Membranes; 1993, with Editorial Revision (2014).
- I. ASTM E96/E96M - Standard Test Methods for Water Vapor Transmission of Materials; 2016.
- J. 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).
- 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 and surface conditioner.
- C. Shop Drawings: Indicate special joint or termination conditions and conditions of interface with other materials.
- D. Certificate: Certify that products meet or exceed specified requirements.
- E. Manufacturer's Installation Instructions: Indicate special procedures.
- F. Warranty: Submit manufacturer warranty and ensure forms have been completed in Owner's name and registered with manufacturer.

1.06 QUALITY ASSURANCE

- A. Membrane Manufacturer Qualifications: Company specializing in waterproofing sheet membranes with five years experience.
- B. Installer Qualifications: Company specializing in performing the work of this section with minimum five years documented experience.

1.07 MOCK-UP

- A. Construct mock-up consisting of 100 sq ft of horizontal waterproofed panel; to represent finished work including internal and external corners.
- B. Locate where directed.
- C. Mock-up may remain as part of this Work.

1.08 FIELD CONDITIONS

- A. Maintain ambient temperatures above 40 degrees F for 24 hours before and during application and until liquid or mastic accessories have cured.

1.09 WARRANTY

- A. See Section 01 7800 - Closeout Submittals, for additional warranty requirements.
- B. Contractor shall correct defective Work within a five year period after Date of Substantial Completion; remove and replace materials concealing waterproofing at no extra 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 WATERPROOFING APPLICATIONS

- A. Self-Adhered Modified Bituminous Sheet Waterproofing: Use at concrete and masonry substrates.
- B. Self-Adhered HDPE Sheet Membrane Waterproofing: Use at sub-slab waterproofing at Batting Cage. See Alternate 2.

2.02 MEMBRANE MATERIALS

- A. Self-Adhered Modified Bituminous Sheet Membrane:
 - 1. Thickness: 40 mil (0.040 inch).
 - 2. Sheet Width: 36 inch, minimum.
 - 3. Tensile Strength:
 - a. Film: 5000 pounds per square inch, minimum, measured according to ASTM D882 and at grip-separation rate of 2 inches per minute.
 - b. Membrane: 325 pounds per square inch, minimum, measured according to ASTM D412 Method A, using die C and at spindle-separation rate of 2 inches per minute.
 - 4. Elongation at Break: 300 percent, minimum, measured according to ASTM D412.
 - 5. Water Vapor Permeance: 0.05 perm, maximum, measured in accordance with ASTM E96/E96M.
 - 6. Low Temperature Flexibility: Unaffected when tested according to ASTM D1970/D1970M at minus 20 degrees F, 180 degree bend on 1 inch mandrel.
 - 7. Peel Strength: 7 pounds per inch, minimum, when tested according to ASTM D903.
 - 8. Lap Adhesion Strength: 5 pounds per inch, minimum, when tested according to ASTM D1876.
 - 9. Puncture Resistance: 50 pounds, minimum, measured in accordance with ASTM E154/E154M.
 - 10. Water Absorption: 0.1 percent increase in weight, maximum, measured in accordance with ASTM D570, 24 hour immersion.

11. Hydrostatic Resistance: Resists the weight of 200 feet when tested according to ASTM D5385/D5385M.
 12. Adhesives, Sealants, Tapes, and Accessories: As recommended by membrane manufacturer.
 13. Manufacturers:
 - a. Carlisle Coatings & Waterproofing Inc; MiraDRI 860/861: www.carlisleccw.com/#sle.
 - b. Grace Construction Products; Perm-a-barrier Wall Membrane: www.na.graceconstruction.com.
 - c. Henry Company; Blueskin SA: www.henry.com.
 - d. W.R. Meadows, Inc Air Shield XLT: www.wrmeadows.com.
 - e. Substitutions: See Section 01 6000 - Product Requirements.
- B. Self-Adhered HDPE Sheet Membrane: Recommended by manufacturer for placement below concrete slabs and on outside face of below grade walls before placement of concrete.
1. Provide under slab at batting cages. See Alternate 2.
 2. Sheet Thickness: 46 mil (0.046 inch), minimum.
 3. Low Temperature Flexibility: Unaffected when tested according to ASTM D1970/D1970M at minus 20 degrees F, 180 degree bend on 1 inch mandrel.
 4. Hydrostatic Resistance: Resists the weight of 230 feet when tested according to ASTM D5385/D5385M.
 5. Elongation at Break: 400 percent, minimum, measured according to ASTM D412.
 6. Tensile Strength, Film: 3,500 pounds per square inch, minimum, measured according to ASTM D412.
 7. Water Vapor Permeance: 0.01 perm, maximum, measured in accordance with ASTM E96/E96M.
 8. Bond to Concrete: 5 pounds per inch, minimum, per ASTM D903.
 9. Adhesives, Sealants, Tapes, and Accessories: As recommended by membrane manufacturer.
 10. Manufacturers:
 - a. GCP Applied Technologies; Preprufe 300R Plus: www.gcpat.com/#sle.
 - b. Polyguard Barrier Systems, Inc, a division of Polyguard Products, Inc; TERM Underslab Barrier: www.polyguardbarriers.com/#sle.
 - c. Tremco Commercial Sealants & Waterproofing; TREMproof 545: www.tremcosealants.com/#sle.
 - d. W. R. Meadows Inc; PRECON: www.wrmeadows.com.
 - e. Substitutions: See Section 01 6000 - Product Requirements.

2.03 ACCESSORIES

- A. Sealant for Cracks and Joints In Substrates: Resilient elastomeric joint sealant compatible with substrates and waterproofing materials.
- B. Protection Board: Provide type capable of preventing damage to waterproofing due to backfilling and construction traffic.
 1. Polystyrene foam board, 1 inch thick.
 2. Recycled or reclaimed closed-cell foam plastic with non-woven filter fabric cover; 1 inch thick.
 3. Semi-rigid glass fiber board; unaffected by water, freeze-thaw, fungus, or soil bacteria; containing no formaldehyde, phenol, acrylic, or artificial color; 3/4 inch thick, nominal.
- C. Drainage Panel: Drainage layer with geotextile filter fabric on earth side.
 1. Composition: Dimpled polystyrene, polyethylene, or polypropylene core; polypropylene filter fabric.
 - a. Manufacturers:
 - 1) Epro Services, Inc; ECODRAIN-MS: www.eproserv.com/#sle.
 - 2) Mar-flex Waterproofing & Building Products; ArmorDrain 110: www.mar-flex.com/#sle.

- 3) W.R. Meadows, Inc; Mel-Drain 5012: www.wrmeadows.com/#sle.
 - 4) Substitutions: See Section 01 6000 - Product Requirements.
- D. Cant Strips: Premolded composition material.
 - E. Seaming Materials: As recommended by membrane manufacturer.
 - F. Membrane Sealant: As recommended by membrane manufacturer.
 - G. Termination Bars: Aluminum or stainless steel; compatible with membrane and adhesives.
 - H. Primers and Surface Conditioners: Recommended by manufacturer, compatible with membrane.
 - I. Adhesives: As recommended by membrane manufacturer.
 - J. Thinner and Cleaner: As recommended by adhesive manufacturer, compatible with sheet membrane.

PART 3 EXECUTION

3.01 EXAMINATION

- A. Verify existing conditions are acceptable prior to starting this work.
- B. Verify substrate surfaces are durable; free of matter detrimental to adhesion or application of waterproofing system.
- C. 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 membrane manufacturer.
- D. Fill non-moving joints and cracks with a filler compatible with waterproofing materials.
- E. Seal moving cracks with sealant and non-rigid filler, using procedures recommended by sealant and waterproofing manufacturers.
- F. Prepare building expansion joints at locations as indicated on drawings.
- G. Surfaces for Adhesive Bonding: Apply surface conditioner at a rate recommended by manufacturer, and protect conditioner from rain or frost until dry.
- H. Concrete Surfaces for Adhesive Bonding: Prepare concrete substrate according to ASTM D5295/D5295M.
 1. Remove substances that inhibit adhesion including form release agents, curing compounds admixtures, laitance, moisture, dust, dirt, grease and oil.
 2. Repair surface defects including honeycombs, fins, tie holes, bug holes, sharp offsets, rutted cracks, ragged corners, deviations in surface plane, spalling and delaminations, as described in the reference standard.
 3. Remove and replace areas of defective concrete as specified in Section 03 3000.
 4. Prepare concrete for adhesive bonded waterproofing using mechanical or chemical methods described in the referenced standard.
 5. Test concrete surfaces as described in the referenced standards. Verify surfaces are ready to receive adhesive bonded waterproofing membrane system.

3.03 INSTALLATION - MEMBRANE

- A. Install membrane waterproofing in accordance with manufacturer's instructions and NRCA (WM) applicable requirements.
- B. Roll out membrane, and minimize wrinkles and bubbles.
- C. Self-Adhering Membrane: Remove release paper layer, and roll out onto substrate with a mechanical roller to provide full contact bond.

- D. Overlap edges and ends, minimum 3 inches, seal permanently waterproof by method recommended by manufacturer, and apply uniform bead of sealant to joint edge.
- E. Reinforce membrane with multiple thickness of membrane material over joints, whether joints are static or dynamic.
- F. Weather lap joints on sloped substrate in direction of drainage, and seal joints and seams.
- G. Flexible Flashings: Seal items watertight that penetrate through waterproofing membrane with flexible flashings.
- H. Seal membrane and flashings to adjoining surfaces.

3.04 INSTALLATION - DRAINAGE PANEL AND PROTECTION BOARD

- A. Place drainage panel directly against membrane, butt joints, place to encourage drainage downward. Scribe and cut boards around projections, penetrations, and interruptions.
- B. Place protection board directly against drainage panel; butt joints. 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 1400
FLUID-APPLIED WATERPROOFING

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Fluid applied membrane waterproofing for horizontal split-slab application.

1.02 RELATED REQUIREMENTS

- A. Section 03300 - Poured-in-Place Concrete: Concrete substrate and concrete wear slab.
- B. Section 07 2100 - Thermal Insulation: Thermal insulation.
- C. Section 07 9005 - Joint Sealers: Sealant for joints in substrates.
- D. Section 22 1006 - Plumbing Piping Specialties: Roof drain and plumbing vent flashing flanges.

1.03 ABBREVIATIONS

1.04 REFERENCE STANDARDS

- A. NRCA ML104 - The NRCA Roofing and Waterproofing Manual; Fifth Edition, with interim updates.

1.05 SUBMITTALS

- A. See Section 01 3000 - Administrative Requirements, for submittal procedures.
- B. Product Data: Provide data for membrane, surface conditioner, flexible flashings, joint cover sheet, and joint and crack sealants.
- C. Shop Drawings: Indicate special joint or termination conditions and conditions of interface with other materials.
- D. Certificate: Certify that products meet or exceed specified requirements.
- E. Manufacturer's Installation Instructions: Indicate special procedures.
- F. Warranty: Submit manufacturer warranty and ensure forms have been completed in Owner's name and registered with manufacturer.

1.06 QUALITY ASSURANCE

- A. Membrane Manufacturer Qualifications: Company specializing in waterproofing sheet membranes with 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.
- C. Provide deck waterproofing and insulation system components as manufactured or recommended by single manufacturer and covered under single source warranty.
- D. Mock-Up: Construct a mock-up consisting of 100 sq ft of horizontal waterproofed panel, including internal and external corners similar to those that will be present in the finished work.
 - 1. Locate where directed.
 - 2. Mock-up may remain as part of the work.

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 Ten year manufacturer labor and materials 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. Warranty shall include liquid applied membrane system, sheet membrane system specified in Section 07130 and their tie-ins to each other.

- D. For warranty repair work, remove and replace materials concealing waterproofing at no additional cost to Owner.

PART 2 PRODUCTS

2.01 MANUFACTURERS

- A. Cold-Applied Elastomeric Manufacturers:
1. Carlisle Coatings & Waterproofing, Inc; ____: www.carlisleccw.com/#sle.
 2. Carlisle Coatings & Waterproofing, Inc; Product Miraseal 100% Solids: www.carlisle-ccw.com.
 3. BASF Construction Chemicals-Building Systems; HLM 5000 T, S, or R: www.buildingsystems.basf.com
 4. Gaco Western; Product Gacoflex LM-60H: www.gaco.com.
 5. Henry Company; Aqua-Bloc SB: www.henry.com
 6. NEOGard Div. Jones-Blair; Product 7401 Modified Polyurethane Coating: www.neogard.com.
 7. Soprema; Product Colphene LM 350: www.soprema.us.
 8. Tremco; Product Tremproof 250 GC or Tremproof 201/60: www.tremcosealants.com.

2.02 WATERPROOFING APPLICATIONS

2.03 FLUID APPLIED WATERPROOFING MATERIALS

- A. Flexible Flashings: Type recommended by membrane manufacturer.

2.04 ACCESSORIES

- A. Surface Conditioner: Recommended type, compatible with membrane compound.
- B. Sealant for Substrate Surfaces: As recommended by membrane manufacturer.
- C. Protection Board: Type capable of preventing damage to waterproofing due to backfilling and construction traffic.
1. Use one of the following:
 - a. Fiberglass reinforced rubberized asphalt sheet.
 2. Products:
 - a. American Hydrotech Inc; Hydroflex Protection Sheet: www.hydrotechusa.com.
- D. Drainage/Protection Board: 3/8 inch thick 3 dimensional plastic core with woven drainage fabric; with integral drainage channels . Provide product suitable for horizontal split-slab applications, minimum compressive strength of 15000 psf.
1. American Hydrotech; Product Hydrodrain: www.hydrotechusa.com
 2. Carlisle Coatings & Waterproofing, Inc; Product CCW MiraDRAIN 9000: www.carlisle-ccw.com.
 3. Tremco; Product Tremdrain 2000: www.tremcosealants.com.
 4. Substitutions: See Section 01600 - Product Requirements.
- E. Cant Strips: Premolded composition material.

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.
 - 1. Mechanically clean membrane curing compounds from substrate.
- C. Do not apply waterproofing to surfaces unacceptable to waterproofing manufacturer.
- D. Seal cracks and joints with sealant using methods recommended by sealant manufacturer.
- E. Install cant strips at inside corners.
- F. Membrane Preparation:
 - 1. Heat in double jacketed, oil bath or air jacketed melter with mechanical agitation, specifically designed for the preparation of a rubberized asphalt membrane.
 - 2. Heat membrane until membrane can be drawn-free flowing at a temperature range recommended by manufacturer of membrane material. Protect from overheating.

3.03 INSTALLATION

- A. Apply primer or surface conditioner at a rate recommended by manufacturer, and protect conditioner from rain or frost until dry.
- B. Detailing:
 - 1. Apply flashings and detailing in accordance with the manufacturer's standard guideline details.
 - 2. Complete all detailing and flashing before installing the membrane over the field of the substrate.
 - 3. Detail substrate board joints with membrane and fabric reinforcing prior to full membrane application.
- C. Apply waterproofing in accordance with manufacturer's instructions to specified minimum thickness. Provide pin-hole free application.
 - 1. Apply the rubberized asphalt membrane at a rate to provide a continuous, monolithic coat of 90 mil minimum.
 - 2. Fully embedded a layer of the spunbonded polyester fabric reinforcing sheet, followed by another continuous monolithic coat of membrane at an average thickness of 125 mil. Overlap fabric reinforcing sheet 1-2 inches (25.4 mm - 50.8 mm) with membrane between fabric sheets.
 - 3. Provide total membrane thickness of 215 mils average; 180 mils minimum.
- D. Flexible Flashings: Seal items watertight that penetrate through waterproofing membrane with flexible flashings.
- E. Seal membrane and flashings to adjoining surfaces.

3.04 INSTALLATION - DRAINAGE PANEL AND PROTECTION BOARD

- A. Comply with manufacturers recommendations for application over waterproofing membrane.
- B. Embed the protection sheet/rigid insulation board into the membrane while it is still hot to insure a good bond.
- C. Overlap adjoining sheet edges (dry) a minimum of 2"-3" to insure complete coverage.
- D. Cover completed membrane/protection assembly with subsequent topping materials as soon as possible, within 30 days of membrane installation.

3.05 FIELD QUALITY CONTROL

- A. VERIFY that the structure can support the deadload weight of a watertest before testing.
- B. If leaks should occur, the water shall be drained completely and the membrane installation repaired.

3.06 DRAINAGE COURSE / INSULATION / FILTER FABRIC SHEET / PAVER PLACEMENT

- A. General
 - 1. Examine the deck area to be covered with subsequent topping materials in order to insure that all deck areas have received the membrane, the membrane is free of damage, it is properly protected, and all flashing has been properly installed, before placing the insulation.
 - 2. Install drainage course, insulation, and other subsequent topping materials as each section is completed.
- B. Prefabricated Drainage Course Placement:
 - 1. Install drainage course on horizontal and vertical surfaces in accordance with the manufacturer's recommendations.
 - 2. Layout and position drainage course and allow to lay flat. Cut and fit drainage course to perimeter and penetrations.
 - 3. Bond all geotextile overlap edges to adjacent drainage course geotextile with an acceptable adhesive to insure geotextile integrity.
 - 4. Place subsequent topping materials as soon as possible.
- C. Insulation Placement:
 - 1. Loose lay (horizontal applications) in a staggered manner and tightly butt together all insulation boards. The maximum acceptable opening between insulation boards is 3/8". Insulation shall be installed within 3/4" (19 mm) of all projections, penetrations, etc.
 - 2. When multi-layer insulation applications are involved the bottom layer of insulation shall be the thickest layer and shall be a minimum of 2" thick (50.8 mm). All layers shall be installed unadhered to each other and all joints in relation to underlying layers staggered.
- D. Architectural Finish Paver Placement:
 - 1. Install architectural finish pavers on tabs or pedestals in accordance with manufacturer's recommendations and architectural layout.
 - 2. Black, fabric-covered insulation shall not be left exposed in ambient temperatures greater than or equal to 90°F. Measures to maintain temperatures at insulation surface below 165°F shall be implemented.

3.07 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 metal stud wall inboard of structural girts.
- B. Batt or low expansion foam insulation for filling perimeter window and door shim spaces and crevices in exterior wall and roof.
- C. Acoustic Insulation.

1.02 RELATED REQUIREMENTS

- A. Section 04 2000 - Unit Masonry.
- B. Section 05 4000 - Cold-Formed Metal Framing: Continuous board insulation at light gage metal framing.
- C. Section 07 8400 - Firestopping: Insulation as part of fire-rated through-penetration assemblies.
- D. Section 09 2116 - Gypsum Board Assemblies: Acoustic insulation inside walls and partitions.
- E. Section 13 3419 - Metal Building Systems: Thermal insulation and vapor barrier as part of metal building system.

1.03 REFERENCE STANDARDS

- A. ASTM C665 - Standard Specification for Mineral-Fiber Blanket Thermal Insulation for Light Frame Construction and Manufactured Housing; 2017.
- B. ASTM E84 - Standard Test Method for Surface Burning Characteristics of Building Materials; 2018b.

1.04 SUBMITTALS

- A. See Section 01 3000 - Administrative Requirements, for submittal procedures.
- B. Product Data: Provide data on product characteristics, performance criteria, and product limitations.
- C. Manufacturer's Installation Instructions: Include information on special environmental conditions required for installation and installation techniques.

1.05 QUALITY ASSURANCE

- A. Provide full thick batts at all insulated stud conditions.

1.06 FIELD CONDITIONS

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

1.07 SEQUENCING

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

1.08 COORDINATION

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

PART 2 PRODUCTS

2.01 APPLICATIONS

- A. Insulation in Metal Framed Walls behind gypsum board: Batt insulation with no vapor retarder. Provide mineral fiber batt.
- B. Acoustical Insulation: Mineral wool batt or semi-rigid mineral wool board insulation.
- C. Insulation where indicated on Drawings.

2.02 BATT INSULATION MATERIALS

- A. Mineral Fiber Batt Insulation for thermal or acoustic uses: Flexible preformed batt or blanket, complying with ASTM C 665; friction fit; unfaced flame spread index of 0 (zero) when tested in accordance with ASTM E 84.
 - 1. Flame Spread Index: 25 or less, when tested in accordance with ASTM E84.
 - 2. Smoke Developed Index: 0 (zero), when tested in accordance with ASTM E84.
 - 3. Thermal Resistance: R-value of 4.3 degrees F hr sq ft/Btu per inch at 75 degrees F, minimum, when tested according to ASTM C518.
 - 4. Density: 2 pounds per cubic foot, nominal.
 - 5. Thickness: As indicated on Drawings. If not indicated otherwise, provide full thickness of cavity, stud or rafter.
 - a. Thickness at acoustic partitions: 3-1/2 inches.
 - b. Thickness at exterior walls: 6 inches.
 - 6. Manufacturers: Subject to requirements, provide product of one of the following manufacturers.
 - a. Johns Manville: www.jm.com.
 - b. Thermafiber, Inc: www.thermafiber.com/#sle.
 - c. Rockwool Group, Inc: www.rockwool.com.
 - d. Industrial Insulation Group LLC: www.iig-llc.com.
 - e. Substitutions: See Section 01 6000 - Product Requirements.

2.03 ACCESSORIES

- A. Insulation Fasteners: Lengths of unfinished, 13 gage, 0.072 inch high carbon spring steel with chisel or mitered tips, held in place by tension, length to suit insulation thickness and substrate, capable of securely supporting insulation in place.
- B. Foam Crack and Crevice Insulation: Low expansion single component polyurethane foam insulation.
 - 1. Products:
 - a. Great Stuff Pro Gap and Crack Insulation Foam Sealant manufactured by Dow Chemical Company: www.greatstuff.dow.com.
 - b. 627720 Insulating Foam Sealant manufactured by Owens Corning: www.insulation.owenscorning.com.
 - c. CRC Minimal Expansion Foam Sealant manufactured by CRC Industries Inc: www.crcindustries.com.
 - d. Substitutions: See Section 01 6000 - Product Requirements.

PART 3 EXECUTION

3.01 EXAMINATION

- A. Verify that substrate, adjacent materials, and insulation materials are dry and that substrates are ready to receive insulation.
- B. Verify substrate surfaces are flat, free of honeycomb, fins, irregularities, or materials or substances that may impede adhesive bond.

3.02 BATT INSTALLATION

- A. Install insulation in accordance with manufacturer's instructions.
- B. Install in exterior wall spaces without gaps or voids. Do not compress insulation.
- C. Install in roof truss spaces suspended on wire mesh. Install without gaps or voids. Do not compress insulation.
- D. Install acoustic insulation in partition spaces and above ceilings without gaps or voids.
- E. Trim insulation neatly to fit spaces. Insulate miscellaneous gaps and voids.
- F. Fit insulation tightly in cavities and tightly to exterior side of mechanical and electrical services within the plane of the insulation.

- G. Install with factory applied vapor retarder membrane facing warm side of building spaces. Lap ends and side flanges of membrane over framing members.
- H. Tape exposed insulation batts in place with matching tape.
- I. Retain insulation batts in place with wire mesh secured to framing members.
- J. Tape seal butt ends, lapped flanges, and tears or cuts in membrane.

3.03 PROTECTION

- A. Do not permit installed insulation to be damaged prior to its concealment. Replace damaged units.

END OF SECTION

SECTION 07 2500
WEATHER BARRIERS

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Air Barriers: Materials that form a system to stop passage of air through exterior walls, joints between exterior walls and roof, and joints around frames of openings in exterior walls.

1.02 RELATED REQUIREMENTS

- A. Section 03 3000 - Cast-in-Place Concrete: Vapor retarder under concrete slabs on grade.
- B. Section 07 2400 - Exterior Insulation and Finish Systems: Water-resistive barrier under exterior insulation.
- C. Section 07 5400 - Thermoplastic Membrane Roofing: Vapor retarder installed as part of roofing system.
- D. Section 07 6200 - Sheet Metal Flashing and Trim: Metal flashings installed in conjunction with weather barriers.
- E. Section 07 9200 - Joint Sealants: Sealing building expansion joints.

1.03 DEFINITIONS

- A. Weather Barrier: Assemblies that form either water-resistive barriers, air barriers, or vapor retarders.
- B. Air Barrier: Air tight barrier made of material that is relatively air impermeable but water vapor permeable, both to the degree specified, with sealed seams and with sealed joints to adjacent surfaces. Note: For the purposes of this specification, vapor impermeable air barriers are classified as vapor retarders.
- C. Vapor Retarder: Air tight barrier made of material that is relatively water vapor impermeable, to the degree specified, with sealed seams and with sealed joints to adjacent surfaces.
 - 1. Water Vapor Permeance: For purposes of conversion, $57.2 \text{ ng}/(\text{Pa s sq m}) = 1 \text{ perm}$.

1.04 REFERENCE STANDARDS

- A. ASTM D412 - Standard Test Methods for Vulcanized Rubber and Thermoplastic Elastomers--Tension; 2016.
- B. ASTM D1970/D1970M - Standard Specification for Self-Adhering Polymer Modified Bituminous Sheet Materials Used as Steep Roofing Underlayment for Ice Dam Protection; 2019.
- C. ASTM E2357 - Standard Test Method for Determining Air Leakage of Air Barrier Assemblies; 2018.
- D. ASTM E84 - Standard Test Method for Surface Burning Characteristics of Building Materials; 2018b.
- E. ASTM E96/E96M - Standard Test Methods for Water Vapor Transmission of Materials; 2016.
- F. ASTM E2178 - Standard Test Method for Air Permeance of Building Materials; 2013.
- G. ICC-ES AC212 - Acceptance Criteria for Water-Resistive Coatings Used as Water-Resistive Barriers over Exterior Sheathing; 2015.
- H. NFPA 285 - Standard Fire Test Method for Evaluation of Fire Propagation Characteristics of Exterior Non-Load-Bearing Wall Assemblies Containing Combustible Components; 2019.

1.05 SUBMITTALS

- A. See Section 01 3000 - Administrative Requirements, for submittal procedures.
- B. Product Data: Provide data on material characteristics, performance criteria, limitations, and special procedures.
- C. Shop Drawings: Provide drawings of special joint conditions.

- D. Manufacturer's Installation Instructions: Indicate preparation, installation methods, storage and handling criteria, and special conditions requiring extra attention.
- E. ABAA Manufacturer Qualification: Submit documentation of current evaluation of proposed manufacturer and materials.

1.06 QUALITY ASSURANCE

- A. Air Barrier Association of America (ABAA) Evaluated Materials Program (EAP); www.airbarrier.org/#sle: Use evaluated materials from a single manufacturer regularly engaged in air barrier material manufacture, and use secondary materials approved in writing by primary material manufacturer.
 - 1. Provide products conforming to performance levels in accord with ASTM E2357.

1.07 FIELD CONDITIONS

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

PART 2 PRODUCTS

2.01 WEATHER BARRIER ASSEMBLIES

- A. Air Barrier:
 - 1. On outside surface of sheathing material at exterior masonry veneer walls use air barrier coating.

2.02 AIR BARRIER MATERIALS (WATER VAPOR PERMEABLE AND WATER-RESISTIVE)

- A. Air Barrier, Fluid Applied: Vapor permeable, elastomeric waterproofing.
 - 1. Air Barrier Coating:
 - a. Dry Film Thickness (DFT): 10 mil, 0.010 inch, minimum.
 - 1) Provide application thickness as recommended by manufacturer for product, substrate and optimum performance.
 - b. Air Permeance: 0.004 cfm/sq ft, maximum, when tested in accordance with ASTM E2178.
 - c. Water Vapor Permeance: 18 perms, minimum, when tested in accordance with ASTM E96/E96M Procedure B (Water Method) at 73.4 degrees F.
 - d. Ultraviolet (UV) and Weathering Resistance: Approved in writing by manufacturer for up to six months of weather exposure after application.
 - e. Elongation: 300 percent, minimum, when tested in accordance with ASTM D412.
 - f. Surface Burning Characteristics: Flame spread index of 25 or less, smoke developed index of 450 or less, when tested in accordance with ASTM E84.
 - g. Complies with NFPA 285 wall assembly requirements.
 - h. Nail Sealability: Pass, when tested in accordance with ASTM D1970/D1970M.
 - i. Code Acceptance: Comply with applicable requirements of ICC-ES AC212.
 - j. Sealants, Tapes and Accessories: As recommended by coating manufacturer.
 - k. Manufacturers:
 - 1) Carlisle Coatings and Waterproofing, Inc; Fire Resist Barrithane VP: www.carlisleccw.com/#sle.
 - 2) BASF Corporation; MasterSeal AWB 660: www.master-builders-solutions.basf.us/#sle.
 - 3) Dow Chemical Company; DOWSIL DefendAir 200: consumer.dow.com/en-us/industry/ind-building-construction.html/#sle.
 - 4) DuPont de Nemours, Inc; Tyvek Fluid Applied WB+ with Tyvek Fluid Applied Flashing and Joint Compound, Sealant for Tyvek Fluid Applied System and StraightFlash: www.dupont.com/#sle.
 - 5) Hohmann & Barnard, Inc; ENVIRO-BARRIER VP: www.h-b.com/#sle.
 - 6) Momentive Performance Materials, Inc/GE Construction Sealants; GE Elemax 2600 AWB: www.siliconeforbuilding.com/#sle.

- 7) Pecora Corporation; Pecora ProPerm VP - Vapor Permeable Air Barrier System with Pecora XL-Flash Liquid Flashing and Joint Filler, AVB Silicone Surface Transitions, and XL-Span Transition Membrane: www.pecora.com/#sle.
- 8) PROSOCO, Inc; R-GUARD Cat 5: www.prosoco.com/r-guard/#sle.
- 9) Sto Corp; Stoguard Sto Airseal: www.stocorp.com.
- 10) Substitutions: See Section 01 6000 - Product Requirements.

2.03 ACCESSORIES

- A. Sealants, Tapes, and Accessories for Sealing Weather Barrier and Sealing Weather Barrier to Adjacent Substrates: As specified or as recommended by weather barrier manufacturer.
- B. Flexible Flashing: Self-adhesive sheet flashing complying with ASTM D1970/D1970M, except slip resistance requirement is waived if not installed on a roof.
 1. Composition: Any material that meets physical requirements of ASTM D1970/D1970M with exceptions indicated.
 2. Thickness: 30 mil, 0.030 inch, nominal; exception from ASTM D1970/D1970M.
- C. Pre-formed Transition Membrane: Semi-rigid silicone or polyester composition, tapered edges, tear resistant.
 1. Manufacturers:
 - a. Dow Chemical Company; DOWSIL Silicone Transition Strip and System: consumer.dow.com/en-us/industry/ind-building-construction.html/#sle.
 - b. Fortifiber Building Systems Group; Moistop Corner Shield: www.fortifiber.com/#sle.
 - c. Momentive Performance Materials, Inc/GE Construction Sealants; RF100 Reinforcing Fabric: www.siliconeforbuilding.com/#sle.
 - d. Tremco Commercial Sealants & Waterproofing; ProGlaze ETA System 1: www.tremcosealants.com/#sle.
 - e. Substitutions: See Section 01 6000 - Product Requirements.
- D. Thinners and Cleaners: As recommended by material manufacturer.

PART 3 EXECUTION

3.01 EXAMINATION

- A. Verify that surfaces and conditions are ready to accept the work of this section.

3.02 PREPARATION

- A. Remove projections, protruding fasteners, and loose or foreign matter that might interfere with proper installation.
- B. Clean and prime substrate surfaces to receive adhesives in accordance with manufacturer's instructions.

3.03 INSTALLATION

- A. Install materials in accordance with manufacturer's instructions.
- B. Air Barriers: Install continuous air tight barrier over surfaces indicated, with sealed seams and with sealed joints to adjacent surfaces.
- C. Apply sealants and adhesives within recommended application temperature ranges. Consult manufacturer if temperature is out of this range.
- D. 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.
- E. Openings and Penetrations in Exterior Weather Barriers:
 1. Install flashing over sills, covering entire sill frame member, extending at least 5 inches onto weather barrier and at least 6 inches up jambs; mechanically fasten stretched edges.

2. At openings to be filled with frames having nailing flanges, seal head and jamb flanges using a continuous bead of sealant compressed by flange and cover flanges with sealing tape at least 4 inches wide; do not seal sill flange.
3. At openings to be filled with non-flanged frames, seal weather barrier to each side of opening framing, using flashing at least 9 inches wide, covering entire depth of framing.
4. At head of openings, install flashing under weather barrier extending at least 2 inches beyond face of jambs; seal weather barrier to flashing.
5. At interior face of openings, seal gap between window/door frame and rough framing, using joint sealant over backer rod.
6. Service and Other Penetrations: Form flashing around penetrating item and seal to weather barrier surface.

3.04 FIELD QUALITY CONTROL

- A. See Section 01 4000 - Quality Requirements, for additional requirements.
- B. Coordination of ABAA Tests and Inspections:
 1. Provide testing and inspection required by ABAA QAP.
 2. Notify ABAA in writing of schedule for air barrier work, and allow adequate time for testing and inspection.
 3. Cooperate with ABAA testing agency.
 4. Allow access to air barrier work areas and staging.
 5. Do not cover air barrier work until tested, inspected, and accepted.
- C. Do not cover installed weather barriers until required inspections have been completed.
- D. Obtain approval of installation procedures by the weather barrier manufacturer based on a mock-up installed in place, prior to proceeding with remainder of installation.
- E. Take digital photographs of each portion of the installation prior to covering up.

3.05 PROTECTION

- A. Do not leave materials exposed to weather longer than recommended by manufacturer.
- B. Do not leave paper- or felt-based barriers exposed to weather for longer than one week.

END OF SECTION

**SECTION 07 4113
METAL ROOF PANELS**

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Architectural roofing system of preformed steel panels.
- B. Attachment system.
- C. Finishes.
- D. Accessories.

1.02 RELATED REQUIREMENTS

- A. Section 07 2100 - THERMAL INSULATION: Ventilating nailbase roof insulation.
- B. Section 07 4213 - Metal Wall Panels: Preformed wall and soffit panels.
- C. Section 07 9200 - Joint Sealants: Sealing joints between metal roof panel system and adjacent construction.

1.03 REFERENCE STANDARDS

- A. AAMA 2605 - Voluntary Specification, Performance Requirements and Test Procedures for Superior Performing Organic Coatings on Aluminum Extrusions and Panels (with Coil Coating Appendix); 2013.
- B. ASTM A792/A792M - Standard Specification for Steel Sheet, 55% Aluminum-Zinc Alloy-Coated by the Hot-Dip Process; 2010 (Reapproved 2015).
- C. ASTM D1970/D1970M - Standard Specification for Self-Adhering Polymer Modified Bituminous Sheet Materials Used as Steep Roofing Underlayment for Ice Dam Protection; 2019.
- D. ASTM E96/E96M - Standard Test Methods for Water Vapor Transmission of Materials; 2016.
- E. IAS AC472 - Accreditation Criteria for Inspection Programs for Manufacturers of Metal Building Systems; 2018.

1.04 ADMINISTRATIVE REQUIREMENTS

- A. Coordination: Coordinate the installation of roofing with size, location and installation of service utilities.
- B. Preinstallation Meeting: Conduct a preinstallation meeting one week prior to the start of the work of this section; require attendance by all affected installers.
 - 1. PRE-ROOFING MEETING
 - a. A pre-roofing conference is required before any roofing materials are installed. This conference shall be conducted by a representative of the Architect and attended by representatives of the Owner, Building Commission Inspector, General Contractor, Roofing Contractor, Sheet Metal Contractor, Roof Deck Manufacturer (if applicable), and the Roofing Materials Manufacturer (if warranty is required of this manufacturer). If equipment of substantial size is to be placed on the roof, the Mechanical Contractor must also attend this meeting.
 - b. The pre-roofing conference is intended to clarify demolition (for renovation or re-roofing projects) and application requirements for work to be completed before roofing operations can begin. This would include a detailed review of the specifications, roof plans, roof deck information, flashing details, and approved shop drawings, submittal data, and samples. If conflict exists between the specifications and the Manufacturer's requirements, this shall be resolved. If this pre-roofing conference cannot be satisfactorily concluded without further inspection and investigation by any of the parties present, it shall be reconvened at the earliest possible time to avoid delay of the work. In no case should the work proceed without inspection of all roof deck areas and substantial agreement on all points.
 - c. The following are to be accomplished during the conference:

- 1) Review all Factory Mutual and Underwriters Laboratories requirements listed in the specifications and resolve any questions or conflicts that may arise.
- 2) Establish trade-related job schedules, including the installation of roof-mounted mechanical equipment.
- 3) Establish roofing schedule and work methods that will prevent roof damage.
- 4) Require that all roof penetrations and walls be in place prior to installing the roof.
- 5) Establish those areas on the job site that will be designated as work and storage areas for roofing operations.
- 6) Establish weather and working temperature conditions to which all parties must agree.

1.05 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. Summary of test results, indicating compliance with specified requirements.
 2. Storage and handling requirements and recommendations.
 3. Installation methods.
 4. Specimen warranty.
- C. Shop Drawings: Include layouts of roof panels, details of edge and penetration conditions, spacing and type of connections, flashings, underlayments, and special conditions.
 1. Show work to be field-fabricated or field-assembled.
- D. Selection Samples: For each roofing system specified, submit color chips representing manufacturer's full range of available colors and patterns.
- E. Verification Samples: For each roofing system specified, submit samples of minimum size 12 inches square, representing actual roofing metal, thickness, profile, color, and texture.
 1. Include typical panel joint in sample.
 2. Include typical fastening detail.
- F. Manufacturer Qualification Statement: Provide documentation showing metal roof panel fabricator is accredited under IAS AC472.
- G. Warranty: Submit specified manufacturer's warranty and ensure that forms have been completed in Owner's name and are registered with manufacturer.

1.06 QUALITY ASSURANCE

- A. Manufacturer Qualifications: Company specializing in manufacturing products specified in this section, with not less than three years of documented experience.
 1. Accredited by IAS in accordance with IAS AC472.
- B. Installer Qualifications: Company specializing in performing work of the type specified and with at least three years of documented experience and approved by manufacturer.

1.07 DELIVERY, STORAGE, AND HANDLING

- A. Provide strippable plastic protection on prefinished roofing panels for removal after installation.
- B. Store roofing panels on project site as recommended by manufacturer to minimize damage to panels prior to installation.

1.08 WARRANTY

- A. See Section 01 7800 - Closeout Submittals, for additional warranty requirements.
- B. Finish Warranty: Provide manufacturer's special warranty covering failure of factory-applied exterior finish on metal roof panels and agreeing to repair or replace panels that show evidence of finish degradation, including significant fading, chalking, cracking, or peeling within specified warranty period of twenty years from Date of Substantial Completion.

- C. Weathertightness Warranty: Provide manufacturer's warranty for weathertightness of roofing system, including agreement to repair or replace roofing that fails to keep out water within specified warranty period of not less than 20 years from date of Substantial Completion.
- D. Warranty shall be governed by the laws of the State of Alabama. All provisions to the contrary shall be excluded from the warranty.
- E. Exceptions NOT Permitted:
 - 1. Damage due to roof traffic.
 - 2. Damage due to wind of speed greater than 56 mph but less than 90 mph.
- F. General Contractor's Roofing Guarantee: Correct defective Work within a five year period after Date of Substantial Completion.
 - 1. Contractor to provide 5 year "Leak Free" warranty on Document 00 6536.10 - ABC Form C-9, General Contractor's Roofing Guarantee. Provide 3 copies, all original signatures.
 - 2. Guarantee 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

2.01 MANUFACTURERS

- A. Basis of Design:
 - 1. Metal Roof Panels: Equal to SSR SuperLok Roof Panel manufactured by Mesco Building Solutions: www.mescobuildingsolutions.com.
- B. Other Acceptable Manufacturers; Metal Roof Panels:
 - 1. ATAS International, Inc; Field-Lok 2 " FLR Series Double Lock Seam: www.atas.com/#sle.
 - 2. Berridge Manufacturing Company; Double Lock Zee-Lock: www.berridge.com/#sle.
 - 3. Firestone Building Products LLC; Una-Clad UC-6 Pittsburgh Lock: www.firestonebpco.com.
 - 4. Petersen Aluminum Corporation; Tite-Loc Plus Panel: www.pac-clad.com/#sle.
 - 5. Substitutions: See Section 01 6000 - Product Requirements.

2.02 ARCHITECTURAL METAL ROOF PANELS

- A. Architectural Metal Roofing: Provide complete engineered system complying with specified requirements and capable of remaining weathertight while withstanding anticipated movement of substrate and thermally induced movement of roofing system.
- B. Metal Panels: Factory-formed panels with factory-applied finish.
 - 1. Steel Panels:
 - a. Aluminum-zinc alloy-coated steel conforming to ASTM A792/A792M; minimum AZ55 coating.
 - b. Steel Thickness: Minimum 24 gage (0.024 inch).
 - 2. Profile: Standing seam, with minimum 2.0 inch seam height; concealed fastener system for field seaming with special tool.
 - 3. Texture: Smooth.
 - 4. Width: Maximum panel coverage of 16 inches.

2.03 ATTACHMENT SYSTEM

- A. Concealed System: Provide manufacturer's standard stainless steel concealed anchor clips designed for specific roofing system and engineered to meet performance requirements, including anticipated thermal movement.

2.04 FABRICATION

- A. Panels: Provide factory or field fabricated panels with applied finish and accessory items, using manufacturer's standard processes as required to achieve specified appearance and performance requirements.
- B. Joints: Provide captive gaskets, sealants, or separator strips at panel joints to ensure weathertight seals, eliminate metal-to-metal contact, and minimize noise from panel movements.

2.05 FINISHES

- A. Fluoropolymer Coil Coating System: Manufacturer's standard multi-coat aluminum coil coating system complying with AAMA 2605, including at least 70 percent polyvinylidene fluoride (PVDF) resin, and at least 80 percent of coil coated aluminum surfaces having minimum total dry film thickness (DFT) of 0.9 mil, 0.0009 inch; color and gloss to match sample.

2.06 ACCESSORIES

- A. Miscellaneous Sheet Metal Items: Provide flashings, gutters, downspouts, trim, moldings, closure strips, preformed crickets, caps, equipment curbs, and similar sheet metal items of the same material, thickness, and finish as used for the roofing panels. Items completely concealed after installation may optionally be made of stainless steel.
- B. Rib and Ridge Closures: Provide prefabricated, close-fitting components of steel with corrosion resistant finish or combination steel and closed-cell foam.
- C. Ridge Vents and Deck-top Intake Vent System.
 - 1. Sum of Net Free Area of Eave Vent(s) to equal or exceed Net Free Area of Ridge Vent.
 - 2. Petersen Aluminum Corp: www.pac-clad.com.
 - a. Ridge Vent: PAC SS Ridge Vent.
 - b. Roof Surface Intake Vent: PAC SS Intake Vent.
 - c. Edge Intake Vent: PAC ECO Vented Fascia.
 - 3. Substitutions: See Section 01 6000 - Product Requirements.
- D. Sealants:
 - 1. Exposed Sealant: Elastomeric; silicone, polyurethane, or silyl-terminated polyether/polyurethane.
 - 2. Concealed Sealant: Non-curing butyl sealant or tape sealant.
 - 3. Seam Sealant: Factory-applied, non-skinning, non-drying type.
- E. Thermal Insulation: Provide ventilating nailbase insulation specified in Section 07 2100.
 - 1. Roof Type R-3: Assembly to meet or exceed ASHRAE 90.1-2013 for CLIMATE ZONE 3 - Maximum U-Factor U-0.039 / Minimum Insulation R-25 C.I.
 - a. 3 inch thick vented nailbase insulation on roof deck.
 - b. R-19.5 spray insulation on bottom face of roof deck specified in Section 07 2119.
 - 2. Roof Type R-4: Assembly to meet or exceed ASHRAE 90.1-2013 for CLIMATE ZONE 3 - Maximum U-Factor U-0.039 / Minimum Insulation R-25 C.I.
 - a. 6 inch thick vented nailbase insulation on roof deck.
 - 3. Alternate No. 1 Roof type R-4:
 - a. In lieu of 6 inch vented nailbase insulation, provide 5/8 inch underlayment on 2 x 4 wood sleepers at 18 inches on center on 2 layers insulation staggered 6 inches minimum, total insulation value minimum R-25.
- F. Underlayment: Self-adhering rubber-modified asphalt sheet complying with ASTM D1970/D1970M; 40 mil total thickness; with strippable release film and woven polypropylene sheet top surface.
 - 1. Sheet Thickness: 40 mil (0.040 inch) minimum total thickness.
 - 2. Self Sealability: Passing nail sealability test specified in ASTM D1970/D1970M.
 - 3. Low Temperature Flexibility: Passing test specified in ASTM D1970/D1970M.

4. Water Vapor Permeance: 0.1 perm, maximum, when tested in accordance with ASTM E96/E96M Procedure A (desiccant method).
5. High Temperature Resistance: Up to 250 degrees F.
6. Manufacturers:
 - a. High temperature self-adhering underlayment recommended by manufacturer of roofing metal.
 - b. Firestone; Clad-Guard SA-S: www.firestonebpco.com.
 - c. Tamko; Tamko TW Metal and Tile Underlayment: www.tamko.com.
 - d. Henry Company; Blueskin PE200HT: www.henry.com/#sle.
 - e. Polyglass USA, Inc; Polystick MTS Self-Adhered High Temperature Roof Underlayment: www.polyglass.us/#sle.
 - f. Substitutions: See Section 01 6000 - Product Requirements.

PART 3 EXECUTION

3.01 EXAMINATION

- A. Do not begin installation of preformed metal roof panels until substrates have been properly prepared.
- B. If substrate preparation is the responsibility of another installer, notify Architect of unsatisfactory preparation before proceeding.

3.02 PREPARATION

- A. Broom clean wood sheathing prior to installation of roofing system.
- B. Coordinate roofing work with provisions for roof drainage, flashing, trim, penetrations, and other adjoining work to assure that the completed roof will be free of leaks.
- C. Remove protective film from surface of roof panels immediately prior to installation. Strip film carefully, to avoid damage to prefinished surfaces.
- D. Separate dissimilar metals by applying a bituminous coating, self-adhering rubberized asphalt sheet, or other permanent method approved by roof panel manufacturer.
- E. Where metal will be in contact with wood or other absorbent material subject to wetting, seal joints with sealing compound and apply one coat of heavy-bodied bituminous paint.

3.03 INSTALLATION

- A. Overall: Install roofing system in accordance with approved shop drawings and panel manufacturer's instructions and recommendations, as applicable to specific project conditions. Anchor all components of roofing system securely in place while allowing for thermal and structural movement.
 1. Install roofing system with concealed clips and fasteners, except as otherwise recommended by manufacturer for specific circumstances.
 2. Minimize field cutting of panels. Where field cutting is absolutely required, use methods that will not distort panel profiles. Use of torches for field cutting is absolutely prohibited.
- B. Accessories: Install all components required for a complete roofing assembly, including flashings, gutters, downspouts, trim, moldings, closure strips, preformed crickets, caps, equipment curbs, rib closures, ridge closures, and similar roof accessory items.
- C. Roof Panels: Install panels in strict accordance with manufacturer's instructions, minimizing transverse joints except at junction with penetrations.
 1. Form weathertight standing seams incorporating concealed clips, using an automatic mechanical seaming device approved by the panel manufacturer.
 2. Incorporate concealed clips at panel joints, and apply snap-on battens to provide weathertight joints.
 3. Provide sealant tape or other approved joint sealer at lapped panel joints.
 4. Install sealant or sealant tape, as recommended by panel manufacturer, at end laps and side joints.

3.04 CLEANING

- A. Clean exposed sheet metal work at completion of installation. Remove grease and oil films, excess joint sealer, handling marks, and debris from installation, leaving the work clean and unmarked, free from dents, creases, waves, scratch marks, or other damage to the finish.

3.05 PROTECTION

- A. Do not permit storage of materials or roof traffic on installed roof panels. Provide temporary walkways or planks as necessary to avoid damage to completed work. Protect roofing until completion of project.
- B. Touch-up, repair, or replace damaged roof panels or accessories before Date of Substantial Completion.

END OF SECTION

SECTION 07 4646
FIBER-CEMENT SIDING

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Fiber-cement siding.

1.02 RELATED REQUIREMENTS

- A. Section 05 4000 - Cold-Formed Metal Framing: Siding substrate.
- B. Section 07 2500 - Weather Barriers: Weather barrier under siding.
- C. Section 09 9113 - Exterior Painting: Field painting.

1.03 REFERENCE STANDARDS

- A. ASTM C1186 - Standard Specification for Flat Fiber Cement Sheets; 2008 (Reapproved 2016).

1.04 SUBMITTALS

- A. See Section 01 3000 - Administrative Requirements, for submittal procedures.
- B. Product Data: Submit manufacturer's data sheets on each product to be used, including:
 - 1. Manufacturer's requirements for related materials to be installed by others.
 - 2. Preparation instructions and recommendations.
 - 3. Storage and handling requirements and recommendations.
 - 4. Installation methods, including nail patterns.
- C. Installer's Qualification Statement.
- D. Maintenance Instructions: Periodic inspection recommendations and maintenance procedures.
- E. Warranty: Submit copy of manufacturer's warranty, made out in Owner's name, showing that it has been registered with manufacturer.

1.05 QUALITY ASSURANCE

- A. Installer Qualifications: Company specializing in performing work of the type specified in this section with minimum five years of experience.

1.06 DELIVERY, STORAGE, AND HANDLING

- A. Store products under waterproof cover and elevated above grade, on a flat surface.

1.07 WARRANTY

- A. See Section 01 7800 - Closeout Submittals, for additional warranty requirements.
- B. Correct defective work within a five year period after Date of Substantial Completion.
- C. Provide multi-year manufacturer warranty as indicated under Siding article sub-heading "Warranty".

PART 2 PRODUCTS

2.01 FIBER-CEMENT SIDING

- A. Lap Siding: Individual horizontal boards made of cement and cellulose fiber formed under high pressure with integral surface texture, complying to ASTM C1186, Type A, Grade II; with machined edges, for nail attachment.
 - 1. Style: Beaded lap style.
 - 2. Texture: Smooth.
 - 3. Length: 12 ft, nominal.
 - 4. Width (Height): 8-1/4 inches.
 - 5. Exposure: 7 inches.
 - 6. Thickness: 5/16 inch, nominal.
 - 7. Finish: Unfinished.
 - 8. Warranty: 30 year limited; nontransferable.

9. Manufacturers:
 - a. James Hardie Building Products, Inc; Hardiplank Beaded Smooth Lap Siding: www.jameshardie.com/#sle.
 - b. Substitutions: See Section 01 6000 - Product Requirements.
- B. Shingle Panels: Panels giving appearance of multiple shingles made of cement and cellulose fiber formed under high pressure with integral surface texture, complying with ASTM C1186, Type A, Grade II; with machined edges, for nail attachment.
 1. Style: Random width, staggered edge.
 2. Texture: Smooth.
 3. Length: 48 inches.
 4. Width (Height): 6 inches.
 5. Thickness: 1/4 inch, nominal.
 6. Finish: Factory applied stain.
 7. Warranty: 30 year limited; nontransferable.
 8. Manufacturers:
 - a. Allura, a division of Plycem USA, Inc; 7 Inch Staggered Edge: www.allurausa.com/#sle.
 - b. James Hardie Building Products, Inc; Hardishingle Staggered Edge Panel: www.jameshardie.com/#sle.
 - c. Nichiha USA, Inc; Nichishake Fiber Cement Shake Siding: www.nichiha.com/#sle.
 - d. Substitutions: See Section 01 6000 - Product Requirements.

2.02 ACCESSORIES

- A. Furring Strips: Galvanized metal channels.
- B. Trim: Same material and texture as siding.
- C. Fiber Cement Siding Metal Trim: Extruded aluminum alloy 6063-T5 temper.
 1. Dimension and Layout: As indicated on drawings.
 2. Finish: Clear anodized.
 3. Manufacturers:
 - a. Tamlyn; XtremeTrim: www.tamlyn.com/#sle.
 - b. Substitutions: See Section 01 6000 - Product Requirements.
- D. Fasteners: Galvanized or corrosion resistant; length as required to penetrate minimum 1-1/4 inch.

PART 3 EXECUTION

3.01 EXAMINATION

- A. Examine substrate, clean and repair as required to eliminate conditions that would be detrimental to proper installation.
- B. Verify that weather barrier has been installed over substrate completely and correctly.
- C. Do not begin until unacceptable conditions have been corrected.
- D. If substrate preparation is responsibility of another installer, notify Architect of unsatisfactory preparation before proceeding.

3.02 PREPARATION

- A. Install Sheet Metal Flashing:
 1. Above door and window trim and casings.
 2. Above horizontal trim in field of siding.

3.03 INSTALLATION

- A. Install in accordance with manufacturer's instructions and recommendations.
 1. Read warranty and comply with terms necessary to maintain warranty coverage.
 2. Install in accordance with conditions stated in model code evaluation report applicable to location of project.

3. Use trim details indicated on drawings.
 4. Touch up field cut edges before installing.
 5. Pre-drill nail holes if necessary to prevent breakage.
- B. Over Masonry Walls: Install furring strips of adequate thickness to accept full length of nails and spaced at 16 inches on center; leave space at top and bottom open; top may be behind soffit; at bottom install insect screen over opening by wrapping a strip of screen over bottom ends of vertical furring strips.
 - C. Over Steel Studs: Use hot-dipped galvanized self-tapping screws, with the points of at least three screws penetrating each stud the panel crosses and at panel ends.
 - D. Allow space for thermal movement between both ends of siding panels that butt against trim; seal joint between panel and trim with specified sealant.
 - E. Joints in Horizontal Siding: Avoid joints in lap siding except at corners; where joints are inevitable stagger joints between successive courses.
 - F. Do not install siding less than 6 inches from surface of ground nor closer than 1 inch to roofs, patios, porches, and other surfaces where water may collect.
 - G. After installation, seal joints except lap joints of lap siding; seal around penetrations, and paint exposed cut edges.
 - H. Finish Painting: Refer to Section 09 9113.

3.04 PROTECTION

- A. Protect installed products until Date of Substantial Completion.
- B. Touch-up, repair or replace damaged products before Date of Substantial Completion.

END OF SECTION

**SECTION 07 8400
FIRESTOPPING**

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Firestopping materials.
- B. Firestopping of all penetrations and interruptions to fire rated assemblies, whether indicated on drawings or not, and other openings indicated.

1.02 RELATED REQUIREMENTS

- A. Section 04800 - Unit Masonry Assemblies.
- B. Section 09 2116 - Gypsum Board Assemblies: Gypsum wallboard fireproofing.

1.03 REFERENCE STANDARDS

- A. ASTM E119 - Standard Test Methods for Fire Tests of Building Construction and Materials; 2018c.
- B. ASTM E814 - Standard Test Method for Fire Tests of Penetration Firestop Systems; 2013a (Reapproved 2017).
- C. ASTM G21 - Standard Practice for Determining Resistance of Synthetic Polymeric Materials to Fungi; 2015.
- D. ITS (DIR) - Directory of Listed Products; current edition.
- E. FM 4991 - Approval Standard for Firestop Contractors; 2013.
- F. FM (AG) - FM Approval Guide; current edition.
- G. UL 1479 - Standard for Fire Tests of Penetration Firestops; Current Edition, Including All Revisions.
- H. UL (FRD) - Fire Resistance Directory; current edition.

1.04 SUBMITTALS

- A. See Section 01 3000 - Administrative Requirements, for submittal procedures.
- B. Schedule of Firestopping: List each type of penetration, fire rating of the penetrated assembly, and firestopping test or design number. Utilize applicable or equivalent forms at the end of this Section.
- C. Product Data: Provide data on product characteristics.
- D. Manufacturer's Installation Instructions: Indicate preparation and installation instructions.
- E. Manufacturer's Certificate: Certify that products meet or exceed specified requirements.
- F. Certificate from authority having jurisdiction indicating approval of materials used.
- G. Installer Qualification: Submit qualification statements for installing mechanics.

1.05 QUALITY ASSURANCE

- A. Fire Testing: Provide firestopping assemblies of designs which provide the specified fire ratings when tested in accordance with methods indicated.
 - 1. Listing in the current classification or certification books of UL, FM, or ITS (Warnock Hersey) will be considered as constituting an acceptable test report.
 - 2. Valid evaluation report published by ICC Evaluation Service, Inc. (ICC-ES) at www.icc-es.org will be considered as constituting an acceptable test report.
 - 3. Current evaluation reports published by CABO, ICBO, or BOCA will be considered as constituting an acceptable test report.
 - 4. Submission of actual test reports is required for assemblies for which none of the above substantiation exists.

- B. Manufacturer Qualifications: Company specializing in manufacturing the products specified in this section with minimum three years documented experience.
- C. Installer Qualifications: Company specializing in performing the work of this section and:
 - 1. Approved by Factory Mutual Research Corporation under FM 4991, or meeting any two of the following requirements:
 - 2. Verification of minimum three years documented experience installing work of this type.
 - 3. Verification of at least five satisfactorily completed projects of comparable size and type.
 - 4. Licensed by local authorities having jurisdiction (AHJ).
 - 5. Approved by firestopping manufacturer.
- D. Installing Mechanic's Qualifications: Trained by firestopping manufacturer and able to provide evidence thereof.

1.06 MOCK-UP

- A. Install one firestopping assembly representative of each fire rating design required on project.
 - 1. Where one design may be used for different penetrating items or in different wall constructions, install one assembly for each different combination.
 - 2. Where firestopping is intended to fill a linear opening, install minimum of 1 linear ft.
- B. Obtain approval of authorities having jurisdiction (AHJ) before proceeding.
- C. If accepted, mock-up will represent minimum standard for the Work.
- D. If accepted, mock-up may remain as part of the Work. Remove and replace mock-ups not accepted.

1.07 ENVIRONMENTAL REQUIREMENTS

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

PART 2 PRODUCTS

2.01 MANUFACTURERS

- A. Firestopping Manufacturers:
 - 1. 3M Fire Protection Products: www.3m.com/firestop/#sle.
 - 2. A/D Fire Protection Systems Inc: www.adfire.com/#sle.
 - 3. Hilti, Inc: www.us.hilti.com/#sle.
 - 4. Nelson FireStop Products: www.nelsonfirestop.com/#sle.
 - 5. Specified Technologies Inc: www.stifirestop.com/#sle.
 - 6. Tremco Commercial Sealants & Waterproofing: www.tremcosealants.com/#sle.

2.02 MATERIALS

- A. Firestopping Materials: Any materials meeting requirements.
- B. Mold and Mildew Resistance: Provide firestopping materials with mold and mildew resistance rating of zero(0) in accordance with ASTM G21.
- C. Primers, Sleeves, Forms, Insulation, Packing, Stuffing, and Accessories: Provide type of materials as required for tested firestopping assembly.
- D. Fire Ratings: Refer to drawings for required systems and ratings.

2.03 FIRESTOPPING ASSEMBLIES

- A. Firestopping: Any material meeting requirements.
 - 1. Fire Ratings: Use system that is listed by FM (AG), ITS (DIR), or UL (FRD) and tested in accordance with ASTM E814, ASTM E119, or UL 1479 with F Rating equal to fire rating of penetrated assembly and minimum T Rating Equal to F Rating and in compliance with other specified requirements.

2.04 MATERIALS

- A. Elastomeric Silicone Firestopping: Single component silicone elastomeric compound and compatible silicone sealant; conforming to the following:
 - 1. Manufacturers:
 - a. A/D Fire Protection Systems Inc; Product FireBarrier Silicone: www.adfire.com.
 - b. 3M Fire Protection Products; Product Fire Barrier 1000 N/S: www.3m.com/firestop.
 - c. Specified Technologies, Inc; Product PEN300: www.stifirestop.com.
 - d. Grace Construction Products; Product FlameSafe FS 1900: www.na.graceconstruction.com
 - e. Substitutions: See Section 01 6000 - Product Requirements.
- B. Foam Firestopping: Multiple component foam compound; conforming to the following:
 - 1. Manufacturers:
 - a. 3M Fire Protection Products; Product Fire Barrier Silicone RTV Foam 2001: www.3m.com/firestop.
 - b. Hilti, Inc; Product CP 620 Fire Foam: www.hilti.com.
 - c. Specified Technologies, Inc; Product PEN200: www.stifirestop.com.
 - d. Substitutions: See Section 01 6000 - Product Requirements.
- C. Fiber Packing Material: Mineral fiber packing insulation; conforming to the following:
 - 1. Manufacturers:
 - a. A/D Fire Protection Systems Inc; Product FireBarrier Mineral Wool: www.adfire.com.
 - b. Hilti, Inc; Product Mineral Wool (4 pcf)Product [CP 620 Fire Foam]: www.hilti.com.
 - c. USG Corporation Thermafiber; Product Safing Insulation.
 - d. Substitutions: See Section 01 6000 - Product Requirements.
- D. Firestop Devices: Mechanical device with incombustible filler and sheet stainless steel jacket; conforming to the following:
 - 1. Manufacturers:
 - a. Grace Construction Products; Product FlameSafe Intumescent Wrap Strip and Devices: www.na.graceconstruction.com.
 - b. 3M Fire Protection Products; Product Fire Barrier FS-195+ and RC-1 Restricting Collar: www.3m.com/firestop.
 - c. Specified Technologies, Inc; Product LCC Intumescent Collars: www.stifirestop.com.
 - d. A/D Fire Protection Systems Inc; Product Firebarrier Collars, Wrap Strip and Collar Strips.
 - e. Substitutions: See Section 01 6000 - Product Requirements.
- E. Intumescent Putty: Compound which expands on exposure to surface heat gain; conforming to the following:
 - 1. Manufacturers:
 - a. Grace Construction Products; Product FlameSafe FSP Putty: www.na.graceconstruction.com.
 - b. 3M Fire Protection Products; Product Fire Barrier Moldable Putty+: www.3m.com/firestop.
 - c. Hilti, Inc; Product CP 617 Putty Pad, CP 618 Putty Stick: www.hilti.com.
 - d. Specified Technologies, Inc; Product SSP Intumescent Putty: www.stifirestop.com.
 - e. Substitutions: See Section 01 6000 - Product Requirements.
- F. Firestop Pillows: Formed mineral fiber pillows; conforming to the following:
 - 1. Manufacturers:
 - a. Grace Construction Products; Product FlameSafe Pillows: www.na.graceconstruction.com.
 - b. A/D Fire Protection Systems Inc; Product Firebarrier Pillows: www.nelsonfirestop.com.
 - c. Specified Technologies, Inc; Product SSB Firestop Pillows: www.stifirestop.com.
 - d. Substitutions: See Section 01 6000 - Product Requirements.

- G. Primers, Sleeves, Forms, and Accessories: Type required for tested assembly design.

PART 3 EXECUTION

3.01 EXAMINATION

- A. Verify openings are ready to receive the work of this section.

3.02 PREPARATION

- A. Clean substrate surfaces of dirt, dust, grease, oil, loose material, or other matter which may affect bond of firestopping material.
B. Remove incompatible materials which may affect bond.
C. Install backing materials to prevent liquid material from leakage.

3.03 INSTALLATION

- A. Install materials in manner described in fire test report and in accordance with manufacturer's instructions, completely closing openings.
B. Do not cover installed firestopping until inspected by authorities having jurisdiction.
C. Install labeling required by code.

3.04 FIELD QUALITY CONTROL

- A. Repair or replace penetration firestopping and joints at locations where inspection results indicate firestopping or joints do not meet specified requirements.

3.05 CLEANING

- A. Clean adjacent surfaces of firestopping materials.

3.06 CLEANING AND PROTECTION

- A. Clean adjacent surfaces of firestopping materials.
B. Protect adjacent surfaces from damage by material installation.

END OF SECTION

FIRESTOPPING SCHEDULE

SINGLE UNINSULATED METALLIC PIPING & CONDUIT

Manufacturer/Product Name:

Color:

Accessories:

Wall or Floor Const.	Item Size/ Description	Sleeve Type	"F" Rating	"T" Rating	Annular Space	Firestop Thick-ness	Tested Assembly Number

MULTIPLE UNINSULATED METALLIC PIPING & CONDUIT

Manufacturer/Product Name:

Color:

Accessories:

Wall or Floor Const.	Item Size/ Description	Sleeve Type	"F" Rating	"T" Rating	Annular Space	Firestop Thick-ness	Tested Assembly Number

FIRESTOPPING SCHEDULE

UNINSULATED PLASTIC PIPING & CONDUIT

Manufacturer/Product Name:

Color:

Accessories:

Wall or Floor Const.	Item Size/ Description	Sleeve Type	"F" Rating	"T" Rating	Annular Space	Firestop Thick-ness	Tested Assembly Number

GLASS PIPING

Manufacturer/Product Name:

Color:

Accessories:

Wall or Floor Const.	Sleeve Type	"F" Rating	"T" Rating	Annular Space	Firestop Thickness	Tested Assembly Number

FIRESTOPPING SCHEDULE

INSULATED METALLIC PIPING

Manufacturer/Product Name:

Color:

Accessories:

Wall or Floor Const.	Sleeve Type	"F" Rating	"T" Rating	Annular Space	Firestop Thickness	Tested Assembly Number

BLANKS, VOIDS, HOLES

Manufacturer/Product Name:

Color:

Accessories:

Wall or Floor Const.	Size	"F" Rating	"T" Rating	Firestop Thickness	Tested Assembly Number

FIRESTOPPING SCHEDULE

INSULATED HIGH TEMPERATURE FLUES & EXHAUST PIPES

(Boiler flues, generator exhausts insulated with calcium silicate or other non-combustible insulation)

Manufacturer/Product Name:

Color:

Accessories:

Wall or Floor. Const.	Item Size/Description	Sleeve Type	"F" Rating	"T" Rating	Annular Space Range	Firestop Thickness	Tested Assembly Number

ELECTRICAL/TELEPHONE CABLE

Cable Type:

Manufacturer/Product Name:

Color:

Accessories:

Wall or Floor. Const.	Single or Bundled	Sleeve Type	"F" Rating	"T" Rating	Annular Space	Firestop Thickness	Tested Assembly Number.

FIRESTOPPING SCHEDULE

CABLE TRAY

Manufacturer/Product Name:

Color:

Accessories:

Wall or Floor Const.	Item Size/Description	Sleeve Type	"F" Rating	"T" Rating	Annular Space Range	Firestop Thick-ness	Tested Assembly Number

BUS DUCT

Manufacturer/Product Name:

Color:

Accessories:

Wall or Floor Const.	Item Size/Description	"F" Rating	"T" Rating	Annular Space	Firestop Thick-ness	Tested Assembly Number.

FIRESTOPPING SCHEDULE

FIRE RATED JOINTS

Manufacturer/Product Name:

Color:

Accessories:

Joint Description	“F” Rating	“T” Rating	Firestop Thickness	Tested Assembly Number.

MISCELLANEOUS PENETRATIONS

Manufacturer/Product Name:

Color:

Accessories:

Wall or Floor. Const.	Item Size/Description	Sleeve Type	“F” Rating	“T” Rating	Annular Space Range	Firestop Thick- ness	Tested Assembly Number

FIRESTOPPING SCHEDULE

ENGINEERING JUDGMENTS/ OVERSIZE OR UNUSUAL CONDITIONS

(Submit Actual Installation Drawing and Letter of Certification)

Manufacturer/Product Name:

Color:

Accessories:

Wall or Floor. Const.	Item Description	Sleeve Type	"F" Rating	"T" Rating	Annular Space Range	Firestop Thick-ness	Packing Thick-ness

END OF SECTION

SECTION 07 9200
JOINT SEALANTS

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Nonsag gunnable joint sealants.
- B. Self-leveling pourable joint sealants.
- C. Joint backings and accessories.

1.02 RELATED REQUIREMENTS

- A. Section 07 2500 - Weather Barriers: Sealants required in conjunction with air barriers and vapor retarders.
- B. Section 07 8400 - Firestopping: Firestopping sealants.
- C. Section 07 9100 - Preformed Joint Seals: Precompressed foam, gaskets, and strip seals.
- D. Section 07 9513 - Expansion Joint Cover Assemblies: Sealants forming part of expansion joint cover assemblies.
- E. Section 08 7100 - Door Hardware: Setting exterior door thresholds in sealant.
- F. Section 08 8000 - Glazing: Glazing sealants and accessories.
- G. Section 09 2116 - Gypsum Board Assemblies: Sealing acoustical and sound-rated walls and ceilings.
- H. Section 09 2216 - Non-Structural Metal Framing: Sealing between framing and adjacent construction in acoustical and sound-rated walls and ceilings.
- I. Section 09 3000 - Tiling: Sealant between tile and plumbing fixtures and at junctions with other materials and changes in plane.

1.03 REFERENCE STANDARDS

- A. ASTM C661 - Standard Test Method for Indentation Hardness of Elastomeric-Type Sealants by Means of a Durometer; 2015.
- B. ASTM C794 - Standard Test Method for Adhesion-In-Peel of Elastomeric Joint Sealants; 2018.
- C. ASTM C834 - Standard Specification for Latex Sealants; 2017.
- D. ASTM C919 - Standard Practice for Use of Sealants in Acoustical Applications; 2018.
- E. ASTM C920 - Standard Specification for Elastomeric Joint Sealants; 2018.
- F. ASTM C1087 - Standard Test Method for Determining Compatibility of Liquid-Applied Sealants with Accessories Used in Structural Glazing Systems; 2016.
- G. ASTM C1193 - Standard Guide for Use of Joint Sealants; 2016.
- H. ASTM C1248 - Standard Test Method for Staining of Porous Substrate by Joint Sealants; 2008 (Reapproved 2012).
- I. ASTM C1311 - Standard Specification for Solvent Release Sealants; 2014.
- J. ASTM C1330 - Standard Specification for Cylindrical Sealant Backing for Use with Cold Liquid-Applied Sealants; 2018.
- K. ASTM C1521 - Standard Practice for Evaluating Adhesion of Installed Weatherproofing Sealant Joints; 2019.
- L. ASTM E90 - Standard Test Method for Laboratory Measurement of Airborne Sound Transmission Loss of Building Partitions and Elements; 2009 (Reapproved 2016).
- M. SWRI (VAL) - SWR Institute Validated Products Directory; Current Edition.

1.04 SUBMITTALS

- A. See Section 01 3000 - Administrative Requirements, for submittal procedures.

- B. Product Data for Sealants: Submit manufacturer's technical data sheets for each product to be used, that includes the following.
 - 1. Physical characteristics, including movement capability, VOC content, hardness, cure time, and color availability.
 - 2. List of backing materials approved for use with the specific product.
 - 3. Substrates that product is known to satisfactorily adhere to and with which it is compatible.
 - 4. Substrates the product should not be used on.
 - 5. Substrates for which use of primer is required.
 - 6. Substrates for which laboratory adhesion and/or compatibility testing is required.
 - 7. Installation instructions, including precautions, limitations, and recommended backing materials and tools.
 - 8. Sample product warranty.
 - 9. Certification by manufacturer indicating that product complies with specification requirements.
 - 10. SWRI Validation: Provide currently available sealant product validations as listed by SWRI (VAL) for specified sealants.
- C. Product Data for Accessory Products: Submit manufacturer's technical data sheet for each product to be used, including physical characteristics, installation instructions, and recommended tools.
- D. Color Cards for Selection: Where sealant color is not specified, submit manufacturer's color cards showing standard colors available for selection.
- E. Samples for Verification: Where custom sealant color is specified, obtain directions from Architect and submit at least two physical samples for verification of color of each required sealant.
- F. Preconstruction Laboratory Test Reports: Submit at least four weeks prior to start of installation.
- G. Installation Plan: Submit at least four weeks prior to start of installation.
- H. Preinstallation Field Adhesion Test Plan: Submit at least two weeks prior to start of installation.
- I. Preinstallation Field Adhesion Test Reports: Submit filled out Preinstallation Field Adhesion Test Reports log within 10 days after completion of tests; include bagged test samples and photographic records.
- J. Installation Log: Submit filled out log for each length or instance of sealant installed.
- K. Field Quality Control Log: Submit filled out log for each length or instance of sealant installed, within 10 days after completion of inspections/tests; include bagged test samples and photographic records, if any.

1.05 QUALITY ASSURANCE

- A. Manufacturer Qualifications: Company specializing in manufacturing the products specified in this section with minimum five years documented experience.
- B. Installer Qualifications: Company specializing in performing the work of this section and with at least three years of documented experience and approved by manufacturer.
- C. Preconstruction Laboratory Testing: Arrange for sealant manufacturer(s) to test each combination of sealant, substrate, backing, and accessories.
 - 1. Adhesion Testing: In accordance with ASTM C794.
 - 2. Compatibility Testing: In accordance with ASTM C1087.
 - 3. Allow sufficient time for testing to avoid delaying the work.
 - 4. Deliver to manufacturer sufficient samples for testing.
 - 5. Report manufacturer's recommended corrective measures, if any, including primers or techniques not indicated in product data submittals.
 - 6. Testing is not required if sealant manufacturer provides data showing previous testing, not older than 24 months, that shows satisfactory adhesion, lack of staining, and compatibility.

- D. Installation Plan: Include schedule of sealed joints, including the following.
1. Joint width indicated in Contract Documents.
 2. Joint depth indicated in Contract Documents; to face of backing material at centerline of joint.
 3. Method to be used to protect adjacent surfaces from sealant droppings and smears, with acknowledgement that some surfaces cannot be cleaned to like-new condition and therefore prevention is imperative.
 4. Approximate date of installation, for evaluation of thermal movement influence.
 5. Installation Log Form: Include the following data fields, with known information filled out.
 - a. Unique identification of each length or instance of sealant installed.
 - b. Location on project.
 - c. Substrates.
 - d. Sealant used.
 - e. Stated movement capability of sealant.
 - f. Primer to be used, or indicate as "No primer" used.
 - g. Size and actual backing material used.
 - h. Date of installation.
 - i. Name of installer.
 - j. Actual joint width; provide space to indicate maximum and minimum width.
 - k. Actual joint depth to face of backing material at centerline of joint.
 - l. Air temperature.
- E. Preinstallation Field Adhesion Test Plan: Include destructive field adhesion testing of one sample of each combination of sealant type and substrate, except interior acrylic latex sealants, and include the following for each tested sample.
1. Identification of testing agency.
 2. Name(s) of sealant manufacturers' field representatives who will be observing
 3. Preinstallation Field Adhesion Test Log Form: Include the following data fields, with known information filled out.
 - a. Substrate; if more than one type of substrate is involved in a single joint, provide two entries on form, for testing each sealant substrate side separately.
 - b. Test date.
 - c. Location on project.
 - d. Sealant used.
 - e. Test method used.
 - f. Date of installation of field sample to be tested.
 - g. Copy of test method documents.
 - h. Age of sealant upon date of testing.
 - i. Test results, modeled after the sample form in the test method document.
 - j. Indicate use of photographic record of test.
- F. Field Adhesion Test Procedures:
1. Allow sealants to fully cure as recommended by manufacturer before testing.
 2. Have a copy of the test method document available during tests.
 3. Take photographs or make video records of each test, with joint identification provided in the photos/videos; for example, provide small erasable whiteboard positioned next to joint.
 4. Record the type of failure that occurred, other information required by test method, and the information required on the Field Quality Control Log.
 5. If any combination of sealant type and substrate does not show evidence of minimum adhesion or shows cohesion failure before minimum adhesion, report results to Architect.
- G. Non-Destructive Field Adhesion Test: Test for adhesion in accordance with ASTM C1521, using Nondestructive Spot Method.
1. Record results on Field Quality Control Log.
 2. Repair failed portions of joints.

1.06 WARRANTY

- A. See Section 01 7800 - Closeout Submittals, for additional warranty requirements.
- B. Correct defective work within a five year period after Date of Substantial Completion.
- C. Warranty: Include coverage for installed sealants and accessories that fail to achieve watertight seal, exhibit loss of adhesion or cohesion, or do not cure.

PART 2 PRODUCTS

2.01 MANUFACTURERS

- A. Non-Sag Sealants: Permits application in joints on vertical surfaces without sagging or slumping.
 - 1. BASF Construction Chemicals-Building Systems: www.buildingsystems.basf.com.
 - 2. Bostik Inc: www.bostik-us.com/#sle.
 - 3. Dow Chemical Company:
consumer.dow.com/en-us/industry/ind-building-construction.html/#sle.
 - 4. Hilti, Inc: www.us.hilti.com/#sle.
 - 5. Momentive Performance Materials, Inc (formerly GE Silicones):
www.momentive.com/#sle.
 - 6. Pecora Corporation: www.pecora.com/#sle.
 - 7. Tremco Global Sealants: www.tremcosealants.com.
 - 8. Sherwin-Williams Company: www.sherwin-williams.com/#sle.
 - 9. Sika Corporation: www.usa-sika.com/#sle.
 - 10. W.R. Meadows, Inc: www.wrmeadows.com/#sle.
 - 11. Substitutions: See Section 01 6000 - Product Requirements.
- B. Self-Leveling Sealants: Pourable or self-leveling sealant that has sufficient flow to form a smooth, level surface when applied in a horizontal joint.
 - 1. BASF Construction Chemicals-Building Systems: www.buildingsystems.basf.com/#sle.
 - 2. Bostik Inc: www.bostik-us.com/#sle.
 - 3. Dayton Superior Corporation: www.daytonsuperior.com/#sle.
 - 4. Dow Chemical Company:
consumer.dow.com/en-us/industry/ind-building-construction.html/#sle.
 - 5. Pecora Corporation: www.pecora.com/#sle.
 - 6. Tremco Global Sealants: www.tremcosealants.com.
 - 7. Sherwin-Williams Company: www.sherwin-williams.com/#sle.
 - 8. Sika Corporation: www.usa-sika.com/#sle.
 - 9. W.R. Meadows, Inc: www.wrmeadows.com/#sle.

2.02 JOINT SEALANT APPLICATIONS

- A. Scope:
 - 1. Exterior Joints: Seal open joints, whether or not the joint is indicated on drawings, unless specifically indicated not to be sealed. Exterior joints to be sealed include, but are not limited to, the following items.
 - a. Joints between door, window, and other frames and adjacent construction.
 - b. Joints between different exposed materials.
 - c. Openings below ledge angles in masonry.
 - d. Other joints indicated below.
 - 2. Interior Joints: Do not seal interior joints unless specifically indicated to be sealed. Interior joints to be sealed include, but are not limited to, the following items.
 - a. Joints between door, window, and other frames and adjacent construction.
 - b. In sound-rated wall and ceiling assemblies, gaps at electrical outlets, wiring devices, piping, and other openings; between wall/ceiling and other construction; and other flanking sound paths.
 - 1) Exception: Through-penetrations in sound-rated assemblies that are also fire-rated assemblies.

- c. Other joints indicated below.
3. Do not seal the following types of joints.
 - a. Intentional weepholes in masonry.
 - b. Weep holes in storefront work and similar components requiring water evacuation.
 - c. Joints indicated to be treated with manufactured expansion joint cover or some other type of sealing device.
 - d. Joints where sealant is specified to be provided by manufacturer of product to be sealed.
 - e. Joints where installation of sealant is specified in another section.
 - f. Joints between suspended panel ceilings/grid and walls.
- B. Exterior Joints: Use non-sag non-staining silicone sealant, Type A or B, unless otherwise indicated.
 1. Lap Joints in Sheet Metal Fabrications: Butyl rubber, non-curing; Type H.
 2. Control and Expansion Joints in Concrete Paving: Self-leveling polyurethane "traffic-grade" sealant; Type F or H.
 3. Cooling Tower and Fountain Basins: Nonsag polyurethane sealant for continuous immersion; Type E or J.
- C. Type D - Interior Joints: Use non-sag polyurethane sealant, unless otherwise indicated.
 1. Type E - Wall and Ceiling Joints in Wet Areas: Non-sag polyurethane sealant for continuous liquid immersion.
 2. Type F - Floor Joints in Wet Areas: Non-sag polyurethane "traffic-grade" sealant suitable for continuous liquid immersion.
 3. Type C - Joints between Fixtures in Wet Areas and Floors, Walls, and Ceilings: Mildew-resistant silicone sealant; white.
 4. In Sound-Rated Assemblies: Acrylic emulsion latex sealant especially recommended as acoustical sealant..
 5. Other Floor Joints: Self-leveling polyurethane "traffic-grade" sealant; Type J.
- D. Interior Wet Areas: Bathrooms, restrooms, kitchens, food service areas, and food processing areas; fixtures in wet areas include plumbing fixtures, food service equipment, countertops, cabinets, and other similar items.

2.03 JOINT SEALANTS - GENERAL

- A. Colors: As selected from manufacturer's full range.

2.04 NONSAG JOINT SEALANTS

- A. Type A - Non-Staining Silicone Sealant: ASTM C920, Grade NS, Uses M and A; not expected to withstand continuous water immersion or traffic.
 1. Movement Capability: Plus 100 percent, minus 50 percent, minimum.
 2. Non-Staining To Porous Stone: Non-staining to light-colored natural stone when tested in accordance with ASTM C1248.
 3. Dirt Pick-Up: Reduced dirt pick-up compared to other silicone sealants.
 4. Hardness Range: 15 to 35, Shore A, when tested in accordance with ASTM C661.
 5. Color: To be selected by Architect from manufacturer's standard range.
 6. Cure Type: Single-component, neutral moisture curing.
 7. Service Temperature Range: Minus 65 to 180 degrees F.
 8. Manufacturers:
 - a. Dow Chemical Company; DOWSIL 790 Silicone Building Sealant: consumer.dow.com/en-us/industry/ind-building-construction.html/#sle.
 - b. Pecora Corporation; 890NST Ultra Low Modulus Silicone Sealant Class 100: www.pecora.com/#sle.
 - c. Sika Corporation; Sikasil WS-290: www.usa-sika.com/#sle.
 - d. Tremco Commercial Sealants & Waterproofing; Spectrem 1: www.tremcosealants.com/#sle.
 - e. Substitutions: See Section 01 6000 - Product Requirements.

- B. Type B - Silicone Sealant: ASTM C920, Grade NS, Uses M and A; not expected to withstand continuous water immersion or traffic.
1. Movement Capability: Plus and minus 25 percent, minimum.
 2. Hardness Range: 15 to 35, Shore A, when tested in accordance with ASTM C661.
 3. Color: To be selected by Architect from manufacturer's standard range.
 4. Cure Type: Single-component, neutral moisture curing
 5. Service Temperature Range: Minus 65 to 180 degrees F.
 6. Manufacturers:
 - a. Pecora Corporation; _____: www.pecora.com/#sle.
 - b. Sika Corporation; Sikasil WS-295: www.usa-sika.com/#sle.
 - c. Tremco Commercial Sealants & Waterproofing; Spectrem 3: www.tremcosealants.com/#sle.
 - d. Dow Corning; 795 Silicone Building Sealant: www.dowcorning.com.
- C. Type C - Mildew-Resistant Silicone Sealant: ASTM C920, Grade NS, Uses M and A; single component, mildew resistant; not expected to withstand continuous water immersion or traffic.
1. Color: White.
 2. Manufacturers:
 - a. BASF Construction Chemicals - Building Systems; Masterseal NP100: www.buildingsystems.basf.com.
 - b. Pecora Corporation; 898NST Sanitary Mildew-Resistant Silicone Sealant: www.pecora.com/#sle.
 - c. Sika Corporation; Sikasil GP: www.usa-sika.com/#sle.
 - d. Tremco Global Sealants; Tremsil 200 Sanitary Sealant: www.tremcosealants.com.
 - e. Substitutions: See Section 01 6000 - Product Requirements.
- D. Type D - Polyurethane Sealant: ASTM C920, Grade NS, Uses M and A; single or multi-component; not expected to withstand continuous water immersion or traffic.
1. Movement Capability: Plus and minus 25 percent, minimum.
 2. Hardness Range: 20 to 35, Shore A, when tested in accordance with ASTM C661.
 3. Color: To be selected by Architect from manufacturer's standard range.
 4. Service Temperature Range: Minus 40 to 180 degrees F.
 5. Manufacturers:
 - a. Pecora Corporation; Dynatrol 1-XL: www.pecora.com/#sle.
 - b. The QUIKRETE Companies; QUIKRETE® Polyurethane Non-Sag Sealant: www.quikrete.com/#sle.
 - c. Sherwin-Williams Company; Stampede-1/-TX Polyurethane Sealant: www.sherwin-williams.com/#sle.
 - d. Sika Corporation; Sikaflex-15 LM: www.usa-sika.com/#sle.
 - e. Tremco Global Sealants; Dymeric 240FC: tremcosealants.com
 - f. W. R. Meadows, Inc; POURTHANE NS: www.wrmeadows.com/#sle.
 - g. Substitutions: See Section 01 6000 - Product Requirements.
- E. Type E - Polyurethane Sealant for Continuous Water Immersion: ASTM C920, Grade NS, Uses M and A; single or multicomponent; explicitly approved by manufacturer for continuous water immersion; suitable for traffic exposure when recessed below traffic surface .
1. Movement Capability: Plus and minus 50 percent.
 2. Hardness Range: 20 to 35, Shore A, when tested in accordance with ASTM C661.
 3. Color: To be selected by Architect from manufacturer's standard range.
 4. Service Temperature Range: Minus 40 to 180 degrees F.
 5. Manufacturers:
 - a. Sika Corporation; Sikaflex-1a: www.usa-sika.com/#sle.
- 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.
 - b. Pecora Corporation; AC-20 +Silicone: www.pecora.com/#sle.
 - c. Sherwin-Williams Company; White Lightning 3006 Siliconized Acrylic Latex Caulk: www.sherwin-williams.com/#sle.
 - d. Sherwin-Williams Company; 950A Siliconized Acrylic Latex Caulk: www.sherwin-williams.com/#sle.
 - e. Substitutions: See Section 01 6000 - Product Requirements.
- H. Type H - Butyl Acoustical Sealant: Solvent-based; ASTM C919; single component, nonsag; not expected to withstand continuous water immersion or traffic.
1. ASTM E90
 2. Hardness Range: 10 to 30, Shore A, when tested in accordance with ASTM C661.
 3. Color: To be selected by Architect from manufacturer's standard range.
 4. Service Temperature Range: Minus 13 to 180 degrees F.
 5. Manufacturers:
 - a. Pecora Corporation; BA98: www.pecora.com.
 - b. Tremco Global Sealants; Acoustical Sealant: www.tremcosealants.com.
- I. Type H - Non-Curing Butyl Sealant: Solvent-based; ASTM C1311; single component, non-sag, non-skinning, non-hardening, non-bleeding; vapor-impermeable; intended for fully concealed applications.
1. Manufacturers:
 - a. DAP Corporation; Butyl-Flex Sealant: www.dap.com.
 - b. Pecora Corporation; BC158: www.pecora.com.
 - c. Tremco Global Sealants; Tremco Butyl Sealant: www.tremcosealants.com.
 - d. Substitutions: See Section 01 6000 - Product Requirements.

2.05 SELF-LEVELING SEALANTS

- A. Type J - Self-Leveling Polyurethane Sealant: ASTM C920, Grade P, Uses M and A; single or multicomponent; explicitly approved by manufacturer for traffic exposure; not expected to withstand continuous water immersion .
1. Movement Capability: Plus and minus 25 percent, minimum.
- B. Type K - Self-Leveling Polyurethane Sealant for Continuous Water Immersion: Polyurethane; ASTM C920, Grade P, Uses M and A; single or multicomponent; explicitly approved by manufacturer for traffic exposure and continuous water immersion.
1. Movement Capability: Plus and minus 25 percent, minimum.

2.06 ACCESSORIES

- A. Backer Rod: Cylindrical cellular foam rod with surface that sealant will not adhere to, compatible with specific sealant used, and recommended by backing and sealant manufacturers for specific application.
1. Type for Joints Not Subject to Pedestrian or Vehicular Traffic: ASTM C1330; Type O - Open Cell Polyurethane.
 2. Type for Joints Subject to Pedestrian or Vehicular Traffic: ASTM C1330; Type B - Bi-Cellular Polyethylene.
 3. Open Cell: 40 to 50 percent larger in diameter than joint width.

4. Closed Cell and Bi-Cellular: 25 to 33 percent larger in diameter than joint width.
- B. Backing Tape: Self-adhesive polyethylene tape with surface that sealant will not adhere to and recommended by tape and sealant manufacturers for specific application.
- C. Masking Tape: Self-adhesive, nonabsorbent, non-staining, removable without adhesive residue, and compatible with surfaces adjacent to joints and sealants.
- D. Joint Cleaner: Non-corrosive and non-staining type, type recommended by sealant manufacturer; compatible with joint forming materials.
- E. Primers: Type recommended by sealant manufacturer to suit application; non-staining.

PART 3 EXECUTION

3.01 EXAMINATION

- A. Verify that joints are ready to receive work.
- B. Verify that backing materials are compatible with sealants.
- C. Verify that backer rods are of the correct size.
- D. Preinstallation Adhesion Testing: Install a sample for each test location indicated in the test plan.
 1. Test each sample as specified in PART 1 under QUALITY ASSURANCE article.
 2. Notify Architect of date and time that tests will be performed, at least 7 days in advance.
 3. Arrange for sealant manufacturer's technical representative to be present during tests.
 4. Record each test on Preinstallation Adhesion Test Log as indicated.
 5. If any sample fails, review products and installation procedures, consult manufacturer, or take whatever other measures are necessary to ensure adhesion; re-test in a different location; if unable to obtain satisfactory adhesion, report to Architect.
 6. After completion of tests, remove remaining sample material and prepare joint for new sealant installation.

3.02 PREPARATION

- A. Remove loose materials and foreign matter that could impair adhesion of sealant.
- B. Clean joints, and prime as necessary, in accordance with manufacturer's instructions.
- C. Perform preparation in accordance with manufacturer's instructions and ASTM C1193.
- D. Mask elements and surfaces adjacent to joints from damage and disfigurement due to sealant work; be aware that sealant drips and smears may not be completely removable.
- E. Concrete Floor Joints That Will Be Exposed in Completed Work: Test joint filler in inconspicuous area to verify that it does not stain or discolor slab.

3.03 INSTALLATION

- A. Perform work in accordance with sealant manufacturer's requirements for preparation of surfaces and material installation instructions.
- B. Perform installation in accordance with ASTM C1193.
- C. Perform acoustical sealant application work in accordance with ASTM C919.
- D. Measure joint dimensions and size joint backers to achieve the following, unless otherwise indicated:
 1. Width/depth ratio of 2:1.
 2. Neck dimension no greater than 1/3 of the joint width.
 3. Surface bond area on each side not less than 75 percent of joint width.
- E. Install bond breaker backing tape where backer rod cannot be used.
- F. Install sealant free of air pockets, foreign embedded matter, ridges, and sags, and without getting sealant on adjacent surfaces.

- G. Do not install sealant when ambient temperature is outside manufacturer's recommended temperature range, or will be outside that range during the entire curing period, unless manufacturer's approval is obtained and instructions are followed.
- H. Nonsag Sealants: Tool surface concave, unless otherwise indicated; remove masking tape immediately after tooling sealant surface.

3.04 FIELD QUALITY CONTROL

- A. Perform field quality control inspection/testing as specified in PART 1 under QUALITY ASSURANCE article.
- B. Remove and replace failed portions of sealants using same materials and procedures as indicated for original installation.

3.05 POST-OCCUPANCY

- A. Post-Occupancy Inspection: Perform visual inspection of entire length of project sealant joints at a time that joints have opened to their greatest width; i.e. at low temperature in thermal cycle. Report failures immediately and repair.

END OF SECTION

**SECTION 08 1113
HOLLOW METAL DOORS AND FRAMES**

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Non-fire-rated hollow metal doors and frames.
- B. Hollow metal frames for wood doors.
- C. Fire-rated hollow metal doors and frames.
- D. Thermally insulated hollow metal doors with frames.
- E. Hurricane-resistant hollow metal doors and frames.
- F. Hollow metal borrowed lites glazing frames.
- G. Accessories, including glazing, louvers, and matching panels.

1.02 RELATED REQUIREMENTS

- A. Section 08 7100 - Door Hardware.
- B. Section 08 8000 - Glazing: Glass for doors and borrowed lites.
- C. Section 09 9113 - Exterior Painting: Field painting.
- D. Section 09 9123 - Interior Painting: Field painting.

1.03 PRICE AND PAYMENT PROCEDURES

- A. Alternates: See Section 01 2300 - Alternates, for product alternatives affecting this section.
 - 1. This section describes an alternative product. Under Base Bid, no hollow metal doors will be required.

1.04 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.

1.05 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); 2017.
- E. ANSI/SDI A250.10 - Test Procedure and Acceptance Criteria for Prime Painted Steel Surfaces for Steel Doors and Frames; 2011.
- F. ASTM A653/A653M - Standard Specification for Steel Sheet, Zinc-Coated (Galvanized) or Zinc-Iron Alloy-Coated (Galvannealed) by the Hot-Dip Process; 2018.
- G. ASTM A1008/A1008M - Standard Specification for Steel, Sheet, Cold-Rolled, Carbon, Structural, High-Strength Low-Alloy, High-Strength Low-Alloy with Improved Formability, Solution Hardened, and Bake Hardenable; 2018.

- H. ASTM A1011/A1011M - Standard Specification for Steel, Sheet and Strip, Hot-Rolled, Carbon, Structural, High-Strength Low-Alloy, High-Strength Low-Alloy with Improved Formability, and Ultra-High Strength; 2018a.
- I. ASTM E330/E330M - Standard Test Method for Structural Performance of Exterior Windows, Doors, Skylights and Curtain Walls by Uniform Static Air Pressure Difference; 2014.
- J. BHMA A156.115 - American National Standard for Hardware Preparation in Steel Doors and Steel Frames; 2016.
- K. FBC TAS 201 - Impact Test Procedures; Testing Application Standard; 1994.
- L. FBC TAS 202 - Criteria for Testing Impact and Non-Impact Resistant Building Envelope Components Using Uniform Static Air Pressure; Testing Application Standard; 1994.
- M. FBC TAS 203 - Criteria for Testing Products Subject To Cyclic Wind Pressure Loading; Testing Application Standard; 1994.
- N. FLA (PAD) - Florida Building Code Online - Product Approval Directory; Current Edition.
- O. ICC (IECC) - International Energy Conservation Code; Most Recent Edition Adopted by Authority Having Jurisdiction, Including All Applicable Amendments and Supplements.
- P. ICC A117.1 - Accessible and Usable Buildings and Facilities; 2017.
- Q. ITS (DIR) - Directory of Listed Products; current edition.
- R. Miami (APD) - Approved Products Directory; Miami-Dade County; Current Edition.
- S. NAAMM HMMA 805 - Recommended Selection and Usage Guide for Hollow Metal Doors and Frames; 2012.
- T. NAAMM HMMA 830 - Hardware Selection for Hollow Metal Doors and Frames; 2002.
- U. NAAMM HMMA 831 - Hardware Locations for Hollow Metal Doors and Frames; 2011.
- V. NAAMM HMMA 840 - Guide Specifications for Installation and Storage of Hollow Metal Doors and Frames; 2007.
- W. NAAMM HMMA 850 - Fire-Protection and Smoke Control Rated Hollow Metal Door and Frame Products; 2014.
- X. NAAMM HMMA 860 - Guide Specifications for Hollow Metal Doors and Frames; 2018.
- Y. NAAMM HMMA 861 - Guide Specifications for Commercial Hollow Metal Doors and Frames; 2014.
- Z. NFPA 80 - Standard for Fire Doors and Other Opening Protectives; 2019.
- AA. NFPA 252 - Standard Methods of Fire Tests of Door Assemblies; 2017.
- AB. SDI 117 - Manufacturing Tolerances for Standard Steel Doors and Frames; 2013.
- AC. UL (DIR) - Online Certifications Directory; Current Edition.
- AD. UL 10C - Standard for Positive Pressure Fire Tests of Door Assemblies; Current Edition, Including All Revisions.

1.06 SUBMITTALS

- A. See Section 01 3000 - Administrative Requirements, for submittal procedures.
- B. Product Data: Materials and details of design and construction, hardware locations, reinforcement type and locations, anchorage and fastening methods, and finishes; and one copy of referenced standards/guidelines.
- C. Shop Drawings: Details of each opening, showing elevations, glazing, frame profiles, and any indicated finish requirements.
- D. Samples: Submit two samples of metal, 2 inch by 2 inch in size showing factory finishes, colors, and surface texture.

- E. Design Submittals: Manufacturer to submit anchor design analysis calculations for blast-resistant doors signed and sealed by specialty design engineer experienced in this type of work and licensed in the State in which the Project is located.
- F. Installation Instructions: Manufacturer's published instructions, including any special installation instructions relating to this project.
- G. Manufacturer's Certificate: Certification that products meet or exceed specified requirements.
- H. Manufacturer's Qualification Statement.
- I. Installer's Qualification Statement.

1.07 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.

1.08 DELIVERY, STORAGE, AND HANDLING

- A. Comply with NAAMM HMMA 840 or ANSI/SDI A250.8 (SDI-100) in accordance with specified requirements.
- B. Protect with resilient packaging; avoid humidity build-up under coverings; prevent corrosion and adverse effects on factory applied painted finish.

PART 2 PRODUCTS

2.01 MANUFACTURERS

- A. Hollow Metal Doors and Frames:
 - 1. Ceco Door, an Assa Abloy Group company: www.assaabloydss.com/#sle.
 - 2. Curries, an Assa Abloy Group company: www.assaabloydss.com.
 - 3. Fleming Door Products, an Assa Abloy Group company: www.assaabloydss.com/#sle.
 - 4. Krieger Specialty Products: www.kriegerproducts.com/#sle.
 - 5. Mesker, dormakaba Group: www.meskeropeningsgroup.com/#sle.
 - 6. Republic Doors, an Allegion brand: www.republicdoor.com/#sle.
 - 7. Steelcraft, an Allegion brand: www.allegion.com/#sle.
 - 8. Technical Glass Products: www.tgpamerica.com.
 - 9. Substitutions: See Section 01 6000 - Product Requirements.
- B. Hurricane-Resistant and Tornado-Resistant Hollow Metal Doors and Frames:
 - 1.
 - 2. Krieger Specialty Products; Hurricane Resistant Door: www.kriegerproducts.com/#sle.
 - 3. Mesker, dormakaba Group; Windstorm Series, Hurricane Doors and Frames: www.meskeropeningsgroup.com/#sle.
 - 4. Republic Doors, an Allegion brand; Hurricane Resistant: www.republicdoor.com/#sle.
 - 5. Substitutions: See Section 01 6000 - Product Requirements.

2.02 PERFORMANCE REQUIREMENTS

- A. Requirements for Hollow Metal Doors and Frames:
 - 1. Steel Sheet: Comply with one or more of the following requirements; galvanized steel complying with ASTM A653/A653M, cold-rolled steel complying with ASTM A1008/A1008M, or hot-rolled pickled and oiled (HRPO) steel complying with ASTM A1011/A1011M, commercial steel (CS) Type B, for each.
 - 2. Accessibility: Comply with ICC A117.1 and ADA Standards.
 - 3. Exterior Door Top Closures: Flush end closure channel, with top and door faces aligned.
 - 4. Door Edge Profile: Manufacturers standard for application indicated.

5. Typical Door Face Sheets: Flush.
 6. Glazed Lights: Non-removable stops on non-secure side; sizes and configurations as indicated on drawings. Style: Manufacturers standard.
 7. Hardware Preparations, Selections and Locations: Comply with NAAMM HMMA 830 and NAAMM HMMA 831 or BHMA A156.115 and ANSI/SDI A250.8 (SDI-100) in accordance with specified requirements.
 8. Zinc Coating for Typical Interior and/or Exterior Locations: Provide metal components zinc-coated (galvanized) and/or zinc-iron alloy-coated (galvannealed) by the hot-dip process in accordance with ASTM A653/A653M, with manufacturer's standard coating thickness, unless noted otherwise for specific hollow metal doors and frames.
 - a. Based on NAAMM HMMA Custom Guidelines: Provide at least A25/ZF75 (galvannealed) for interior applications, and at least A60/ZF180 (galvannealed) or G60/Z180 (galvanized) for corrosive locations.
- B. Minimum Thermal Standards: Swing door unit U-value no greater than 0.61 in accord with ICC (IECC) requirements (Table C402.1.4 - U-value method).
- C. Combined Requirements: If a particular door and frame unit is indicated to comply with more than one type of requirement, comply with the specified requirements for each type; for instance, an exterior door that is also indicated as being sound-rated must comply with the requirements specified for exterior doors and for sound-rated doors; where two requirements conflict, comply with the most stringent.

2.03 HOLLOW METAL DOORS

- A. Door Finish: Factory primed and field finished.
- B. Exterior Doors: Thermally insulated.
1. Based on NAAMM HMMA Custom Guidelines:
 - a. Comply with guidelines of NAAMM HMMA 860 for Hollow Metal Doors and Frames.
 - b. Performance Level 3 - Heavy Duty, in accordance with NAAMM HMMA 805.
 - c. Physical Performance Level B, 500,000 cycles; in accordance with ANSI/SDI A250.4.
 - d. Door Face Metal Thickness: 16 gage, 0.053 inch, minimum.
 - e. Zinc Coating: G90/Z275 galvanized coating; ASTM A653/A653M.
 2. Core Material: Manufacturers standard core material/construction and in compliance with requirements.
 3. Door Thermal Resistance: R-Value of ____.
 4. Door Thickness: 1-3/4 inch, nominal.
 5. Weatherstripping: Refer to Section 08 7100.
- C. Interior Doors, Non-Fire Rated:
1. Based on NAAMM HMMA Custom Guidelines:
 - a. Comply with guidelines of NAAMM HMMA 860 for Hollow Metal Doors and Frames.
 - b. Performance Level 3 - Heavy Duty, in accordance with NAAMM HMMA 805.
 - c. Physical Performance Level B, 500,000 cycles; in accordance with ANSI/SDI A250.4.
 - d. Door Face Metal Thickness: 18 gage, 0.042 inch, minimum.
 - e. Zinc Coating: G90/Z275 galvanized coating; ASTM A653/A653M.
 2. Door Core Material: 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.
- E. Hurricane-Resistant Doors: Provide fire-rated door construction as indicated for door Type HMSI-2, Fire-Rated Doors, and the following hurricane resistant door requirements.
1. Comply with Florida Building Code (FBC) test protocols for High Velocity Hurricane Zone (HVHZ) FBC TAS 201, FBC TAS 202 and FBC TAS 203.
 2. Design and size door and frame components to withstand the specified load requirements without damage or permanent set, when tested in accordance with ASTM E330/E330M.
 - a. Design Wind Loads: Comply with requirements of authorities having jurisdiction.
 - b. Wind-Borne Debris Resistance: Door and frame components shall have FLA (PAD) approval or Miami (APD) approval for Large and Small Missile impact and pressure cycling at design wind loads.
 3. Based on NAAMM HMMA Custom Guidelines:
 - a. Comply with guidelines of NAAMM HMMA 860 for Hollow Metal Doors and Frames.
 - b. Performance Level 2 - Moderate Duty, in accordance with NAAMM HMMA 805.
 - c. Physical Performance Level C, 250,000 cycles; in accordance with ANSI/SDI A250.4.
 - d. Door Face Metal Thickness: 16 gage, 0.053 inch, minimum.
 4. Door Core Material: Manufacturers standard core material/construction and in compliance with requirements.
 5. Door Thickness: 1-3/4 inch, nominal.

2.04 HOLLOW METAL FRAMES

- A. Comply with standards and/or custom guidelines as indicated for corresponding door in accordance with applicable door frame requirements.
- B. Frame Finish: Factory primed and field finished.
- C. Exterior Door Frames: Full profile/continuously welded type.
 1. Galvanizing: Components hot-dipped zinc-iron alloy-coated (galvannealed) in accordance with ASTM A653/A653M, with A40/ZF120 coating.
 2. Frame Metal Thickness: 14 gage, 0.067 inch, minimum.
 3. Weatherstripping: Separate, see Section 08 7100.
- D. Interior Door Frames, Non-Fire Rated: Face welded type.
 1. Frame Metal Thickness: 16 gage, 0.053 inch, minimum.
- E. Door Frames, Fire-Rated: Full profile/continuously welded type.
 1. Fire Rating: Same as door, labeled.
 2. Frame Metal Thickness: 16 gage, 0.053 inch, minimum.
- F. Hurricane-Resistant Door Frames: With same hurricane resistance as door; face welded or full profile/continuously welded construction, ground smooth, fully prepared and reinforced for hardware installation.
- G. Frames for Wood Doors: Comply with frame requirements in accordance with corresponding door.
- H. Mullions for Pairs of Doors: Removable type, with profile similar to jambs.
- I. Transom Bars: Fixed, of profile same as jamb and head.
- J. Provide mortar guard boxes for hardware cut-outs in frames to be installed in masonry or to be grouted.
- K. Frames in Masonry Walls: Size to suit masonry coursing with head member 4 inch high to fill opening without cutting masonry units.

- L. Frames Wider than 48 inches: Reinforce with steel channel fitted tightly into frame head, flush with top.

2.05 FINISHES

- A. Primer: Rust-inhibiting, complying with ANSI/SDI A250.10, door manufacturer's standard.
- B. Bituminous Coating: Asphalt emulsion or other high-build, water-resistant, resilient coating.

2.06 ACCESSORIES

- A. Louvers: Roll formed steel with overlapping frame; finish same as door components; factory-installed.
 - 1. Style: Sightproof inverted Y blade.
 - 2. Louver Free Area: 50 percent.
 - 3. Fasteners: Exposed, tamper proof fasteners.
- B. 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 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 06: Rough Carpentry.
 2. Division 08: Aluminum Doors and Frames
 3. Division 08: Hollow Metal Doors and Frames.
 4. Division 08: Wood Doors.
 5. Division 26: Electrical
 6. Division 28: Electronic Security
- C. References: Comply with applicable requirements of the following standards. Where these standards conflict with other specific requirements, the most restrictive shall govern.
1. Builders Hardware Manufacturing Association (BHMA)
 2. NFPA 101 Life Safety Code, 2010
 3. NFPA 80 – Standard for Fire Doors and Other Opening Protectives, 2013
 4. ANSI-A156.xx- Various Performance Standards for Finish Hardware
 5. UL10C – Positive Pressure Fire Test of Door Assemblies
 6. ANSI-A117.1 – Accessible and Usable Buildings and Facilities
 7. DHI /ANSI A115.IG – Installation Guide for Doors and Hardware
 8. IBC – International Building Code, 2015
- D. Intent of Hardware Groups
1. Should items of hardware not definitely specified be required for completion of the Work, furnish such items of type and quality comparable to adjacent hardware and appropriate for service required.
 2. Where items of hardware are not definitely or correctly specified, but are required for completion of the Work, a written statement of such omission, error or other discrepancy must be submitted to Architect prior to date specified for receipt of bids for clarification by addendum.
- E. Allowances
1. Refer to Division 01 for allowance amount and procedures.
- F. Alternates
1. Refer to Division 01 for Alternates and procedures.

1.2 SUBSTITUTIONS:

A. Comply with Division 01.

1.3 SUBMITTALS:

A. Comply with Division 01.

B. Special Submittal Requirements: Combine submittals of this Section with Sections listed below to ensure the "design intent" of the system/assembly is understood and can be reviewed together.

C. Product Data: Manufacturer's specifications and technical data including the following:

1. Detailed specification of construction and fabrication.
2. Manufacturer's installation instructions.
3. Wiring diagrams for each electric product specified. Coordinate voltage with electrical before submitting.
4. Submit 6 copies of catalog cuts with hardware schedule.

D. Shop Drawings - Hardware Schedule: Submit 6 complete reproducible copy of detailed hardware schedule in a vertical format.

1. List groups and suffixes in proper sequence.
2. Completely describe door and list architectural door number.
3. Manufacturer, product name, and catalog number.
4. Function, type, and style.
5. Size and finish of each item.
6. Explanation of abbreviations and symbols used within schedule.

E. Templates: Submit templates and "reviewed Hardware Schedule" to door and frame supplier and others as applicable to enable proper and accurate sizing and locations of cutouts and reinforcing.

F. Samples: (If requested by the Architect)

1. 1 sample of Lever and Rose/Escutcheon design, (pair).
2. 3 samples of metal finishes

G. Contract Closeout Submittals: Comply with Division 01 including specific requirements indicated.

1. Operating and maintenance manuals: Submit 3 sets containing the following.
 - a. Complete information in care, maintenance, and adjustment, and data on repair and replacement parts, and information on preservation of finishes.
 - b. Catalog pages for each product.
 - c. Name, address, and phone number of local representatives for each manufacturer.
 - d. Manufacturer's installation instructions for each product.
2. Copy of final hardware schedule, edited to reflect, "As installed".
3. Copy of final keying schedule
4. One set of special tools required for maintenance and adjustment of hardware, including changing of cylinders.

1.4 QUALITY ASSURANCE

A. Comply with Division 01.

1. Statement of qualification for distributor and installers.
2. Statement of compliance with regulatory requirements and single source responsibility.
3. Distributor's Qualifications: Firm with 3 consecutive years of experience in the distribution of commercial hardware.
 - a. Distributor to employ full time Architectural Hardware Consultants (AHC) for the purpose of scheduling and coordinating hardware and establishing keying schedule.
 - b. Hardware Schedule shall be prepared and signed by an AHC.
 - c. Distributor must be an authorized factory distributor for products furnished.
4. Installer's Qualifications: Firm with 3 years experienced in installation of similar hardware to that required for this Project, including specific requirements indicated.
5. Regulatory Label Requirements: Provide testing agency label or stamp on hardware for labeled openings.
 - a. Provide UL listed hardware for labeled and 20-minute openings in conformance with requirements for class of opening scheduled.
 - b. Underwriters Laboratories requirements have precedence over this specification where conflict exists.
6. Single Source Responsibility: Except where specified in hardware schedule, furnish products of only one manufacturer for each type of hardware.

B. Review Project for extent of finish hardware required to complete the Work. Where there is a conflict between these Specifications and the existing hardware, notify the Architect in writing and furnish hardware in compliance with the Specification unless otherwise directed in writing by the Architect.

1.5 DELIVERY, STORAGE, AND HANDLING

A. Packing and Shipping: Comply with Division 01.

1. Deliver products in original unopened packaging with legible manufacturer's identification.
2. Package hardware to prevent damage during transit and storage.
3. Mark hardware to correspond with "reviewed hardware schedule".
4. Deliver hardware to door and frame manufacturer upon request.

B. Storage and Protection: Comply with manufacturer's recommendations.

1.6 PROJECT CONDITIONS:

A. Coordinate hardware with other work. Furnish hardware items of proper design for use on doors and frames of the thickness, profile, swing, security and similar requirements indicated, as necessary for the proper installation and function, regardless of omissions or conflicts in the information on the Contract Documents.

B. Review Shop Drawings for doors and entrances to confirm that adequate provisions will be made for the proper installation of hardware.

1.7 WARRANTY:

A. Refer to Conditions of the Contract

B. Manufacturer's Warranty:

1. Closers: Ten years
2. Exit Devices: Five Years
3. Locksets & Cylinders: Seven Years
4. All other Hardware: Two Years.

1.8 OWNER'S INSTRUCTION:

- A. Instruct Owner's personnel in operation and maintenance of hardware units.

1.9 MAINTENANCE:

- A. Deliver to Owner:

1. Special Tools: Provide special wrenches and tools applicable to each different or special hardware component.

PART 2 - PRODUCTS

2.1 MANUFACTURERS:

- A. The following manufacturers are approved subject to compliance with requirements of the Contract Documents. Approval of manufacturers other than those listed shall be in accordance with Division 01.

<u>Item:</u>	<u>Manufacturer:</u>	<u>Approved:</u>
Hinges	Stanley	Ives, McKinney
Continuous Hinges	Stanley	Ives, Pemko
Locksets	Best 45H	Sargent 8200, Schlage L9000
Cylinders / Cores	Best (CORMAX)	
Exit Devices	Precision Apex 2000	Von Duprin 98, Sargent 80
Flush Bolts	ABH	Ives, Rockwood
Surface Bolts	ABH	Ives, Rockwood
Closers	Stanley D-4550/4551	LCN 4050, Sargent 351
Push/Pull Plates	Trimco	Ives, Rockwood
Protection Plates	Trimco	Ives, Rockwood
Door Stops	Trimco	Ives, Rockwood
Threshold & Gasketing	National Guard	Pemko, Zero

2.2 MATERIALS:

- A. Hinges: Shall be Five Knuckle Ball bearing hinges

1. Template screw hole locations
2. Bearings are to be fully hardened.
3. Bearing shell is to be consistent shape with barrel.
4. Minimum of 2 permanently lubricated non-detachable bearings on standard weight hinge and 4 permanently lubricated bearing on heavy weight hinges.
5. Equip with easily seated, non-rising pins.
6. Non-Removable Pin screws shall be slotted stainless steel screws.
7. Hinges shall be full polished, front, back and barrel.
8. Hinge pin is to be fully plated.
9. Bearing assembly is to be installed after plating.
10. Sufficient size to allow 180-degree swing of door
11. Furnish five knuckles with flush ball bearings

12. Provide hinge type as listed in schedule.
13. Furnish 3 hinges per leaf to 7-foot, 6-inch height. Add one for each additional 30 inches in height or fraction thereof.
14. Tested and approved by BHMA for all applicable ANSI Standards for type, size, function and finish
15. UL10C listed for Fire rated doors.

B. Geared Continuous Hinges:

1. Tested and approved by BHMA for ANSI A156.26-1996 Grade 1
2. Anti-spinning through fastener
3. UL10C listed for 3-hour Fire rating
4. Non-handed
5. Lifetime warranty
6. Provide Fire Pins for 3-hour fire ratings
7. Permit door to swing 180 degrees

C. Mortise Type Locks and Latches:

1. Tested and approved by BHMA for ANSI A156.13, Series 1000, Operational Grade 1, Extra-Heavy Duty, Security Grade 2 and be UL10C.
2. Fit ANSI A115.1 door preparation
3. Functions and design as indicated in the hardware groups
4. Solid, one-piece, 3/4-inch (19mm) throw, anti-friction latch bolt made of self-lubricating stainless steel
5. Deadbolt functions shall have 1 inch (25mm) throw bolt made of hardened stainless steel
6. Latch bolt and Deadbolt are to extend into the case a minimum of 3/8 inch (9.5mm) when fully extended
7. Auxiliary dead latch to be made of one-piece stainless steel, permanently lubricated
8. Provide sufficient curved strike lip to protect door trim
9. Lever handles must be of forged or cast brass, bronze or stainless-steel construction and conform to ANSI A117.1. Levers that contain a hollow cavity are not acceptable
10. Lock shall have self-aligning, thru-bolted trim
11. Levers to operate a roller bearing spindle hub mechanism
12. Mortise cylinders of lock shall have a concealed internal setscrew for securing the cylinder to the lockset. The internal setscrew will be accessible only by removing the core, with the control key, from the cylinder body.
13. Spindle to be designed to prevent forced entry from attacking of lever
14. Provide locksets with 7-pin removable and interchangeable core cylinders
15. Each lever to have independent spring mechanism controlling it
16. Core face must be the same finish as the lockset.

D. Tubular Deadbolts:

1. ANSI / BHMA Grade 1
2. 1" Throw Stainless Steel deadbolt
3. Solid extruded brass or bronze cylinder

E. Exit Devices:

1. Exit devices to meet or exceed BHMA for ANSI 156.3, Grade 1.
2. Exit devices chassis to be investment cast steel, zinc dichromate.
3. Exit devices to have stainless steel deadlocking 3/4" through latch bolt.
4. Exit devices to be equipped with sound dampening on touch bar.
5. Non-fire rated exit devices to have cylinder dogging.
6. Non-fire rated exit devices to have 1/4" minimum turn hex key dogging.
7. Touchpad to be "T" style constructed of architectural metal with matching metal end caps.
8. Touch bar assembly on wide style exit devices to have a 1/4" clearance to allow for vision frames.
9. All exposed exit device components to be of architectural metals and "true" architectural finishes.

10. Provide strikes as required by application.
11. Fire exit hardware to conform to UL10C and UBC 7-2. UL tested for Accident Hazard.
12. The strike is to be black powder coated finish.
13. Exit devices to have field reversible handing.
14. Provide heavy duty vandal resistant lever trim with heavy duty investment cast stainless steel components and extra strength shock absorbing overload springs. Lever shall not require resetting. Lever design to match locksets and latch sets.
15. Vertical Latch Assemblies to have gravity operation, no springs.

F. Door Closers shall:

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

G. Push Plates: Provide with four beveled edges ANSI J301, .050 thickness, size as indicated in hardware set. Furnish oval-head countersunk screws to match finish.

H. Pulls with plates: Provide with four beveled edges ANSI J301, .050 thickness Plates with ANSI J401 Pull as listed in hardware set. Provide proper fasteners for door construction.

I. Kickplates: Provide with four beveled edges ANSI J102, 10 inches high by width less 2 inches on single doors and 1 inch on pairs of doors. Furnish oval-head countersunk screws to match finish.

J. Mop plates: Provide with four beveled edges ANSI J103, 6 inches high by width less 1 inch on single doors and 1 inch on pairs of doors. Furnish oval-head countersunk screws to match finish.

K. Weather stripping: Provide at head and jambs only those units where resilient or flexible seal strip is easily replaceable. Where bar-type weather strip is used with parallel arm mounted closers install weather-strip first.

1. Weather strip shall be resilient seal of (Neoprene, Polyurethane, Vinyl, Pile, Nylon Brush, Silicone)
2. UL10C Positive Pressure rated seal set when required.

L. Door Bottoms/Sweeps: Surface mounted or concealed door bottom where listed in the hardware sets.

1. Door seal shall be resilient seal of (Neoprene, Polyurethane, Nylon Brush, Silicone)
2. UL10C Positive Pressure rated seal set when required.

M. Thresholds: Thresholds shall be aluminum beveled type with maximum height of 1/2" for conformance with ADA requirements. Furnish as specified and per details. Provide fasteners and screws suitable for floor conditions.

N. Silencers: Furnish silencers on all interior frames; 3 for single doors, 2 for pairs.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Verification of conditions: Examine doors, frames, related items and conditions under which Work is to be performed and identify conditions detrimental to proper and or timely completion.
1. Do not proceed until unsatisfactory conditions have been corrected.

3.2 HARDWARE LOCATIONS:

- A. Mount hardware units at heights indicated in the following publications except as specifically indicated or required to comply with the governing regulations.
1. Recommended Locations for Builder's Hardware for Standard Steel Doors and Frames, by the Door and Hardware Institute (DHI).
 2. Recommended locations for Architectural Hardware for flush wood doors (DHI).
 3. WDMA Industry Standard I.S.-1A-04, Industry Standard for Architectural wood flush doors.

3.3 INSTALLATION:

- A. Install each hardware item per manufacturer's instructions and recommendations. Do not install surface mounted items until finishes have been completed on the substrate. Set units level, plumb and true to line and location. Adjust and reinforce the attachment substrate as necessary for proper installation and operation.
- B. Conform to local governing agency security ordinance.
- C. Install Conforming to ICC/ANSI A117.1 Accessible and Usable Building and Facilities.
1. Adjust door closer sweep periods so that from the open position of 70 degrees, the door will take at least 3 seconds to move to a point 3 inches from the latch, measured to the landing side of the door.
- D. Installed hardware using the manufacturers fasteners provided. Drill and tap all screw holes located in metallic materials. Do not use "Riv-Nuts" or similar products.

3.4 FIELD QUALITY CONTROL AND FINAL ADJUSTMENT

- A. Contractor/Installers, Field Services: After installation is complete, contractor shall inspect the completed door openings on site to verify installation of hardware is complete and properly adjusted, in accordance with both the Contract Documents and final shop drawings.
1. Check and adjust closers to ensure proper operation.
 2. Check latch set, lockset, and exit devices are properly installed and adjusted to ensure proper operation.
 - a. Verify levers are free from binding.
 - b. Ensure latch bolts and dead bolts are engaged into strike and hardware is functioning.
 3. Report findings, in writing, to architect indicating that all hardware is installed and functioning properly. Include recommendations outlining corrective actions for improperly functioning hardware if required.

SCHEDULE OF FINISH HARDWARE:

Manufacturer List

<u>Code</u>	<u>Name</u>
AB	ABH Manufacturing Inc.
BE	Best Access Systems
BY	By Others
NA	National Guard Products
PR	Precision
SD	Stanley Door Closers
ST	Stanley
TR	Trimco

Option List

<u>Code</u>	<u>Description</u>
HC	Hurricane Code Device
LD	Less Dogging
SN	Sex Nuts (Pkg. of 4)
ALK	ALARM, BATTERY OPERATED
CSK	COUNTER SINKING OF KICK and MOP PLATES
NCA-03	Cylinder Attachment Kit
P45-180D	Drop Plate for Narrow Top Rail
B4E	BEVELED 4 EDGES – KICK / MOP PLATES

Finish List

<u>Code</u>	<u>Description</u>
AL	Aluminum
600	Primed for Painting
626	Satin Chromium Plated
630	Satin Stainless Steel
689	Aluminum Painted
GREY	Grey
626AM	Satin Chrome - Antimicrobial Coating
630AM	Satin Stainless - Antimicrobial Coating
US26D	Chromium Plated, Dull
US32D	Stainless Steel, Dull

Hardware Sets

SET #01 – STORAGE DOORS IN BATTING CAGE

Doors: 300A-1 & 300B-1

6 Hinges	FBB191 4 1/2 X 4 1/2 NRP	US32D	ST
2 Surface Bolts	HD1825TB 12"	US32D	AB
1 Lockset	45H-7AB14R PATD	630	BE
2 Mop Plate	KM050 6" X 1" LDW B4E CSK	630	TR
1 Wall Bumper	1270CX	626	TR
1 Meeting Stile Astragal	9600 A (SET) x Door Height		NA
1 Saddle Threshold	425	AL	NA
1 Set Weatherstripping	160A 1pc 72" x 2pc 84"	AL	NA

SET #02 – Storage Doors in Press Boxes (Int. Pairs)

Doors: 100A-1 & 200A-1

6 Hinges	FBB191 4 1/2 X 4 1/2 NRP	US32D	ST
1 Set Flush Bolts	1857P	US32D	AB
1 Dust Proof Strike	1870	US32D	AB
1 Lockset	45H-7D14R PATD	630	BE
2 Kick Plate	K0050 10" X 1" LDW B4E CSK	630	TR
2 Mop Plate	KM050 6" X 1" LDW B4E CSK	630	TR
2 Door Silencers	1229A	GREY	TR

SET #03 – Exterior Press Box Doors (Singles)

Doors: 100-1, 100-2, 200-1, & 200-2

3 Hinges	FBB191 4 1/2 X 4 1/2 NRP	US32D	ST
1 Lockset	45H-7AB 14R PATD	630	BE
1 Door Closer	CLD-4551 STD W/PA BRKT SN	689	SD
1 Kick Plate	K0050 10" X 2" LDW B4E CSK	630	TR
1 Wall Bumper	1270CX	626	TR
1 Threshold	896VA x Door Width	AL	NA
1 Set Weatherstripping	160A 1pc 36" x 2pcs 84"	AL	NA
1 Rain Drip	16A x 40"	AL	NA

Opening List

<u>Opening</u>	<u>Hdw Set</u>
001-1	01
002-1	01
100-1	03
100-2	03
100A-1	02
200-1	03

200-2	03
200A-1	02

END OF SECTION 08 71 00

**SECTION 09 2216
NON-STRUCTURAL METAL FRAMING**

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Metal partition framing.
- B. Framing accessories.

1.02 RELATED REQUIREMENTS

- A. Section 06 1000 - Rough Carpentry: Wood blocking within stud framing.
- B. Section 06 1000 - Rough Carpentry: Wall sheathing.

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; 2018.
- B. ASTM C645 - Standard Specification for Nonstructural Steel Framing Members; 2018.
- C. ASTM C754 - Standard Specification for Installation of Steel Framing Members to Receive Screw-Attached Gypsum Panel Products; 2018.
- D. 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; 2018.
- E. 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:
 - 1. Indicate prefabricated work, component details, stud layout, framed openings, anchorage to structure, acoustic details, type and location of fasteners, accessories, and items of other related work.
 - 2. Describe method for securing studs to tracks, splicing, and for blocking and reinforcement of framing connections.
- C. Product Data: Provide data describing framing member materials and finish, product criteria, load charts, and limitations.
- D. Manufacturer's Installation Instructions: Indicate special procedures and perimeter conditions requiring special attention.

1.05 QUALITY ASSURANCE

- A. Installer Qualifications: Company specializing in performing the work of this section with minimum five years documented experience and approved by manufacturer.

PART 2 PRODUCTS

2.01 MANUFACTURERS

- A. Metal Framing, Connectors, and Accessories:
 - 1. CEMCO: www.cemcosteel.com/#sle.
 - 2. ClarkDietrich: www.clarkdietrich.com/#sle.
 - 3. Marino: www.marinoware.com/#sle.
 - 4. Substitutions: See Section 01 6000 - Product Requirements.

2.02 FRAMING MATERIALS

- A. Loadbearing Studs: As specified in Section 05 4000.

- 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 knurled or embossed faces.
 - 2. Runners: U shaped, sized to match studs.
- C. Non-Loadbearing Framing Accessories:
 - 1. Partial Height Wall Framing Support: Provides stud reinforcement and anchored connection to floor.
 - 2. Framing Connectors: ASTM A653/A653M G90 galvanized steel clips; secures cold rolled channel to wall studs for lateral bracing.
 - 3. Fasteners: ASTM C1002 self-piercing tapping screws.
 - 4. Anchorage Devices: Powder actuated.
 - 5. Touch-Up Primer for Galvanized Surfaces: SSPC-Paint 20, Type I - Inorganic.

2.03 FABRICATION

- A. Fabricate assemblies of framed sections to sizes and profiles required.
- B. Fit, reinforce, and brace framing members to suit design requirements.

PART 3 EXECUTION

3.01 EXAMINATION

- A. Verify existing conditions before starting work.
- B. Verify that rough-in utilities are in proper location.

3.02 INSTALLATION OF STUD FRAMING

- A. Comply with requirements of ASTM C754.
- 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. Align and secure top and bottom runners at 24 inches on center.
- E. Fit runners under and above openings; secure intermediate studs to same spacing as wall studs.
- F. Install studs vertically at spacing indicated on drawings.
- G. Align stud web openings horizontally.
- H. Secure studs to tracks using crimping method. Do not weld.
- I. Stud splicing is not permissible.
- J. Fabricate corners using a minimum of three studs.
- K. Double stud at wall openings, door and window jambs, not more than 2 inches from each side of openings.
- L. Brace stud framing system rigid.
- M. Coordinate erection of studs with requirements of door frames; install supports and attachments.
- N. Coordinate installation of bucks, anchors, and blocking with electrical, mechanical, and other work to be placed within or behind stud framing.
- O. Blocking: Use wood blocking secured to studs. Provide blocking for support of plumbing fixtures, toilet partitions, wall cabinets, toilet accessories, hardware, and opening frames.

3.03 TOLERANCES

- A. Maximum Variation From True Position: 1/8 inch in 10 feet.

- B. Maximum Variation From Plumb: 1/8 inch in 10 feet.

END OF SECTION

SECTION 09 9113
EXTERIOR PAINTING

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Surface preparation.
- B. Field application of paints.
- C. 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.
- D. 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. Stainless steel, anodized aluminum, bronze, terne coated stainless steel, zinc, and lead.
 - 6. Floors, unless specifically indicated.
 - 7. Glass.
 - 8. Concealed pipes, ducts, and conduits.

1.02 RELATED REQUIREMENTS

- A. Section 05 5000 - Metal Fabrications: Shop-primed items.
- B. Section 09 9123 - Interior Painting.
- C. Section 09 9600 - High-Performance Coatings.
- D. Section 21 0553 - Identification for Fire Suppression Piping and Equipment: Color coding scheme for items to be painted under this section.
- E. Section 22 0553 - Identification for Plumbing Piping and Equipment: Painted identification.
- F. Section 23 0553 - Identification for HVAC Piping and Equipment: Painted identification.

1.03 DEFINITIONS

- A. Comply with ASTM D16 for interpretation of terms used in this section.

1.04 REFERENCE STANDARDS

- A. 40 CFR 59, Subpart D - National Volatile Organic Compound Emission Standards for Architectural Coatings; U.S. Environmental Protection Agency; current edition.
- B. ASTM D16 - Standard Terminology for Paint, Related Coatings, Materials, and Applications; 2016.
- C. ASTM D4258 - Standard Practice for Surface Cleaning Concrete for Coating; 2005 (Reapproved 2017).
- D. MPI (APSM) - Master Painters Institute Architectural Painting Specification Manual; Current Edition.
- E. SSPC-SP 1 - Solvent Cleaning; 2015, with Editorial Revision (2016).
- 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; 1997 (Reaffirmed 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. Provide lighting level of 80 ft candles measured mid-height at substrate surface.

PART 2 PRODUCTS

2.01 MANUFACTURERS

- A. Provide paints and finishes from the same manufacturer to the greatest extent possible.
 - 1. In the event that a single manufacturer cannot provide specified products, minor exceptions will be permitted provided approval by Architect is obtained using the specified procedures for substitutions.
 - 2. Substitution of MPI-approved products by a different manufacturer is preferred over substitution of unapproved products by the same manufacturer.
 - 3. Substitution of a different paint system using MPI-approved products by the same manufacturer will be considered.
- B. Paints:
 - 1. Base Manufacturer: Sherwin-Williams Company.
 - 2. Behr Process Corporation: www.behr.com/#sle.
 - 3. PPG Paints: www.ppgpaints.com/#sle.
 - 4. Pratt & Lambert Paints: www.prattandlambert.com/#sle.
 - 5. Sherwin-Williams Company: www.sherwin-williams.com/#sle.
 - 6. Valspar Corporation: www.valsparpaint.com/#sle.
- C. Primer Sealers: Same manufacturer as top coats.
- D. Substitutions: See Section 01 6000 - Product Requirements.

2.02 PAINTS AND FINISHES - GENERAL

- A. Paints and Finishes: Ready mixed, unless required to be a field-catalyzed paint.
 - 1. Provide paints and finishes of a soft paste consistency, capable of being readily and uniformly dispersed to a homogeneous coating, with good flow and brushing properties, and capable of drying or curing free of streaks or sags.
 - 2. Provide materials that are compatible with one another and the substrates indicated under conditions of service and application, as demonstrated by manufacturer based on testing and field experience.
 - 3. For opaque finishes, tint each coat including primer coat and intermediate coats, one-half shade lighter than succeeding coat, with final finish coat as base color.
 - 4. Supply each paint material in quantity required to complete entire project's work from a single production run.

5. Do not reduce, thin, or dilute paint or finishes or add materials unless such procedure is specifically described in manufacturer's product instructions.
- B. Volatile Organic Compound (VOC) Content:
 1. Provide paints and finishes that comply with the most stringent requirements specified in the following:
 - a. 40 CFR 59, Subpart D--National Volatile Organic Compound Emission Standards for Architectural Coatings.
 - b. Architectural coatings VOC limits of the State in which the Project is located.
 2. Determination of VOC Content: Testing and calculation in accordance with 40 CFR 59, Subpart D (EPA Method 24), exclusive of colorants added to a tint base and water added at project site; or other method acceptable to authorities having jurisdiction.
- C. Flammability: Comply with applicable code for surface burning characteristics.
- D. Sheens: Provide the sheens specified; where sheen is not specified, sheen will be selected later by Architect from the manufacturer's full line.
- E. Colors: As indicated on drawings.

2.03 PAINT SYSTEMS - EXTERIOR

- A. Paint E-OP - Exterior Surfaces to be Painted, Unless Otherwise Indicated: Including concrete and concrete masonry units.
 1. Two top coats and one coat primer.
 2. Top Coat(s): Exterior Latex.
 - a. Products:
 - 1) Sherwin-Williams Solo Interior/Exterior Acrylic Semi-Gloss.
 - 2) Sherwin-Williams A-100 Exterior Latex Gloss.
 - 3) Substitutions: Section 01 6000 - Product Requirements.
 3. Top Coat Sheen:
 - a. Semi-Gloss: MPI gloss level 5; use this sheen where selected by Architect.
 - b. Gloss: MPI gloss level 6; use this sheen where selected by Architect.
- B. Paint I-OP-MD-DT - Medium Duty Door/Trim: For surfaces subject to frequent contact by occupants, including metals:
 1. Medium duty applications include doors, door frames, railings, handrails, and guardrails.
 2. Two top coats and one coat primer.
 3. Top Coat(s): Exterior Light Industrial Coating, Water Based.
 - a. Products:
 - 1) Sherwin-Williams Pro Industrial Waterbased Alkyd Urethane Enamel. Gloss.
 - 2) Sherwin-Williams Pro Industrial Waterbased Alkyd Urethane Enamel. Semi-Gloss.
 - 3) Sherwin-Williams Pro Industrial Waterbased Alkyd Urethane Enamel. Low Sheen.
 - 4) Substitutions: Section 01 6000 - Product Requirements.
 - b. Top Coat Sheen:
 - 1) Eggshell: MPI gloss level 3; use this sheen where directed by Architect.
 - 2) Semi-Gloss: MPI gloss level 5; use this sheen where directed by Architect.
 - 3) Gloss: MPI gloss level 6; use this sheen where directed by Architect.
 - c. Primer: As specified under "PRIMERS" below.
- C. Paint GE-OP-3L - Exterior Fiber-Cement Siding, Opaque, Latex 3 Coat:
 1. One coat acrylic masonry primer; Sherwin-Williams Loxon Concrete and Masonry Primer/Sealer.
 2. Satin: 2 coats exterior acrylic; Sherwin-Williams Duration Exterior Acrylic Satin.

2.04 PRIMERS

- A. Primers: Provide the following unless other primer is required or recommended by manufacturer of top coats.

1. Fiber Cement Board: Alkali Resistant Water Based Primer; MPI #3.
 - a. Products:
 - 1) Sherwin-Williams Loxon Concrete and Masonry Primer Sealer, LX02W50. (MPI #3)
2. 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.
3. 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.
4. 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.
5. 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. Fiber Cement Siding: 12 percent.
 3. 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. Fiber Cement Siding: Remove dirt, dust and other foreign matter with a stiff fiber brush. Do not coat surfaces if moisture content or alkalinity of surfaces to be coated exceeds that permitted in manufacturer's written instructions.
- I. Exterior Gypsum Board: Fill minor defects with exterior filler compound. Spot prime defects after repair.
- J. 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.
- K. Asphalt, Creosote, or Bituminous Surfaces: Remove foreign particles to permit adhesion of finishing materials. Apply compatible sealer or primer.
- L. Insulated Coverings: Remove dirt, grease, and oil from canvas and cotton.
- M. Aluminum: Remove surface contamination and oils and wash with solvent according to SSPC-SP 1.
- N. 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.
- O. 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.
- P. 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.

3.07 COLOR SCHEDULE

END OF SECTION

SECTION 09 9123
INTERIOR PAINTING

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Surface preparation.
- B. Field application of paints.
- C. Materials for backpriming woodwork.
- D. Scope: Finish interior surfaces exposed to view, unless fully factory-finished and unless otherwise indicated.
 - 1. Both sides and edges of plywood backboards for electrical and telecom equipment before installing equipment.
 - 2. Access ladders.
 - 3. Surfaces inside cabinets.
 - 4. Prime surfaces to receive wall coverings.
 - 5. Mechanical and Electrical:
 - a. In finished areas, paint insulated and exposed pipes, conduit, boxes, insulated and exposed ducts, hangers, brackets, collars and supports, mechanical equipment, and electrical equipment, unless otherwise indicated.
 - b. In finished areas, paint shop-primed items.
 - c. Paint interior surfaces of air ducts and convectors and baseboard heating cabinets that are visible through grilles and louvers with one coat of flat black paint to visible surfaces.
 - d. Paint dampers exposed behind louvers, grilles, to match face panels.
- E. Do Not Paint or Finish the Following Items:
 - 1. Items factory-finished unless otherwise indicated; materials and products having factory-applied primers are not considered factory finished.
 - 2. Items indicated to receive other finishes.
 - 3. Items indicated to remain unfinished.
 - 4. Fire rating labels, equipment serial number and capacity labels, bar code labels, and operating parts of equipment.
 - 5. Stainless steel, anodized aluminum, bronze, terne coated stainless steel, and lead items.
 - 6. Marble, granite, slate, and other natural stones.
 - 7. Floors, unless specifically indicated.
 - 8. Ceramic and other tiles.
 - 9. Brick, architectural concrete, cast stone, integrally colored plaster and stucco.
 - 10. Glass.
 - 11. Concealed pipes, ducts, and conduits.

1.02 RELATED REQUIREMENTS

- A. Section 05 5000 - Metal Fabrications: Shop-primed items.
- B. Section 05 5100 - Metal Stairs: Shop-primed items.
- C. Section 09 9113 - Exterior Painting.
- D. Section 09 9600 - High-Performance Coatings.
- E. Section 21 0553 - Identification for Fire Suppression Piping and Equipment: Painted identification.
- F. Section 22 0553 - Identification for Plumbing Piping and Equipment: Painted identification.
- G. Section 23 0553 - Identification for HVAC Piping and Equipment: Painted identification.
- H. Section 26 0553 - Identification for Electrical Systems: Painted identification.

1.03 DEFINITIONS

- A. Comply with ASTM D16 for interpretation of terms used in this section.

1.04 REFERENCE STANDARDS

- A. 40 CFR 59, Subpart D - National Volatile Organic Compound Emission Standards for Architectural Coatings; U.S. Environmental Protection Agency; current edition.
- B. ASTM D16 - Standard Terminology for Paint, Related Coatings, Materials, and Applications; 2016.
- C. ASTM D4258 - Standard Practice for Surface Cleaning Concrete for Coating; 2005 (Reapproved 2017).
- D. ASTM D4442 - Standard Test Methods for Direct Moisture Content Measurement of Wood and Wood-Based Materials; 2016.
- E. MPI (APSM) - Master Painters Institute Architectural Painting Specification Manual; Current Edition.
- F. SSPC-SP 13 - Surface Preparation of Concrete; 1997 (Reaffirmed 2003).

1.05 SUBMITTALS

- A. See Section 01 3000 - Administrative Requirements, for submittal procedures.
- B. Product Data: Provide complete list of products to be used, with the following information for each:
 - 1. Manufacturer's name, product name and/or catalog number, and general product category (e.g. "alkyd enamel").
 - 2. MPI product number (e.g. MPI #47).
 - 3. Cross-reference to specified paint system(s) product is to be used in; include description of each system.
 - 4. Manufacturer's installation instructions.
 - 5. If proposal of substitutions is allowed under submittal procedures, explanation of substitutions proposed.
- C. Samples: Submit three paper "draw down" samples, 8-1/2 by 11 inches in size, illustrating range of colors available for each finishing product specified.
 - 1. Where sheen is specified, submit samples in only that sheen.
 - 2. Where sheen is not specified, submit each color in each sheen available.
 - 3. Allow 30 days for approval process, after receipt of complete samples by Architect.
 - 4. Paint color submittals will not be considered until color submittals for major materials not to be painted, such as masonry, have been approved.
- D. Samples: Submit two painted samples, illustrating selected colors and textures for each color and system selected with specified coats cascaded. Submit on aluminum sheet, 8 by 12 inch in size.
- E. Certification: By manufacturer that paints and finishes comply with VOC limits specified.
- F. Manufacturer's Instructions: Indicate special surface preparation procedures.
- G. Maintenance Data: Submit data including finish schedule showing where each product/color/finish was used, product technical data sheets, material safety data sheets (MSDS), care and cleaning instructions, touch-up procedures, repair of painted and finished surfaces, and color samples of each color and finish used.
- H. Maintenance Materials: Furnish the following for Owner's use in maintenance of project.
 - 1. See Section 01 6000 - Product Requirements, for additional provisions.
 - 2. Extra Paint and Finish Materials: 5 percent but not less than 1 gallons of each color; from the same product run, store where directed.
 - 3. Label each container with color in addition to the manufacturer's label.

1.06 QUALITY ASSURANCE

- A. Manufacturer Qualifications: Company specializing in manufacturing the products specified, with minimum ten years documented experience.
- B. Applicator Qualifications: Company specializing in performing the type of work specified with minimum five years experience and approved by manufacturer.

1.07 MOCK-UP

- A. See Section 01 4000 - Quality Requirements, for general requirements for mock-up.
- B. Provide panel, 8 feet long by 8 feet wide, illustrating paint color, texture, and finish.
- C. Provide door and frame assembly illustrating paint color, texture, and finish.
- D. Locate where directed by Architect.
- E. Mock-up may remain as part of the work.

1.08 DELIVERY, STORAGE, AND HANDLING

- A. Deliver products to site in sealed and labeled containers; inspect to verify acceptability.
- B. Container Label: Include manufacturer's name, type of paint, brand name, lot number, brand code, coverage, surface preparation, drying time, cleanup requirements, color designation, and instructions for mixing and reducing.
- C. Paint Materials: Store at minimum ambient temperature of 45 degrees F and a maximum of 90 degrees F, in ventilated area, and as required by manufacturer's instructions.

1.09 FIELD CONDITIONS

- A. Do not apply materials when surface and ambient temperatures are outside the temperature ranges required by the paint product manufacturer.
- B. Follow manufacturer's recommended procedures for producing best results, including testing of substrates, moisture in substrates, and humidity and temperature limitations.
- C. Do not apply materials when relative humidity exceeds 85 percent; at temperatures less than 5 degrees F above the dew point; or to damp or wet surfaces.
- D. Minimum Application Temperatures for Paints: 50 degrees F for interiors unless required otherwise by manufacturer's instructions.
- E. Provide lighting level of 80 ft candles measured mid-height at substrate surface.

PART 2 PRODUCTS

2.01 MANUFACTURERS

- A. Provide paints and finishes from the same manufacturer to the greatest extent possible.
 - 1. In the event that a single manufacturer cannot provide specified products, minor exceptions will be permitted provided approval by Architect is obtained using the specified procedures for substitutions.
 - 2. Substitution of MPI-approved products by a different manufacturer is preferred over substitution of unapproved products by the same manufacturer.
 - 3. Substitution of a different paint system using MPI-approved products by the same manufacturer will be considered.
- B. Paints:
 - 1. Base Manufacturer: Sherwin-Williams Company.
 - 2. Behr Process Corporation: www.behr.com/#sle.
 - 3. PPG Paints: www.ppgpaints.com/#sle.
 - 4. Pratt & Lambert Paints: www.prattandlambert.com/#sle.
 - 5. Sherwin-Williams Company: www.sherwin-williams.com/#sle.
 - 6. Valspar Corporation: www.valsparpaint.com/#sle.
- C. Primer Sealers: Same manufacturer as top coats.

D. Substitutions: See Section 01 6000 - Product Requirements.

2.02 PAINTS AND FINISHES - GENERAL

- A. Paints and Finishes: Ready mixed, unless intended to be a field-catalyzed paint.
1. Provide paints and finishes of a soft paste consistency, capable of being readily and uniformly dispersed to a homogeneous coating, with good flow and brushing properties, and capable of drying or curing free of streaks or sags.
 2. 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 State in which the project is located.
 2. Determination of VOC Content: Testing and calculation in accordance with 40 CFR 59, Subpart D (EPA Method 24), exclusive of colorants added to a tint base and water added at project site; or other method acceptable to authorities having jurisdiction.
- C. Flammability: Comply with applicable code for surface burning characteristics.
- D. Sheens: Provide the sheens specified; where sheen is not specified, sheen will be selected later by Architect from the manufacturer's full line.
- E. Colors: To be selected from manufacturer's full range of available colors.
1. Selection to be made by Architect after award of contract.
 2. Extend colors to surface edges; colors may change at any edge as directed by Architect.
 3. In finished areas, finish pipes, ducts, conduit, and equipment the same color as the wall/ceiling they are mounted on/under.
 4. In utility areas, finish equipment, piping, conduit, and exposed duct work in colors according to the color coding scheme indicated.

2.03 PAINT SYSTEMS - INTERIOR

- A. Paint I-OP-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.
 - B. 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.
 - C. Paint WI-OP-3A - Wood, Opaque, Alkyd, 3 Coat:
 1. One coat alkyd primer sealer. S-W Premium Wall & Wood Primer, B28W8111
 2. Semi-gloss: Two coats of alkyd enamel; S-W Pro-Industrial Alkyd Urethane Semi-gloss B53-1150 Series.

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 repair existing paints or finishes that exhibit surface defects.
- D. Remove or mask surface appurtenances, including electrical plates, hardware, light fixture trim, escutcheons, and fittings, prior to preparing surfaces or finishing.
- E. Seal surfaces that might cause bleed through or staining of topcoat.
- F. Remove mildew from impervious surfaces by scrubbing with solution of tetra-sodium phosphate and bleach. Rinse with clean water and allow surface to dry.
- G. 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.
- H. 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.
- I. 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.
- J. Gypsum Board: Fill minor defects with filler compound. Spot prime defects after repair.
- K. 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.
- L. Insulated Coverings: Remove dirt, grease, and oil from canvas and cotton.
- M. 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.

- N. Wood Doors to be Field-Finished: Seal wood door top and bottom edge surfaces with tinted primer.

3.03 APPLICATION

- A. Remove unfinished louvers, grilles, covers, and access panels on mechanical and electrical components and paint separately.
- B. Apply products in accordance with manufacturer's written instructions and recommendations in "MPI Architectural Painting Specification Manual".
- C. Do not apply finishes to surfaces that are not dry. Allow applied coats to dry before next coat is applied.
- D. Apply each coat to uniform appearance in thicknesses specified by manufacturer.
- E. Dark Colors and Deep Clear Colors: Regardless of number of coats specified, apply as many coats as necessary for complete hide.
- F. Sand wood and metal surfaces lightly between coats to achieve required finish.
- G. Vacuum clean surfaces of loose particles. Use tack cloth to remove dust and particles just prior to applying next coat.
- H. Reinstall electrical cover plates, hardware, light fixture trim, escutcheons, and fittings removed prior to finishing.

3.04 FIELD QUALITY CONTROL

- A. See Section 01 4000 - Quality Requirements, for general requirements for field inspection.
- B. Owner will provide field inspection.

3.05 CLEANING

- A. Collect waste material that could constitute a fire hazard, place in closed metal containers, and remove daily from site.

3.06 PROTECTION

- A. Protect finishes until completion of project.
- B. Touch-up damaged finishes after Substantial Completion.

END OF SECTION

SECTION 09 9600
HIGH-PERFORMANCE COATINGS

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. High performance coatings.
- B. Surface preparation.

1.02 RELATED REQUIREMENTS

- A. Section 09 9113 - Exterior Painting.
- B. Section 09 9123 - Interior Painting: Requirements for mechanical and electrical equipment surfaces.

1.03 PRICE AND PAYMENT PROCEDURES

- A. Alternates: See Section 01 2300 - Alternates, for product alternatives affecting this section.
 - 1. This section will be used in Alternate work (Alternate 3). Prepare surfaces, seal cracks, prime and paint dugouts, main concessions building and miscellaneous buildings outside of Limits of Construction indicated on Drawings. No painting outside of Limits of Construction will be required under Base Bid..

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 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.
- D. MPI (APSM) - Master Painters Institute Architectural Painting Specification Manual; Current Edition.
- E. SSPC-SP 1 - Solvent Cleaning; 2015, with Editorial Revision (2016).
- 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; 1997 (Reaffirmed 2003).

1.05 SUBMITTALS

- A. See Section 01 3000 - Administrative Requirements for submittal procedures.
- B. Product Data: Provide complete list of all products to be used, with the following information for each:
 - 1. Manufacturer's name, product name and/or catalog number, and general product category (e.g. "alkyd enamel").
 - 2. MPI product number (e.g. MPI #47).
 - 3. Cross-reference to specified coating system(s) product is to be used in; include description of each system.
 - 4. Manufacturer's installation instructions.
 - 5. If proposal of substitutions is allowed under submittal procedures, explanation of all substitutions proposed.
- C. Samples: Submit two samples 4 by 4 inch in size illustrating colors available for selection.
- D. Manufacturer's Certificate: Certify that products meet or exceed specified requirements.
- E. Manufacturer's Installation Instructions: Indicate special procedures and perimeter conditions requiring special attention.
- F. Maintenance Data: Include cleaning procedures and repair and patching techniques.

- G. Maintenance Materials: Furnish the following for Owner's use in maintenance of project.
 - 1. See Section 01 6000 - Product Requirements, for additional provisions.
 - 2. Extra Coating Materials: 5 percent but not less than 1 gallon of each type and color.
 - 3. Label each container with manufacturer's name, product number, color number, and room names and numbers where used.

1.06 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.

1.07 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. PPG Paints: www.ppgpaints.com/#sle.
 - 3. Precision Coatings: www.precisioncoatingsinc.com.
 - 4. Sherwin-Williams Company: www.protective.sherwin-williams.com/industries.

5. Tnemec Company, Inc: www.tnemec.com/#sle.
6. Substitutions: Section 01 6000 - Product Requirements.

2.02 HIGH-PERFORMANCE COATINGS

2.03 TOP COAT MATERIALS

- A. Coatings - General: Provide complete multi-coat systems formulated and recommended by manufacturer for the applications indicated, in the thicknesses indicated; number of coats specified does not include primer or filler coat.
 1. Lead Content: Not greater than 0.06 percent by weight of total nonvolatile content.
 2. Chromium Content, as Hexavalent Chromium, Zinc Chromate, or Strontium Chromate: None.
 3. Volatile Organic Compound (VOC) Content:
 - a. Provide coatings that comply with the most stringent requirements specified in the following:
 - 1) 40 CFR 59, Subpart D--National Volatile Organic Compound Emission Standards for Architectural Coatings.
 - 2) Architectural coatings VOC limits of the State in which the Project is located.
 - b. Determination of VOC Content: Testing and calculation in accordance with 40 CFR 59, Subpart D (EPA Method 24), exclusive of colorants added to a tint base and water added at project site; or other method acceptable to authorities having jurisdiction.
 4. Colors: Selected from manufacturer's standard colors.
- B. Urethane Coating for exterior masonry, steel, galvanized steel and aluminum:
 1. Number of Coats: Two.
 2. Product Characteristics:
 - a. Percentage of solids by volume: 44, minimum.
 - b. Dry film thickness, per coat: 2.5 mils, minimum.
 3. Top Coat(s): Acrylic Urethane, Water Based, Two-Component.
 - a. Sheen: High Gloss.
 - b. Products:
 - 1) Sherwin-Williams; Pro Industrial Waterbased Acrolon 100: www.protective.sherwin-williams.com/#sle.
 - 2) Substitutions: Section 01 6000 - Product Requirements.
 4. Primer: As specified under "PRIMERS" below.
- C. Shellac: Pure, white type.

2.04 PRIMERS

- A. Primers: Provide the following unless other primer is required or recommended by coating manufacturer.
 1. Block Filler, Latex; MPI #4.
 - a. Products:
 - 1) Sherwin-Williams Pro Industrial Heavy Duty Block Filler. (MPI #4)
 - 2) Substitutions: Section 01 6000 - Product Requirements.
 2. Rust-Inhibitive, Water Based; ferrous metal, galvanized metal and aluminum.
 - a. Products:
 - 1) Sherwin-Williams; Pro Industrial Pro-Cryl Universal Primer; MPI #107: www.protective.sherwin-williams.com/#sle.
 - 2) Substitutions: Section 01 6000 - Product Requirements.
 3. Zinc Rich, Inorganic; Properly prepared steel.
 - a. Products:
 - 1) Sherwin-Williams; Zinc Clad IV : www.protective.sherwin-williams.com/#sle.

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. Existing Painted and Sealed Surfaces:
 - 1. Remove loose, flaking, and peeling paint. Feather edge and sand smooth edges of chipped paint.
 - 2. Clean with mixture of trisodium phosphate and water to remove surface grease and foreign matter.
- 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 coating 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 coating manufacturer.
- G. Aluminum: Remove surface contamination and oils and wash with solvent according to SSPC-SP 1.
- H. 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.
- I. Ferrous Metal:
 1. Solvent clean according to SSPC-SP 1.
 2. Shop-Primed Surfaces: Verify compatibility of shop primer with specified top coats. Sand and scrape to remove loose primer and rust. Feather edges to make touch-up patches inconspicuous. Clean surfaces with solvent. Prime bare steel surfaces. Re-prime entire shop-primed item.
 3. Remove rust, loose mill scale, and other foreign substances using using methods recommended in writing by paint manufacturer and blast cleaning according to SSPC-SP 6 "Commercial Blast Cleaning", and protect from corrosion until coated.
- J. Protect adjacent surfaces and materials not receiving coating from spatter and overspray; mask if necessary to provide adequate protection. Repair damage.

3.03 PRIMING

- A. Apply primer to all surfaces, unless specifically not required by coating manufacturer. Apply in accordance with coating manufacturer's instructions.
- B. Wood: Prior to priming patch with filler to produce smooth, even surface.
- C. Concrete: Prior to priming, patch with masonry filler to produce smooth surface.
- D. Concrete Masonry: Apply masonry filler to thickness required to fill holes and produce smooth surface; minimum thickness of 30 mils.

3.04 COATING APPLICATION

- A. Apply coatings in accordance with manufacturer's written instructions, to thicknesses specified and recommendations in "MPI Architectural Painting and Specification Manual".
- B. Apply in uniform thickness coats, without runs, drips, pinholes, brush marks, or variations in color, texture, or finish. Finish edges, crevices, corners, and other changes in dimension with full coating thickness.

3.05 CLEANING

- A. Collect waste material that could constitute a fire hazard, place in closed metal containers, and remove daily from site.
- B. Clean surfaces immediately of overspray, splatter, and excess material.
- C. After coating has cured, clean and replace finish hardware, fixtures, and fittings previously removed.

3.06 PROTECTION

- A. Protect finished work from damage.

3.07 SCHEDULE

- A. Colors and Glosses: As indicated on Finish Schedule or as otherwise selected by Architect.
- B. Exterior exposed structural steel: Urethane Coating.
- C. Miscellaneous exposed exterior steel: Urethane Coating.

END OF SECTION

SECTION 10 1400
SIGNAGE

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Room and door signs.
- B. Building identification signs.
- C. Flat plate metal cut logo signage.

1.02 RELATED REQUIREMENTS

- A. Section 22 0553 - Identification for Plumbing Piping and Equipment.
- B. Section 26 0553 - Identification for Electrical Systems.
- C. Section 26 5100 - Interior Lighting: Exit signs required by code.

1.03 REFERENCE STANDARDS

- A. 36 CFR 1191 - Americans with Disabilities Act (ADA) Accessibility Guidelines for Buildings and Facilities; Architectural Barriers Act (ABA) Accessibility Guidelines; current edition.
- B. ADA Standards - Americans with Disabilities Act (ADA) Standards for Accessible Design; 2010.
- C. ICC A117.1 - Accessible and Usable Buildings and Facilities; 2017.

1.04 SUBMITTALS

- A. See Section 01 3000 - Administrative Requirements, for submittal procedures.
- B. Product Data: Manufacturer's printed product literature for each type of sign, indicating sign styles, font, foreground and background colors, locations, overall dimensions of each sign.
- C. Signage Schedule: Provide information sufficient to completely define each sign for fabrication, including room number, room name, other text to be applied, sign and letter sizes, fonts, and colors.
 - 1. When room numbers to appear on signs differ from those on drawings, include the drawing room number on schedule.
 - 2. When content of signs is indicated to be determined later, request such information from Owner through Architect at least 2 months prior to start of fabrication; upon request, submit preliminary schedule.
 - 3. Submit for approval by Owner through Architect prior to fabrication.
- D. Samples: Submit two samples of each type of sign, of size similar to that required for project, illustrating sign style, font, and method of attachment.
- E. Selection Samples: Where colors are not specified, submit two sets of color selection charts or chips.
- F. Verification Samples: Submit samples showing colors specified.
- G. Manufacturer's Installation Instructions: Include installation templates and attachment devices.

1.05 QUALITY ASSURANCE

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

1.06 DELIVERY, STORAGE, AND HANDLING

- A. Package signs as required to prevent damage before installation.
- B. Package room and door signs in sequential order of installation, labeled by floor or building.
- C. Store tape adhesive at normal room temperature.

1.07 FIELD CONDITIONS

- A. Do not install tape adhesive when ambient temperature is lower than recommended by manufacturer.
- B. Maintain this minimum temperature during and after installation of signs.

PART 2 PRODUCTS

2.01 MANUFACTURERS

- A. Flat Signs:
 - 1. Basis of Design: 2/90 Sign Systems; Klik Sign System: www.290signs.com.
 - 2. Other Acceptable Manufacturers:
 - a. Best Sign Systems, Inc: www.bestsigns.com.
 - b. Coastal Sign Concepts LLC: coastalsignconcepts.com.
 - c. Cosco Industries : www.coscoarchitecturalsigns.com.
 - d. Leeds Architectural Letters, Inc: www.leedsletters.com.
 - e. Mohawk Sign Systems, Inc: www.mohawksign.com.
 - 3. Substitutions: See Section 01 6000 - Product Requirements.
- B. Dimensional Letter, Fabricated and Cut Flat Plate Signs and Logos:
 - 1. A.R.C. Ramos Signage Systems: www.arccramos.com
 - 2. Cosco Industries: www.coscoarchitecturalsigns.com.
 - 3. Leeds Architectural Letters, Inc: www.leedsletters.com.
 - 4. Woodland Manufacturing Co: www.woodlandmanufacturing.com.
 - 5. Coastal Sign Concepts LLC: coastalsignconcepts.com.
 - 6. Substitutions: See Section 01 6000 - Product Requirements.

2.02 SIGNAGE APPLICATIONS

- A. Accessibility Compliance: Signs are required to comply with ADA Standards and ICC A117.1 and applicable building codes, unless otherwise indicated; in the event of conflicting requirements, comply with the most comprehensive and specific requirements.
- B. Individual Signage;
 - 1. Sign Type 1:
 - a. Size: 6 by 6 inches.
 - 1) Insert A:
 - (a) 2 by 6 inch ADA.
 - (b) Color: Metallics 158 Graphite.
 - (c) Character Size: 5/8 inch oriented left.
 - (d) Character Style: Arial.
 - (e) Copy Color: Prisms 708 Soft White.
 - 2) Insert B:
 - (a) 4 by 6 inch non-ADA.
 - (b) Color: Metallics 158 Graphite.
 - (c) Character Size: 5/8 inch oriented lower left.
 - (d) Character Style: Arial.
 - (e) Copy Color: Prisms 708 Soft White.
- C. 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. Service Rooms: Identify with room names and numbers to be determined later, not those indicated on drawings.

D. Flat Plate Cut Signage:

1. Provide 1/4 inch thick aluminum plate letters in sizes and font 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 1 inch standoffs.
5. Finish: Where indicated, provide even and uniform brushed satin finish; matte edges.
6. Finish: Where indicated, provide acrylic polyurethane finish system specifically formulated for metal signage. Provide complete system as recommended by paint manufacturer for required substrate to include preparation, primer and all catalysts, reducers etc.
 - a. Matthews Paint; Matthews Acrylic Polyurethane (MAP): www.matthewspaint.com.
 - 1) 6001SP Polyester Primer Surfacer.
 - 2) 2 coats Matthews Acrylic Polyester.
 - 3) Sheen: As selected by Architect from manufacturer standards.

2.03 TACTILE SIGNAGE MEDIA

- A. Applied Character Panels: Acrylic plastic base, with applied acrylic plastic letters and braille.
1. Total Thickness: 1/4 inch.
 2. Letter Thickness: 1/16 inch.
 3. Letter Edges: Square.

2.04 ACCESSORIES

- A. Stand-Offs: 3/4 inch natural matte finish aluminum stand-offs.
- B. Exposed Screws: Chrome plated.
- C. Tape Adhesive: Double sided tape, permanent adhesive.

PART 3 EXECUTION

3.01 EXAMINATION

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

3.02 INSTALLATION

- A. Install in accordance with manufacturer's instructions.
- B. Install neatly, with horizontal edges level.
- C. Locate signs and mount at heights indicated on drawings and in accordance with ADA Standards and ICC A117.1.
- D. Protect from damage until Substantial Completion; repair or replace damaged items.

END OF SECTION

SECTION 10 4313
DEFIBRILLATOR CABINETS

PART 1 - GENERAL

1.01 SUMMARY

- A. Section Includes:
 - 1. Surface mounted fabricated automated external defibrillator (AED) cabinets.
 - 2. Automated external defibrillators (AED's).

1.02 ACTION SUBMITTALS

- A. Product Data: For each type of product indicated. Include construction details, material descriptions, dimensions of individual components and profiles, and finishes for AED cabinets.
 - 1. Include roughing-in dimensions, details showing mounting methods, relationships of box and trim to surrounding construction, door hardware, cabinet type, trim style, and panel style.
 - 2. Automated External Defibrillator
- B. Shop Drawings: For AED cabinets. Include plans, elevations, sections, details, and attachments to other work.
- C. Samples for Initial Selection: For each type of AED cabinet indicated.
- D. Samples for Verification: For each type of exposed finish required, prepared on Samples of size indicated below:
 - 1. Size: 6 by 6 inches square.

1.03 CLOSEOUT SUBMITTALS

- A. Maintenance and Reordering Data: For AED Cabinets and AED units including pads and battery packs.

1.04 QUALITY ASSURANCE

- A. Electrical Components, Devices and Accessories: : Listed and labeled as defined in NFPA 70, by a qualified testing agency, and marked for intended location and application.
- B. Pre-installation Conference: Conduct conference at Project site.
 - 1. Review methods and procedures related to AED cabinets including, but not limited to, the following:
 - a. Schedules and coordination requirements.

1.05 COORDINATION

- A. Coordinate size of AED cabinets to ensure that type and capacity of AED units indicated are accommodated.
- B. Coordinate sizes and locations of AED cabinets with wall depths, construction, and fire ratings.

PART 2 - PRODUCTS

2.01 MANUFACTURERS

- A. AED Cabinets: Provide surface mounted cabinet suitable for selected AED.
 - 1. Basis of Design Manufacturer: Physio- Control Inc; AED Wall Cabinet : www.physio-control.com.
 - 2. Other Acceptable Manufacturers: Subject to requirements, provide equal products of the following manufacturers with written approval of Architect.
 - 3. Potter-Roemer; HSL-05 AED: www.potterroemer.com.
 - 4. JL Industries, Inc; 1415F12 AED: www.jlindustries.com.
 - 5. Larsen's Manufacturing Co: www.larsensmfg.com.
 - 6. Nystrom, Inc: www.nystrom.com/sle.
 - 7. Substitutions: See Section 01 6000 - Product Requirements.
- B. Automated External Defibrillator (AED)

1. Basis of Design Physio-Control Inc; LifePak CR Plus Fully Automatic:
www.physio-control.com.
2. Substitutions: Not permitted.

2.02 MATERIALS

- A. Cold-Rolled Steel Sheet: ASTM A 1008/A 1008M, Commercial Steel (CS), Type B.
- B. Tempered Float Glass: ASTM C 1048, Kind KT, Condition A, Type I, Quality q3, 1/8 inch, Class I (clear).

2.03 AED CABINET

- A. Cabinet Type: Suitable for mounting AED with alarm;
- B. Cabinet Construction: Nonrated surface mounted.
- C. Cabinet Interior Size: 14 inches wide by 22 inches high by 6 inches deep, as required to incorporate AED and specified features. All cabinet components and equipment shall be accessible, removable and replaceable with the cabinet door in a 90 degree position.
- D. Cabinet Material: Steel sheet.
- E. Recessed Cabinet: Cabinet box recessed in walls of sufficient depth to suit style of trim.
- F. Cabinet Trim Material: Stainless-steel sheet.
- G. Door Material: Steel sheet.
- H. Door Style: Provide limited visibility window to match existing.
- I. Door Glazing: Tempered float glass.
- J. Door Hardware: Manufacturer's standard door-operating hardware of proper type for cabinet type, trim style, and door material and style indicated.
 1. Provide manufacturer's standard.
 2. Provide continuous hinge, of same material and finish as trim, permitting door to open 180 degrees.
- K. Accessories:
 1. Identification: Manufacturer's standard identification signage.
 2. Provide clips and hangers as required for AED unit.
- L. Finishes:
 1. Manufacturer's standard baked-enamel paint for the interior of cabinet.

2.04 AUTOMATED EXTERNAL DEFIBRILLATOR (AEDS)

- A. General: Provide automatic defibrillator especially designed for public use. Include voice commands. Provide complete with long life battery pack, pads software and instructions.
- B. Provide the following: Provide city standard model complete with battery pack and pads.
 1. LifePak CR Plus Fully Automatic manufactured by Physio-Control Inc.
 2. Substitutions: Not permitted

2.05 FABRICATION

- A. AED Cabinets: Provide manufacturer's standard box (tub) with trim, frame, door, and hardware to suit cabinet type, trim style, and door style indicated.
 1. Weld joints and grind smooth.
 2. Provide factory-drilled mounting holes.
- B. Cabinet Doors: Fabricate doors according to manufacturer's standards, from materials indicated and coordinated with cabinet types and trim styles selected.
- C. Cabinet Trim: Fabricate cabinet trim in one piece with corners mitered, welded, and ground smooth.

2.06 GENERAL FINISH REQUIREMENTS

- A. Comply with NAAMM's "Metal Finishes Manual for Architectural and Metal Products" for recommendations for applying and designating finishes.
- B. Protect mechanical finishes on exposed surfaces of fire protection cabinets from damage by applying a strippable, temporary protective covering before shipping.
 - 1. Finish fire protection cabinets after assembly.
 - 2. Appearance of Finished Work: Noticeable variations in same piece are not acceptable. Variations in appearance of adjoining components are acceptable if they are within the range of approved Samples and are assembled or installed to minimize contrast.

PART 3 - EXECUTION

3.01 EXAMINATION

- A. Examine walls and partitions for suitable framing depth and blocking where recessed cabinets will be installed.
- B. Proceed with installation only after unsatisfactory conditions have been corrected.

3.02 PREPARATION

- A. Prepare recesses for recessed fire protection cabinets as required by type and size of cabinet and trim style.

3.03 INSTALLATION

- A. General: Install AED cabinets in locations and at mounting heights, at heights acceptable to the Authority Having Jurisdiction.
- B. AED Cabinets: Fasten cabinets to structure, square and plumb.

3.04 ADJUSTING AND CLEANING

- A. Remove temporary protective coverings and strippable films, if any, as cabinets are installed unless otherwise indicated in manufacturer's written installation instructions.
- B. Adjust cabinet doors to operate easily without binding.
- C. On completion of cabinet installation, clean interior and exterior surfaces as recommended by manufacturer.
- D. Touch up marred finishes, or replace cabinets that cannot be restored to factory-finished appearance. Use only materials and procedures recommended or furnished by AED cabinet and mounting bracket manufacturers.
 - 1. Replace AED cabinets that have been damaged or have deteriorated beyond successful repair by finish touchup or similar minor repair procedures.

END OF SECTION

SECTION 10 4316
FIRST AID CABINETS

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. First aid cabinets and supplies, size and number as required to serve 200 persons, minimum.

1.02 REFERENCE STANDARDS

- A. ANSI/ISEA Z308.1 - American National Standard - Minimum Requirements for Workplace First Aid Kits and Supplies; 2015.
- B. FEMA P-361 - Safe Rooms for Tornadoes and Hurricanes: Guidance for Community and Residential Safe Rooms; 2015.
- C. ICC 500 - ICC/NSSA Standard for the Design and Construction of Storm Shelters; National Storm Shelter Association; 2014.
- D. OSHA Standard 29 CFR 1910.151.

1.03 SUBMITTALS

- A. See Section 01 3000 - Administrative Requirements, for submittal procedures.
- B. Product Data: Provide cabinet features and contents, color and finish, and anchorage details.
- C. Shop Drawings: Indicate cabinet size, installation requirements and construction.
- D. Certificate: Certify that products of this section meet or exceed specified requirements.
- E. Maintenance Data: Provide content listing, shelf life and reordering data.

1.04 QUALITY ASSURANCE

- A. In accord with requirements contained in ICC 500 and FEMA P-361, whichever is more strict, provide at the minimum, first aid kit sized as adequate for shelter occupancy.
- B. First Aid Kit: Comply with ANSI/ISEA Z308.1 Class B Type I or II.

PART 2 PRODUCTS

2.01 BASE BID MANUFACTURER

- A. First Aid Only an Acme United Corporation brand, Model 200 Person 5 Shelf First Aid Metal Cabinet Part No. 249-O/P: www.firstaidonly.com.
- B. Other Acceptable Manufacturers: Subject to requirements, provide equal products of one of the following suppliers with written approval of Architect.
 - 1. First Aid Product: www.first-aid-product.com.
 - 2. Select Safety Sales: www.selectsafetysales.com.
 - 3. Wholesale Direct First Aid: www.wholesale-direct-first-aid.com.
 - 4. Substitutions: See Section 01 6000 - Product Requirements.

2.02 PRODUCT

- A. 5 Shelf Industrial First Aid Station with a pocket liner: 5-shelf, 1720pc industrial first aid station to serve 200 + people.
 - 1. Meet all OSHA and ANSI recommendations for first aid stations.
 - 2. Provide printed refill requirements with reordering diagram on cabinet.
 - 3. Provide 22 pocket vinyl liner to provide additional storage.
 - 4. Cabinet Dimensions: 19-1/2 x 26 x 5-1/2 inches.
- B. Cabinet Contents:
 - 1. 1 I-435: Antacid tablets, (125) 2-pks
 - 2. 1 I-415: Non-aspirin tablets, (125) 2-pks
 - 3. 1 I-427: Extra-strength pain reliever, (125) 2-pks
 - 4. 1 H-410: Aspirin tablets, (50) 2-pks
 - 5. 1 G-155: 3/4"x3" Adhesive plastic bandages, 100/bx

6. 1 G-122: 1"x3" Fabric bandages, 100/bx
7. 1 G-124: Knuckle fabric bandages, 40/bx
8. 1 G-126: Fingertip fabric bandages, 40/bx
9. 1 G-128: Fingertip fabric bandages, large, 25/bx
10. 2 B-204: 2"x4.1 yd. Conforming gauze roll bandages, 2/bx
11. 1 B-207: 4"x4" Gauze dressing pads, 4/bx
12. 1 3"x5 yd. Cohesive elastic bandage wrap
13. 1 M-270: Super Stop™ bandage
14. 1 B-518: Triangular sling/bandage, 1/bx
15. 1 G-532: Exam quality gloves, 5 pr/bx
16. 1 H-305: Alcohol cleansing pads, 100/bx
17. 1 B-503: 4"x5" Instant cold compress, 1/bx
18. 1 M-564-E: 6"x9" Instant cold compress, 1/bx
19. 1 SL-109: 2"x4" Elbow & knee plastic bandages, 25/bx
20. 1 M-5064: 3" Cotton tipped applicators, 100/vial
21. 1 I-228: 24 - 2"x2", 24 - 3"x3" Gauze dressing pads, 48/bx
22. 1 M-701-NIA: Eye wash, 4 oz.
23. 1 M-704-NIA: Eye wash solution, 8 oz.
24. 1 M-707: Redness reliever eye drops, 1/2 oz.
25. 1 M-528: Antiseptic spray, 3 oz.
26. 1 M-531: Burn spray, 3 oz.
27. 1 M-527: Spray on bandage, 3 oz.
28. 1 M-583: 5-3/4" Deluxe scissors - stainless steel
29. 1 M-584: 4" Tweezers, plastic
30. 1 M-660: 2"x5 yd. 3-Cut first aid tape
31. 1 H-307: Antiseptic cleansing wipes (sting free), 50/bx
32. 1 G-310: Povidone-iodine infection control wipes, 50/bx
33. 1 B-718: 4 Sterile, oval, gauze eye pads, 1/2"x5 yd. first aid tape, 1/bx
34. 1 G-231: 2"x3" Non-stick pads with adhesive edges, 50/bx
35. 1 B-504: CPR Pack: 1 Rescue Breather™ CPR one-way valve faceshield, 2 large latex gloves and 3 antiseptic wipes (sting free)
36. 1 A-5009: Ammonia inhalants, 10/bx
37. 1 A-151: Medium butterfly wound closures, 10/bx
38. 2 AN-205: 32 sq. in. Absorbent gauze compress, 1/bx
39. 1 G-486: Hydrocortisone cream, 1.0%, 1.5 gm pack, 25/bx
40. 1 G-469: Burn relief packs, 3.5 gm pack, 25/bx
41. 1 M-5068: 22-pocket, vinyl liner

PART 3 EXECUTION

3.01 INSTALLATION

- A. Install in accordance with manufacturer's instructions.
- B. Install cabinets plumb and level , 48 inches from finished floor to inside bottom of cabinet.
- C. Secure rigidly in place.
- D. Place first aid supplies and accessories in cabinets. Verify that contents are complete.

3.02 PROTECTION

- A. Protect installed first aid cabinets from subsequent construction operations.

END OF SECTION

SECTION 10 4400
FIRE PROTECTION SPECIALTIES

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Fire extinguishers.
- B. 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. FM (AG) - FM Approval Guide; current edition.
- B. NFPA 10 - Standard for Portable Fire Extinguishers; 2017, with Errata (2018).
- C. UL (DIR) - Online Certifications Directory; Current Edition.

1.04 SUBMITTALS

- A. See Section 01 3000 - Administrative Requirements, for submittal procedures.
- B. Product Data: Provide extinguisher operational features.
- C. Manufacturer's Installation Instructions: Indicate special criteria and wall opening coordination requirements.
- D. Manufacturer's Certificate: Certify that products meet or exceed specified requirements.
- E. Maintenance Data: Include test, refill or recharge schedules and re-certification requirements.

1.05 FIELD CONDITIONS

- A. Do not install extinguishers when ambient temperature may cause freezing of extinguisher ingredients.

PART 2 PRODUCTS

2.01 MANUFACTURERS

- A. Fire Extinguishers:
 - 1. Ansul, a Tyco Business: www.ansul.com.
 - 2. Kidde, a unit of United Technologies Corp: www.kidde.com.
 - 3. Nystrom, Inc: www.nystrom.com/sle.
 - 4. Pyro-Chem, a Tyco Business: www.pyrochem.com.
 - 5. Strike First Corporation of America: www.strikefirstusa.com/#sle.
 - 6. Substitutions: See Section 01 6000 - Product Requirements.

2.02 FIRE EXTINGUISHERS

- A. Fire Extinguishers - General: Comply with product requirements of NFPA 10 and applicable codes, whichever is more stringent.
 - 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 gauge.
 - 1. Cartridge Operated: Spun shell.
 - 2. Class: A:B:C type.
 - 3. Size: 5 pound.
 - 4. UL Rating: 3A-40BC
 - 5. Finish: Baked polyester powder coat, Red color.
 - 6. Temperature range: Minus 65 degrees F to 120 degrees F.

7. Provide extinguishers labeled by Underwriters Laboratories Inc. for the purpose specified and indicated.

2.03 ACCESSORIES

- A. Extinguisher Brackets: Formed steel, chrome-plated.
- B. Graphic Identification: Provide where required by code.

PART 3 EXECUTION

3.01 EXAMINATION

- A. Verify existing conditions before starting work.
- B. Prior to roughin, Coordinate with the various trades to avoid conflicts with other items
- C. Verify rough openings for cabinet are correctly sized and located.

3.02 INSTALLATION

- A. Install in accordance with manufacturer's instructions.
- B. Install cabinets plumb and level in wall openings, No more than 48 inches from finished floor to fire extinguisher handle.
- C. Secure rigidly in place.
- D. Place extinguishers and accessories in cabinets.
- E. Verify charge condition. Charge extinguishers as necessary.

3.03 MAINTENANCE

- A. See Section 01 7000 - Execution and Closeout Requirements, for additional requirements relating to maintenance service.
- B. Provide a separate maintenance contract for specified maintenance service.

3.04 MAINTENANCE - SELF-SERVICE FIRE EXTINGUISHERS

- A. Annual Inspections: Inspect self-service fire extinguishers on annual basis in accordance with manufacturer's instructions, and requirements of the authorities having jurisdiction (AHJ).
- B. Inspection Certification Tag: Provide new tag indicating acceptable condition of fire extinguisher, date of inspection, and name of self-service inspector for each inspection.

END OF SECTION

SECTION 10 7113.13
EXTERIOR SHUTTERS

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Aluminum shutters.
- B. Shutter hardware.

1.02 REFERENCE STANDARDS

- A. AAMA 2605 - Voluntary Specification, Performance Requirements and Test Procedures for Superior Performing Organic Coatings on Aluminum Extrusions and Panels (with Coil Coating Appendix); 2013.
- B. ASTM E330/E330M - Standard Test Method for Structural Performance of Exterior Windows, Doors, Skylights and Curtain Walls by Uniform Static Air Pressure Difference; 2014.
- C. ASTM E1996 - Standard Specification for Performance of Exterior Windows, Curtain Walls, Doors, and Impact Protective Systems Impacted by Windborne Debris in Hurricanes; 2017.

1.03 SUBMITTALS

- A. See Section 01 3000 - Administrative Requirements, for submittal procedures.
- B. Product Data: Manufacturer's data sheets on each product to be used.
- C. Shop Drawings: Show materials, layout, dimensions, profiles, fasteners and anchors, hardware, finishes, and interface with adjacent construction.
- D. Samples: For each finish product specified, two complete sets of color chips representing manufacturer's standard colors.
- E. Certificate: Certify that products of this section meet or exceed specified requirements.
- F. Test Reports: Show compliance with specified requirements for windborne debris-resistant shutters.
- G. Product Evaluation Reports: Show compliance with specified requirements.
- H. Manufacturer's Qualification Statement.
- I. Installer's Qualification Statement.
- J. Warranty Documentation: Submit manufacturer warranty and ensure that forms have been completed in Owner's name and registered with manufacturer.
- K. Specimen Warranty.

1.04 QUALITY ASSURANCE

- A. Manufacturer Qualifications: Company specializing in manufacturing products specified in this section, with at least five years of documented experience.
- B. Installer Qualifications: Company specializing in performing work of the type specified and with at least five years of documented experience and approved by manufacturer.

1.05 DELIVERY, STORAGE, AND HANDLING

- A. Deliver materials to site in manufacturer's original, unopened packaging, with labels clearly identifying product name and manufacturer.
- B. Store products in manufacturer's unopened packaging until ready for installation.
- C. Store materials in a clean, cool and dry area in accordance with manufacturer's instructions. Do not leave unopened shutters in direct sunlight.
- D. Protect materials during handling and installation to prevent damage.

1.06 FIELD CONDITIONS

- A. Maintain environmental conditions (temperature, humidity, and ventilation) within limits recommended by manufacturer. Do not install products under environmental conditions outside manufacturer's absolute limits.

1.07 WARRANTY

- A. See Section 01 7800 - Closeout Submittals, for additional warranty requirements.
- B. Correct defective Work within a five year period after Date of Substantial Completion.
- C. Provide five year manufacturer warranty for shutters.

PART 2 PRODUCTS

2.01 MANUFACTURERS

- A. Aluminum Shutters:
 - 1. Basis of Design: Larsen Shutter Company; New Horizon Decorative Aluminum Bahama Shutters: www.larsenshutters.com.
 - 2. LAS Shutters and Windows: www.lashome.com.
 - 3. Willard Shutter Company: www.willardshutterco.com.
 - 4. New Horizon Shitters: www.newhorizonshutters.com.
 - 5. Substitutions: See Section 01 6000 - Product Requirements.

2.02 EXTERIOR SHUTTERS

- A. General:
 - 1. Provide operable shutters as indicated on drawings.
- B. Material Composition: Aluminum, and as specified below.
- C. Type: Top hung (Bahama).
 - 1. Style: Louvered.
- D. Thickness: 1-3/4 inches, nominal.
- E. Width: 72 inch.
- F. Height: 72 inch.
- G. Impact Protective System: Shutter manufacturer's standard assembly for specified shutter type.
 - 1. Storm Bars:
 - a. Bahama Storm Shutters: Hurricane-rated top hinge with locking system on sides.
 - 2. Accessories: Provide stainless steel hinges, holders, fasteners, and other accessories to resist design windloads and for proper shutter operations.

2.03 PERFORMANCE REQUIREMENTS

- A. Shutters to withstand specified load requirements without damage or permanent set, when tested in accordance with ASTM E330/E330M.
- B. Design Wind Loads: Comply with requirements of authorities having jurisdiction.
- C. Windborne Debris Resistance: Shutter with impact protective system complying with ASTM E1996 for Wind Zone 3 - Enhanced Protection, including both large and small missile tests, and cyclic pressure loading when tested according to ASTM E1886.

2.04 MATERIALS

- A. Manufacturer's standard shutter construction and materials for selected model or product line.
- B. Aluminum: Shutters fabricated from individual components of aluminum and other materials as noted below.
 - 1. Stiles: Extruded aluminum.
 - 2. Rails: Extruded aluminum.
 - 3. Louver Slats: Extruded aluminum; rounded edges.

4. Thermal Stability: Reinforced aluminum alloy structural louvers for wider spans up to 48 inches and side rails finished with a two-part solar reflective polyurethane enamel thermally stable up to 800 degrees F.
5. Shop-Applied Finish:
 - a. Superior Performing Organic Coatings System: Manufacturer's standard multi-coat superior performing organic coatings system complying with AAMA 2605, including at least 70 percent polyvinylidene fluoride (PVDF) resin, and at least 80 percent of aluminum extrusion and panels surfaces having minimum total dry film thickness (DFT) of 1.2 mils, 0.0012 inch.
6. Color: As indicated on Drawings.

2.05 HARDWARE

- A. Hardware for Top-Hung "Bahama" Shutters: Select from shutter manufacturer's standard options.
 1. Two-Piece Continuous Top Hinges:
 - a. Material: Aluminum.
 - b. Finish: Match shutter finish and color.
 2. Tilt Arms:
 - a. Aluminum tilt arms with nylon end caps.
 - b. Adjustable for 18 inches extension.
 - c. Provide latching mechanism for securing shutter in closed position.

PART 3 EXECUTION

3.01 EXAMINATION

- A. Do not begin installation until substrates have been properly prepared.
- B. If substrate preparation is the responsibility of another installer, notify Architect of unsatisfactory preparation before proceeding.
- C. Commencement of work will imply acceptance of substrate.

3.02 PREPARATION

- A. Clean surfaces thoroughly prior to installation.
- B. Prepare surfaces using the methods recommended by the manufacturer for achieving the best result for the substrate under the project conditions.

3.03 INSTALLATION

- A. Install shutters in accordance with manufacturer's instructions for mounting indicated.
- B. Adjust operable units for smooth unobstructed operation.

3.04 PROTECTION

- A. Protect installed products from damage by weather and other work until Date of Substantial Completion.
- B. Touch-up and repair damaged products before Date of Substantial Completion.

END OF SECTION

SECTION 108113
BIRD CONTROL DEVICES

PART 1 – GENERAL

1.1 SUMMARY

- A. This Section includes:
 - a. Sonic Bird Control Devices to prevent and deter access to pest birds in the specified areas to prevent damage from droppings and nesting materials.

1.2 CONFORMANCE SUBMITTALS

- A. Substitute Products: No substitute products accepted.
- B. Product Data: Submit manufacturer's samples, catalog cuts, shop sketches and other descriptive materials.

1.3 CLOSEOUT

SUBMITTALS A.

Maintenance Data

1.4 QUALITY ASSURANCE

- A. Obtain technical literature from Bird Control Device manufacturer or distributor, telephone consultation and plan/photograph evaluation.
- B. Utilize an authorized or certified installation companies in your area who are fully skilled with specified Bird Control Systems, carry the proper insurance coverage, and able to offer warranty as specified.

1.5 PRODUCT HANDLING

- A. Protect Bird Control Devices and hardware system from damage before, during and after installation.
- B. If damage occurs to Bird Control Devices, make all replacements immediately.

1.6 WARRANTY

- A. Submit a 6-month manufacturer's warranty document, labor and material, executed by authorized company official.

PART 2 – PRODUCTS

2.1 ARCHITECTURAL BIRD CONTROL DEVICES

(ULTRASONIC) A. Acceptable Products:

A. Super BirdXpeller Pro

- a. Dimensions: Control unit 9" x 9" x 5.25", speakers 4" x 4" x 6" with 100 ft. of cable per speaker
 - b. Box dimensions: 19" x 13" x 7" / Shipping weight: 12 lbs c.
- Speakers: 8 ohms, 75 watts

- d. Coverage: Up to six acres
 - e. Power Requirements: 110v or 220vAC or 12vDC (110vAC adaptor not included; battery not included)
 - f. 110v cord is 50 ft / 220v and 240v cords are 6 ft g.
- Sound Pressure: 105–110 db at 1 meter
- h. Frequency: 3–3 kHz
 - i. Compliance: Supply power source is UL and CE listed

- j. EPA Est. 075130-OR0001
- k. NEMA type box
- l. Proudly made in the USA

- B. Provide Bird Control Devices, in necessary quantities to efficiently protect noted areas.
 - 1. As required by the manufacture and product coverage areas.

- C. Power Consumption/Description:
 - 1. Power Requirements: 110vAC (220vAC available)
 - 2. 110v cord is 6 ft / 220v and 240v cords are 6 ft
 - 3. Sound Pressure: Max 105–110 db at 1 meter
 - 4. Frequency: 3–3 kHz
 - 5. Compliance: unit CE Marked / supply power source UL Listed & CE Marked

PART 3 – EXECUTION

3.1 EXAMINATION

- A. Examine installation area. Notify Owner's Agent of detrimental work conditions.
- B. Do not proceed until conditions are corrected.

3.2 AREA AND SURFACE PREPERATION

- A. Remove existing bird droppings in a safe manner. Large quantities shall be removed and disposed of by reputable waste removal companies. Work areas shall be cleaned, and repair work shall be done in areas, which will be excluded by Bird Control Devices.
- B. Remove or repair articles that may damage the Bird Control Devices after installation.

3.3 INSTALLATION

- 1. Use the mounting hardware to mount the control unit box to a wall, post or other vertical surface.
- 2. Plug the AC power adapter into a standard household 110V outlet or an outdoor rated outlet protected from moisture. An optional 220V adapter is available for use with 220-volt source power. The other end of the cable should already be plugged into the power jack located below **POWER** on the front panel of the control unit box.
- 3. Speaker positioning: In general, place speakers at the level of the birds or higher, and as close as possible to the infested area. Position them either in a central area facing out, or in four outer areas facing further out. Birds should be constantly exposed to the greatest sound diversity without too much physical obstruction of the sound waves. If you're not sure exactly where you will want to place the speakers, we suggest temporary installations with wire ties until you determine where you want them permanently. The four individual speakers feature 100 feet of speaker cable that enable them to be positioned in a wide array of areas for optimal coverage. Spreading the speakers equidistant from each other around the target area is typical.
- 4. Set the Recordings, Mode Settings and Volume Knob as desired. (See "**PROGRAMMING YOUR SUPER BIRDXPPELLER**" for complete details).
- 5. Slide the power switch to the **ON** position. The unit may take a few seconds before starting.

6. Close the cover and latch shut.

3.4 INSPECTION

- A. Visually inspect Bird Control Devices for poor adherence to mounting surfaces, or other problems related to poor installation or surface preparation. Be sure all indicator lights are illuminated.
- B. Repair as necessary immediately.

SECTION 11 6654
INTERIOR PUTTING GREEN

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Fairway turf.
- B. Indoor putting green synthetic surfacing.
- C. Practice green cups.
- D. Accessories.

1.02 ADMINISTRATIVE REQUIREMENTS

- A. Coordination: Coordinate the installation of practice green cups with concrete slab work.
- B. Preinstallation Meeting: Conduct a preinstallation meeting one week prior to the start of the work of this section; require attendance by all affected installers.

1.03 SUBMITTALS

- A. See Section 01 3000 - Administrative Requirements, for submittal procedures.
- B. Product Data: Provide manufacturer's product literature,, product specification data, installation instructions, and suggested infill volume requirements..
- C. Shop Drawings: Indicate seaming pattern, where applicable. Identify direction and location of seams and seam construction method..
- D. Samples: Submit two samples, 12 x 12 inch in size, illustrating color and texture.
- E. Specimen Warranty.

1.04 QUALITY ASSURANCE

- A. Manufacturer Qualifications: Company specializing in manufacturing products specified in this section, with not less than three years of documented experience.
- B. Installer Qualifications: Company specializing in performing the work of this section with minimum three years of documented experience and approved by manufacturer.

1.05 DELIVERY, STORAGE, AND HANDLING

- A. Protect synthetic turf rolls and accessories from damage during delivery and store in a dry area, elevated above ground and protected from weather.

PART 2 PRODUCTS

2.01 BASE BID MANUFACTURER - SYNTHETIC TURF

- A. Southwestern Greens LLC: www.southwestgreens.com.
 - 1. Synthetic Fairway Turf: Product SWG 50 Pro GB-011.
 - 2. Synthetic Putting Green Turf: Product SWGGB.
- B. Other Acceptable Manufacturers: Provide equivalent products approved by Architect.
 - 1. Synthetic Turf International: www.synthetic-turf.com.
 - 2. Envylawn Div. Challenger Industries: www.envylawn.com.

2.02 SYNTHETIC FAIRWAY TURF:

- A. Description:
 - 1. Fiber Type: 100 percent polypropylene.
 - 2. Turf Pile Height: 1.75 inches.
 - 3. Color: Spring green, brown thatch.
 - 4. Secondary Backing: Urethane; 17 ounces per square yard.
 - 5. Tufted Face Weight: 50 ounces per square yard; measured in accord wit ASTM D418.
 - 6. Total Weight: 74 ounces per square yard; measured in accord with ASTM D418.

2.03 SYNTHETIC PUTTING GREEN TURF:

- A. Description:
 - 1. Fiber Type: 100 percent polypropylene.
 - 2. Turf Pile Height: 1.125 inches.
 - 3. Color: Bent/bermuda.
 - 4. Secondary Backing: Urethane; 17 ounces per square yard.
 - 5. Tufted Face Weight: 34 ounces per square yard; measured in accord wit ASTM D418.
 - 6. Total Weight: 58 ounces per square yard; measured in accord with ASTM D418.

2.04 ACCESSORIES

- A. Infill: Rounded granular infill as recommended by manufacturer.
- B. Cups: Regulation zinc cup, 6 inch deep x 4-1/4 inch diameter, meeting USGA regulations.
 - 1. Basis of Design: Par Aide Products Co; Product SKU-937: www.paraide.com.
 - 2. Other Acceptable Manufacturers:
 - a. Doyle Golf Inc: www.doyle-golf.com.
 - b. Golf Ventures Inc: www.golfventuresonline.com.
- C. Seam Tapes and Adhesive: As recommended by manufacturer.
- D. Attachment Adhesive: Recommended by synthetic turf manufacturer; releasable type.

PART 3 EXECUTION

3.01 EXAMINATION

- A. Verify that sub-floor surfaces are smooth and flat within the tolerances specified for that type of work and are ready to receive synthetic turf.
- B. Verify that sub-floor surfaces are dust-free and free of substances that could impair bonding of adhesives to sub floor surfaces.
- C. Cementitious Sub-floor Surfaces: Verify that substrates are dry enough and ready for flooring installation by testing for moisture and alkalinity (pH).
 - 1. Test in accordance with ASTM F710.
 - 2. Obtain instructions if test results are not within limits recommended by flooring material manufacturer and adhesive materials manufacturer.
- D. Verify that required floor-mounted cups are in correct location.

3.02 INSTALLATION

- A. Install in accordance with manufacturer's instructions.

3.03 CLOSEOUT ACTIVITIES

- A. See Section 01 7800 - Closeout Submittals, for closeout submittals.
- B. Training: Train Owner's personnel on maintenance and cleaning procedures.
 - 1. Use maintenance manual as training reference, supplemented with additional training materials as required.

3.04 PROTECTION

- A. Protect installed synthetic turf from subsequent construction operations.
- B. Do not permit traffic over unprotected floor surface.

END OF SECTION

SECTION 11 6833.33
BASEBALL FIELD EQUIPMENT

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Sports nets and recreational equipment including the following:
 - 1. Baseball backstop netting system.
 - 2. Batting cages.
 - 3. Safety padding.

1.02 RELATED REQUIREMENTS

- A. Section 01 2300 - Alternates: Descriptions of items, administrative requirements.
- B. Section 01 3000 - Administrative Requirements: Submittal procedures, project meetings, progress schedules and documentation, reports, coordination.
- C. Section 01 4533 - Code-Required Special Inspections.
- D. Section 06 1000 - Rough Carpentry: Treated wood nailers

1.03 PRICE AND PAYMENT PROCEDURES

- A. Alternates: See Section 01 2300 - Alternates, for product alternatives affecting this section.
 - 1. Batting cage included in this Section is included in Alternate No. 2. Base Bid will not require batting cages. Other items included in this Section will be included in Base Bid.

1.04 REFERENCE STANDARDS

- A. ASCE 7 - Minimum Design Loads and Associated Criteria for Buildings and Other Structures; Most Recent Edition Cited by Referring Code or Reference Standard.
- B. ASTM A1023 - Standard Specification for Carbon Steel Wire Ropes for General Purposes; 2019.
- C. ASTM A123/A123M - Standard Specification for Zinc (Hot-Dip Galvanized) Coatings on Iron and Steel Products; 2017.
- D. ASTM A135/A135M - Standard Specification for Electric-Resistance-Welded Steel Pipe; 2009 (Reapproved 2014).
- E. ASTM A500/A500M - Standard Specification for Cold-Formed Welded and Seamless Carbon Steel Structural Tubing in Rounds and Shapes; 2013.
- F. ASTM A513/A513M - Standard Specification for Electric-Resistance-Welded Carbon and Alloy Steel Mechanical Tubing; 2018.
- G. ASTM C94/C94M - Standard Specification for Ready-Mixed Concrete; 2015.
- H. ASTM D2256/D2256M - Standard Test Method for Tensile Properties of Yarns by the Single-Strand Method; 2010 (Reapproved 2015).
- I. ASTM D5823 - Standard Test Method for Tuft Height of Pile Floor Coverings; 2013.
- J. ASTM D5848 - Standard Test Method for Mass Per Unit Area of Pile Yarn Floor Coverings; 2010.
- K. AWS D1.1/D1.1M - Structural Welding Code - Steel; 2015, with Errata (2016).
- L. SSPC-SP 6 - Commercial Blast Cleaning; 2007.
- M. ASTM A53/A53M - Standard Specification for Pipe, Steel, Black and Hot-Dipped, Zinc Coated, Welded and Seamless 2012.
- N. ASTM A603 - Standard Specification for Zinc-Coated Steel Structural Wire Rope.
- O. ASTM A1007 - Standard Specification for Carbon Steel Wire for Wire Rope.

1.05 ADMINISTRATIVE REQUIREMENTS

- A. Coordination: Coordinate the installation of baseball backstop netting system with design and installation of grandstand system.
- B. Preinstallation Meeting: Conduct a preinstallation meeting one week prior to the start of the work of this section; require attendance by all affected installers.
- C. Scheduling: Carefully coordinate installation activities of the various subcontractors..
- D. Large Components: Ensure that large components can be moved into final position without damage to other construction.

1.06 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. Fire rating certifications.
 - 2. Structural steel welder certifications.
 - 3. 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. Provide stamped engineer drawing by AL licensed engineer to be provided with structural pole submittals.
- E. Erection Drawings: Detailed dimensional requirements for proper location of equipment.
- F. Samples:
 - 1. Netting: Submit samples of netting in manufacturer's available range of colors.
 - 2. Artificial Turf: Submit 2 samples 12 by 12 inch illustrating details of finished product.
- G. Operating and maintenance data, for each operating equipment item.
- H. Certificate: Certify that products of this section meet or exceed specified requirements.
- I. Warranty: Submit manufacturer warranty and ensure that forms have been completed in Owner's name and registered with manufacturer.

1.07 QUALITY ASSURANCE

- A. Designer Qualifications: Perform design under direct supervision of a Professional Engineer experienced in design of this type of work and licensed in the State in which the Project is located.
- B. Manufacturer Qualifications: Company specializing in manufacturing products specified in this section, with not less than five years of documented experience.
- C. Installer Qualifications: Company specializing in performing work of the type specified with minimum five years documented experience and approved by manufacturer.
- D. Welding: Comply with AWS D1.1/D1.1M.

1.08 DELIVERY, STORAGE, AND HANDLING

- A. Store products in manufacturer's unopened packaging until ready for installation.
- B. Store products in accordance with manufacturer's instructions; protect from extremes of weather, temperature, moisture, and other damage.
- C. Use implements, tools, facilities, and equipment suitable for proper and safe handling of pipe, fence materials, and accessories.

1.09 FIELD CONDITIONS

- A. Maintain environmental conditions (temperature, humidity, and ventilation) within limits recommended by manufacturer for optimum results. Do not install products under environmental conditions outside manufacturer's absolute limits.
- B. Field Measurements: Verify position and layout of all athletic field equipment. Verify dimensions by field measurements.

1.10 WARRANTY

- A. See Section 01 7800 - Closeout Submittals, for additional warranty requirements.
- B. Correct defective Work within a five year period after Date of Substantial Completion.

PART 2 PRODUCTS

2.01 MATERIALS, GENERAL

- A. Steel Pipe and Tube: Complying with ASTM A135/A135M, ASTM A500/A500M, or ASTM A513/A513M; hot-dip galvanized and free of excess weld and spatter.
 - 1. Tensile Strength: 45,000 psi, minimum.
 - 2. Yield Point: 33,000 psi, minimum.
 - 3. Galvanizing: Hot-dip metal components in zinc after fabrication, in accordance with ASTM A123/A123M; remove tailings and sharp protrusions and burnish edges.
- B. Wire Rope and Cable: Comply with ASTM A1023.
- C. Hardware: Provide design without hazardous protrusions, corners, or finishes, and requiring tools for removal after installation; countersunk fasteners are preferred.
 - 1. Galvanizing: Conform to ASTM A123/A123M,
 - 2. Use stainless steel or hot-dipped galvanized steel for metal-to-metal connections; select type to minimize galvanic corrosion of materials connected by hardware.
 - 3. Use stainless steel or hot-dipped galvanized steel for wood-to-wood and wood-to-metal connections.
 - 4. Use stainless steel with plastic components.
 - 5. Bearings: Self lubricating.
 - 6. Hooks, Including S-Hooks: Closed loop; maximum gap 0.04 inches.
 - 7. Rails and Loops: Same metal as item is mounted on, or aluminum; with powder coating.
 - 8. Anchors: In accordance with manufacturer's recommendations.

2.02 BASEBALL BACKSTOP NETTING SYSTEM

- A. Base Bid Manufacturer:
 - 1. Net Connection LLC: www.netconnectionllc.com.
- B. Substitutions: See Section 01 6000 - Product Requirements.
- C. Materials:
 - 1. Backstop Netting:
 - a. Netting: NC-36 Premium Baseball. The netting shall made of 100% Dupont type 66 high-grade nylon, #36 twisted knotted nylon, manufactured with UV treated yarn and additionally coated with a black resin dye and bonding treatment.
 - b. Size: 3½" stretch mesh, 1 ¾" single bar measure. 325.6 Lb. average single mesh break strength, determined in accordance with ISO standard 1806.
 - c. Attachment Twine: Black #48 braided polyester twine, 375 lb tensile strength, impregnated with UV inhibitor.
 - d. Rope Boarder and Interior Riblines: Black 3/8" braided synthetic cover, parallel synthetic core, 3,500 lb. tensile strength. The rope boarder shall be attached to the net using a black UV dye treated #48 braided polyester twine with a minimum 375 lb. tensile strength. The attachment twine shall not be continuously tied to the net, but rather shall be tied at 6" on center for the full length of the rope boarder.
 - e. Netting shall have a five (5) year pro-rated warranty.

2. Support Poles:
 - a. Steel poles are to be steel pipe, made of ASTM A500/A500M grade B/C pipe (min). Minimum Pipe size to be as per engineering requirements and as identified on drawings. (Tie Back Poles- 20" x .375" 50KSI Min. End Poles- 16"x .375" 50 KSI Min.)
 - b. Preparation for Painting: SSPC-SP 6 and obtain a 1.0-3.0 mil (25-75 micron) angular blast profile.
 - c. Steel poles shall be painted with a Carbozinc 11® primer, and two (2) coats of black Carbothane ® 8845 finish, as manufactured by Carboline.
 - d. Steel poles shall be sized so as to withstand 8% solid wind loading in accordance with ASCE 7. Stamped engineer drawing by AL licensed engineer to be provided with submittals.
 - e. Height above grade shall be as indicated on drawings.
 - f. Netting support pole foundations shall be per engineer drawings (minimum requirements per bidding documents and drawings).
3. Hardware:
 - a. Wire Rope and Cable: Comply with ASTM A1023.
 - b. Hardware shall be galvanized, and shall conform to ASTM A123/A123M, Hardware components shall be matched so as to meet or exceed load capacity of the cable.
 - c. Bolts: All bolts will be 5/8" diameter with a minimum tensile strength of 13,550 lbs.
 - d. Turnbuckles: For Cable termination at all end and tie back poles. (Min) 5/8"x 12" galvanized Jaw and Jaw Turnbuckle
 - e. Top Horizontal Support Cable: All cable spanning between end and tie back poles, horizontally. (Min) 3/8" Independent wire rope core (IWRC) galvanized steel wire rope cable.
 - f. Vertical and Bottom Support Cable: All cable vertically installed and along bottom of netting system above knee walls. (Min) 1/4" IWRC galvanized steel wire rope cable.
 - g. Eyebolts: Eyebolts to be drilled and epoxy into top of knee wall every 5' o.c. (Min) 3/8" x 12" galvanized eyebolts (solid eye).
 - h. Attachment clips shall be 9/32" cadmium plated steel carabineer attachment snap. Zinc or Nickel coated clips are not to be used.
 - i. All cable fittings, clamps and clips shall be installed as per wire rope manufacturer's written installation instructions. All fitting shall be galvanized.
4. Concrete: Ready-mixed, complying with ASTM C94/C94M normal Portland cement; minimum 3000 psi strength at 28 days, 3 inch slump.

2.03 BACKSTOP PADDING AND DUGOUT RAIL PADDING SYSTEM

- A. Base Bid Manufacturer:
 1. West Coast Netting
 2. Other Acceptable Manufacturers:
 - a. Beacon Netting
 - b. Richardson Athletics: www.richardsonathletics.com.
 - c. Midwest Netting Solutions.
 3. Substitutions: See Section 01 6000 - Product Requirements.
- B. Backstop Padding and Dugout Rail Padding:
 1. Vinyl Covered Foam Padding:
 - a. Minimum Padding Thickness: 1 inch.
 - b. Covering: Vinyl-coated polyester fabric, UV, mildew and rot resistant; stapled to back of board.
 - 1) Color: As selected from manufacturer's standard range.
 - 2) Texture: Embossed leather-look.
 - 3) Fabric Weight: 16 oz/sq yd.
 - c. Foam: Urethane, firm, 6 pcf nominal density.

- d. Backstop Padding: Foam filling bonded to backing board, wrapped in covering; each panel fabricated in one piece.
 - 1) Thickness: 3 inch foam.
 - 2) Backing: 3/4 inch exterior grade plywood backer.
 - 3) Attachment Method: Zee Clip and support channel.
- e. Specially Shaped Padding: Same construction as standard padding; custom fabricate to fit irregularly shaped members, areas, and protrusions in gymnasium as indicated.
- f. Rail Padding Shape: Round for minimum 2-1/4 inch interior diameter.
 - 1) Cover: Minimum 16 ounce UV stabilized vinyl coated polyester with lacing grommets at 12 inches o.c.

2.04 BATTING CAGES (PART OF ALTERNATE NO. 2)

- A. 3 Lane Baseball Batting Cage System shall be sized as indicated on Drawings and meet the following minimum criteria:
 - 1. Structural Poles:
 - a. 8.625" O.D. welded high tensile strength steel, .25" wall thickness with welded cap and integral lifting ring to prevent moisture from entering at the top and to ease the installation process.
 - b. Hot-dipped galvanized, and finished with manufacturers standard high performance zinc rich primer and 2 coat two component, acrylic, aliphatic polyurethane coating system over properly prepared metal.
 - 2. Cable and Tensioning System.
 - a. All hardware including nuts, bolts, washers, are to be hot-dipped galvanized.
 - b. Cable shall be 3/16" heavy duty galvanized steel cable. Cable tensioning must allow for adjustment of any given cable.
 - c. 5/8" x 36" Galvanized All-Thread (threaded rod)
 - d. Galvanized Threaded Thimble Eye Nuts
 - e. 5/8" x 14" Cast Oval eye Bolts
 - f. Galvanized Curved Washers
 - g. 5/8" Galvanized Nuts
 - h. 3/16" Cable Clamps
 - 3. Netting:
 - a. #60 nylon knotted baseball netting manufactured into a batting cage. Assemble netting to every rope with a posilock stitch. Ropes shall be at every corner with a rib line on the top panel centered on the long dimension. Provide door on the short dimension at one end, three feet from corner.
 - 1) Netting:
 - (a) #60 Knotted Netting with 3.5 inch stretch mesh, 1.75inch Openings.
 - (b) Color: Black, urethane bonded.
 - (c) Construction; 3 Strand, twisted and knotted construction.
 - (d) Tensile: 620 pounds twine tensile strength.
 - (e) Dupont type 66 nylon with anti UV active content.
 - (f) Weight Factor: 1 pound weight per 13.5 square feet.
 - 2) Rope:
 - (a) Braoded synthetic cover; parallel synthetic core..
 - (b) Tensile: 3,500 pound tensile strength..
 - (c) Color: Black.
 - 3) Hanging Twine:
 - (a) No. 48 braided polyester twine..
 - (b) Tensile: 375 pounds of tensile strength.
 - (c) 2455 wet abrasion cycles.
 - (d) Color: Black.
 - 4. Accessories:

- a. Provide ground sleeves, attachment devices and other items necessary for a complete and proper installation.
- B. Manufacturer:
 1. Same as for backstop netting system.
 2. Sports Edge: www.sportsedge.com.
 3. On Deck Sports: www.ondecksports.com.
 4. Substitutions: See Section 01 6000 - Product Requirements.

2.05 SYNTHETIC TURF (PART OF ALTERNATE NO. 2)

- A. Base Bid Manufacturer: Synthetic Turf:
 1. Sporturf; Sporturf 36 PL705: www.synthetic-turf.com.
 2. Other Acceptable Manufacturers: Provide equivalent products approved by Architect.
 - a. Synthetic Turf International; Pro Ball Turf Color: www.synthetic-turf.com.
 - b. On Deck Sports; GT-48: www.ondecksports.com.
 - c. U.S. Sports Turf; Home Run: www.ussprotsturf.com.
 3. Substitutions: See Section 01 6000 - Product Requirements
- B. Synthetic Turf
 1. Description:
 - a. Fiber Type: Texturized polypropylene.
 - b. Turf Pile Height (ASTM D5823): 0.5625 inches.
 - c. Face Weight (ASTM D5848): 36 oz/sq. yd.
 - d. Total Fabric Weight (ASTM D5848): 121 oz/sq. yd. with 5 mm foam padding.
 - e. Primary Backing Weight (ASTM D5848) 7 oz/sq. yd.
 - f. Secondary Coating Weight (ASTM D5848): 78 oz/sq. yd.
 - g. Average Grab Tear Strength (ASTM D2256/D2256M): >200 pounds.
 - h. Stitch Rate: (ASTM D5793): 19 per 3 inches.
 - i. Machine Gauge (ASTM5793): 3/16 inch.
 - j. Total Weight:
 - k. Color: Provide 2 colors, as selected by Architect..
 - l. Primary Backing: Dual Layer Woven Polypropylene
 - m. Total Weight: 74 ounces per square yard; measured in accord with ASTM D418.
 2. Adhesives:
 - a. Provide adhesive products suitable for substrate and recommended by synthetic turf manufacturer.
 - 1) Synthetic Surfaces, Inc: Nordot Adhesive 34G. www.nordot.com.
 - 2) Mapei Corporation; Ultrabond Turf PU 2K: www.mapei.com.
 - 3) SynLok Adhesives; Turf Claw FB: www.synlokadhesives.com.
 3. Accessories:
 - a. Provide tapes, primers and other attachment accessories as recommended by synthetic turf manufacturer.
 - b. Edge/Transition Trim:
 - 1) Schluter Systems Inc; Reno-Ramp 3-1/2 by 3/4 inch.

PART 3 EXECUTION

3.01 EXAMINATION

- A. Take field measurements to ensure proper fitting of work. If taking field measurements before fabrication will delay work, allow for adjustments within recommended tolerances.
- B. Inspect areas and conditions before installation. Notify Architect in writing of unsatisfactory or detrimental conditions. Do not proceed until conditions have been corrected. Commencing installation constitutes acceptance of work site conditions.
- C. Verify slab levelness to 1/4 inch in 10 feet in any direction. Correct defects in excess of levelness requirements.

- D. Verify location of underground utilities and facilities in the area of the work. Damage to underground utilities and facilities will be repaired at Contractor's expense.

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 contract documents and manufacturer's instructions.
- B. Coordinate installation of inserts and anchors that must be built in to surrounding construction.
- C. Install equipment rigid, straight, plumb, and level.
- D. Secure all equipment with manufacturer's recommended anchoring devices and techniques.

3.04 SYNTHETIC TURF INSTALLATION

- A. Install synthetic turf surfacing only when ambient air temperature is 35 F or above and the relative humidity is below 35% or as otherwise specified by the product manufacturer. Installation will not proceed if rain is imminent.
- B. Fabric surface: Construct and install in minimum widths of 12 feet with no longitudinal or transverse seams.
- C. Installation of the synthetic turf system is to comply with the manufacturer's recommendations, requirements and approved shop drawings, and manufacturer's written installation instructions.
- D. Turf shall be attached to the perimeter edge as shown in the construction plans and as instructed by the synthetic turf manufacturer.
- E. All seams shall be brushed thoroughly before infill materials are installed.
- F. All terminations shall be as detailed in the shop drawings.
- G.

3.05 BASEBALL BACKSTOP NETTING SYSTEM INSTALLATION

- A. Steel Pole Installation:
 - 1. Place poles plumb and true with spacing as indicated on drawings; embedment shall be per engineer drawings. Poles shall be fabricated so that top horizontal cable shall be no less than 2" below the top of steel poles.
 - 2. Pole borings shall be as indicated on drawings.
 - 3. Poles shall be backfilled using 3,000 PSI concrete (Min).
- B. Hardware Installation
 - 1. All hardware to be installed using a through bolted connection or affixed to poles/canopy via welded eye connections.
 - 2. Lock washers shall be installed at each bolted connection.
 - 3. Vertical cables shall be installed on each pole.
 - 4. Horizontal cables shall be installed parallel to the ground and each other.
 - 5. Cables shall be tensioned to force of 500lbs to 1,000 lbs. to provide less than 6" of sag at midpoint of each span.
 - 6. Cross or "X" bracing cables shall not be used between the poles.
- C. Netting Installation
 - 1. Net panels shall be custom fabricated to as built measurements of the pole/cable structure to provide a taut panel upon completion.
 - 2. Rope border shall be installed at the net perimeter and all horizontal and vertical cable locations. Rope borders shall be constructed using a 3/8" rope with black synthetic cover, and a minimum tensile strength of 3,500 lbs.

3. Attachment clips are to be attached to the rope border at 2' on center. Clips shall be installed so as to attach to the support cable and rope boarder only. The clip shall not be attached so as to encompass the net or attachment twine. Continuously sewn rope borders and riblines that require clipping the net with the rope boarder will not be allowed.
4. Netting shall be lashed to bottom strand of cable, continuously, using #48 braided polyester twine. Installer shall use a clove and one half hitch knot when lashing.

3.06 TOLERANCES

- A. Maximum Variation From Plumb: 1/4 inch per story, non-cumulative.
- B. Maximum Offset From True Alignment: 1/4 inch.

3.07 PROTECTION

- A. Protect installed products until Date of Substantial Completion.
- B. Replace damaged products before Date of Substantial Completion.

END OF SECTION

SECTION 13 3100
FABRIC STRUCTURES

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Custom tensioned fabric canopy structure, including attachment to surrounding supporting members, fittings and accessories

1.02 PRICE AND PAYMENT PROCEDURES

- A. Alternates: See Section 01 2300 - Alternates, for product alternatives affecting this section.
 - 1. This section describes an alternative product. No fabric structure will be required under Base Bid.

1.03 REFERENCE STANDARDS

- A. ASCE 7 - Minimum Design Loads and Associated Criteria for Buildings and Other Structures; Most Recent Edition Cited by Referring Code or Reference Standard.
- B. ASTM E84 - Standard Test Method for Surface Burning Characteristics of Building Materials; 2018b.
- C. NFPA 701 - Standard Methods of Fire Tests for Flame Propagation of Textiles and Films; 2015.

1.04 PREINSTALLATION MEETINGS

- A. Pre-installation Meeting: Convene a pre-installation meeting at least two (2) weeks before start of installation of tensioned fabric structure.
 - 1. Require attendance of parties directly effecting work of this section, including Architect, Owner, Contractor, and Tensioned Fabric Installation Superintendent.
 - 2. Review proper handling of fabric, preparation, installation, adjusting, cleaning, and coordination with other work.

1.05 SUBMITTALS

- A. See Section 01 3000 - Administrative Requirements, for submittal procedures.
- B. Product Data: Submit manufacturer's product data, including test reports on fabric showing compliance with specified properties.
- C. Shop Drawings: Submit construction drawings including plans, elevations, details, dimensions, support steel sizing, cables and hardware, clamp/corner plates, fittings, fabric, fabric layout seams, and the following:
 - 1. Exact interface geometry determination and definitions.
 - 2. Coordination between fabric and structural supports
 - 3. Interfaces to foundation supports.
 - 4. Design loads used in structural calculations.
 - 5. Foundation reaction loads.
 - 6. Stamp or seal of design engineer.
- D. Samples: Submit 3 samples, at least 6 inch by 6 inch in size of fabric of each color.
- E. Erection/Stressing Plan: Submit a compressive erection and stressing plan, including drawings and sketches that clearly show the proposed erection procedure for the fabric roof elements, cables, and structural steel during each stage of construction.
- F. Quality Control: Submit outline of manufacturer's Quality Control Program.
- G. Safety Program: Submit copy of manufacturer's safety manual for installation.
- H. Operating and Maintenance Data: Manufacturer's instructions for fabric repair, re-tensioning cables, and cleaning fabric.
- I. Warranty Documentation: Submit manufacturer warranty and ensure that forms have been completed in Owner's name and registered with manufacturer.

1.06 QUALITY ASSURANCE

- A. Manufacturer Qualifications: Firm that is capable of assuming complete responsibility for design, engineering, fabrication, delivery, preparation, installation, adjusting, cleaning of structure, and the following:
1. Having minimum of five years experience in design and fabrication of tensioned fabric structures of similar size and complexity to that specified.
 2. Employing a licensed professional engineer with minimum of five years experience in tensioned fabric structures using large displacement finite element techniques to perform or supervise the structural design and licensed in the State in which the Project is located.
 3. Employing a professional staff and qualified consultants experienced with tensioned fabric structures of similar size and complexity to that specified.
 4. Employing integrated CAD and finite element computer software programs to ensure adequacy of design and accurate 3-dimensional computer generated models for fabrication of structure; using CAD system to prepare construction drawings and interface with the plotting and cutting process, ensuring high precision fabric cutting.
 5. Providing installation directly supervised by a superintendent, directly employed by contractor, with five years of experience in installation of tensioned fabric structures of similar size and complexity to that specified.
- B. Installer Qualifications: Manufacturer or authorized by manufacturer.

1.07 DELIVERY, STORAGE, AND HANDLING

- A. Deliver materials to site in manufacturer's original, unopened containers and packaging, with labels clearly identifying product name and manufacturer.
- B. Store materials in accordance with manufacturer's instructions, in a clean, dry, well ventilated area, above ground on blocking, and do not allow materials to become wet, stained, or dirty.
- C. Handle materials so as to protect materials, coatings, and finishes during handling and installation to prevent damage or staining.
1. Handle fabric in accordance with manufacturer's instructions.
 2. Use care in handling of fabric to avoid damage to fabric material and coating.
 3. Do not damage, crush, or kink cables.

1.08 WARRANTY

- A. See Section 01 7800 - Closeout Submittals, for additional warranty requirements.
- B. Provide manufacturer's standard ten year fabric warranty.
- C. Provide installer's written one year workmanship warranty.

PART 2 PRODUCTS

2.01 TENSIONED FABRIC STRUCTURES

- A. Tensioned Fabric Structure: Provide a custom tensioned fabric structure consisting of fabric stretched on steel structural supports, with the following characteristics:
1. Capable of withstanding loads specified in ASCE 7 and local building code without damage or failure; for designer's information, project falls under the following design categories:
 - a. Building is in Hurricane Prone Region. Ultimate Design Wind Speed: 170 mph.
 - b. Risk Category III.
 - c. Wind Zone 3 - Ultimate Design Wind Speed: 170 mph.
 - d. Building is in Wind Borne Debris Region.
 2. Capable of maintaining structural integrity in event of a tear propagating in fabric, without endangering occupants.
 3. Shape geometry selected for equilibrium based on stress in fabric.
 4. Having a smooth uniform fabric surface with even curved edges and interfaces and without wrinkles, cuts, abrasions, stains, marks, surface defects, or seaming aberrations.
 5. Configuration as indicated on drawings.
 6. Made of prefabricated components ready for installation.

2.02 MATERIALS

- A. Fabric: High density polyethylene (HDPE) structural mesh.
 - 1. Warp and Weft Filaments: 100 percent round mono-filament.
 - 2. Finished Weight: 9.6 oz/sq yd.
 - 3. Stretch Properties: Dimensionally stable in warp and weft.
 - 4. Flame Retardancy: Comply with NFPA 701.
 - 5. Flame Spread Index: 25 or less, when tested in accordance with ASTM E84, Class A.
 - 6. Seams: Sufficient strength to develop 90 percent of full strength of fabric at 140 degrees F in direct tension across seam.
 - a. Acceptable Seams and Edges: Overlock stitched into a polyethylene rope of appropriate stretch and durability characteristics or other approved material.
 - b. Prohibited Seams and Edges: French-hem seam and edge details around a steel cable are unacceptable due to wear characteristics.
 - c. Prevent fabric from coming into contact with steel support members other than through polyethylene edge rope or other corner terminations; stretched fabric over steel support frame is unacceptable due to wear characteristics.
 - 7. Expected Service Life: Ten to twelve years.
 - 8. Color: As indicated below..
 - 9. Manufacturers:
 - a. Basis of Design: Alnet Fabrics; ExtraBlock Shade Cloth Product Code 311077: www.alnetamericas.com.
 - 1) Color Type 1: Cream.
 - 2) Color Type 2: True Blue.
 - 3) Color Type 3: Sunblaze
 - b. Substitutions: See Section 01 6000 - Product Requirements.
 - 1) Approval of substitutions requires acceptable color match with Basis of Design products..
- B. Cables and End Fittings: Provide structural cables of same type having same modulus of elasticity.
 - 1. Cables: Stainless steel, Type 304 or 316.
 - 2. Cables in Contact with Fabric: PVC sleeved.
 - 3. Swaged and Speltered Fittings: Design and install to develop full breaking strength of cable.
 - 4. Thimble End Fittings: Design and install to develop a minimum of 90 percent of breaking strength of cable.
 - 5. Swaged End Fittings, Pins, Nuts, and Washers: Stainless steel.
 - 6. Tensioning Nuts and Fabric Plates: Galvanized steel, finished with two coats of epoxy paint.
- C. Shackles, Rigging Screws, Clamps, and Tensioning Hardware: Stainless steel architectural finished material only.

PART 3 EXECUTION

3.01 EXAMINATION

- A. Examine area to receive structure; notify Architect if area is not acceptable, and do not begin installation until unacceptable conditions have been corrected.
- B. Examine foundations and anchor bolts for location and elevation; notify Architect of inaccuracies, and do not begin installation until unacceptable conditions have been corrected.

3.02 PREPARATION

- A. Prepare an erection plan for all structural and fabric installation activity, including a detailed sequence of the work.

- B. Prepare a clear, flat, smooth, and clean layout area on ground of sufficient size for assembly of fabric panels; prepare area adjacent to location of structure installation.
- C. Check contact surfaces to remove sharp objects, dirt, grease, oil, and other causes for rips, scratching, or other damage to fabric panels during installation.
- D. Use temporary ground sheets where fabric panels are to be dragged across a surface to prevent chaffing or other damage to fabric panel surface.

3.03 INSTALLATION

- A. Comply with pre-established erection plan.
- B. Do not undertake erection of fabric during inclement weather conditions; installer has sole responsibility to determine when conditions are safe for erection.
- C. Install structure in accordance with manufacturer's instructions at location indicated on drawings.
- D. Concrete Foundations:
 - 1. See Structural.
- E. Support Steel:
 - 1. See Structural.
- F. Architect will inspect installed concrete foundations, support steel, cables, and fittings before installation of fabric only to ensure compliance with data submittals.
- G. Install and tension fabric in accordance with manufacturer's instructions.
 - 1. Use care in installation of fabric to avoid damage to base material, coating, and surface treatment.
 - 2. Ensure surfaces of fabric are smooth, uniform, and clean, with even curved edges and interfaces, and with no cuts, scratches, abrasions, stains, marks, blemishes, or welding irregularities.
- H. Repair or replace defective or damaged materials, coatings, and finishes as directed by Architect.

3.04 ADJUSTING

- A. Make final adjustments to structure as required for structural integrity, geometric shape, and free from objectionable wrinkles when viewed from the normally occupied space.

3.05 CLEANING

- A. Clean structure in accordance with fabric manufacturer's instructions.

END OF SECTION

SECTION 13 3416.13
GRANDSTANDS

PART 1 - GENERAL

1.01 SECTION INCLUDES

- A. Provide all labor, materials, equipment, engineering, and installation to provide a new permanent grandstand structure in accordance with the following specifications:
- B. Minimum acceptable criteria:
 - 1. Design per plan view and sectional view drawings.
 - 2. High Traction Welded Decking System as defined by ANSI/NSFI B101.1 and ANSI/NFSI B101.3 meeting the wet coefficient of friction (COF) of .6 on all walking surfaces. If media blasting is used to obtain the necessary wet (COF) of .6, those surfaces shall be anodized.
 - 3. All structural steel must be manufactured by an AISC certified structural steel manufacturer.
 - 4. All steel to be hot-dipped galvanized after fabrication.
 - 5. Powder coated enclosure panel on upper front portion of grandstand; ramps and stairs; front of Press Box.
 - 6. Concrete foundations shall be designed by the grandstand manufacturers engineer based on loads and foundation support reactions provided by grandstand manufacturers and geotechnical report. Grandstand foundations are to be included in this scope of work and shall be installed by a manufacture certified concrete installer with a minimum of 10 years' experience in grandstand foundations
 - 7. The overall length of grandstand shall be as per architectural drawings.
 - 8. The number of rows shall be as per architectural drawings.
 - 9. Height of front cross aisle from grade shall be as per architectural drawings.
 - 10. Width of front walkway to be as per architectural drawings
 - 11. The rise per row shall be as per architectural drawings.
 - 12. The depth per row shall be as per architectural drawings.
 - 13. Net seating capacity shall be as per architectural drawings.
 - 14. ADA seating shall be as shown on architectural drawings.
 - 15. The riser shall be structurally connected to the decking system panel every 12" longitudinal with ¼" diameter structural grade rivet. Tek screws are prohibited
 - 16. One-piece risers shall interlock to row above and overlap the rear tread of row below forming the required overlapping and interlocking riser system. Two piece and or wedged in risers are prohibited
 - 17. There shall be no gaps or cavities between the riser portion of the decking system and any supports or attachments. Open portions of the bolt runner are prohibited.
 - 18. Aluminum extrusions using alloy 6063-T6 and 6061-T6.
 - 19. Understructure framing consist of galvanized structural steel square tube columns, supports and stringers that form a clear span design per drawings.
 - 20. All welded connections shall be by certified steel and aluminum welders and inspected at the manufacturer by a licensed CWI
 - 21. Aisle and Egress stairs shall have a ½" overlap.
 - 22. At locations where platforms meet end to end a beveled four inch wide aluminum threshold shall be provided to cover the walking surface.
 - 23. Seat support system shall be universally adjustable to any location on the vertical plane of the decking system and shall. There shall be no through bolting of these items.
 - 24. All seat support, aisle step supports, aisle handrails and risers shall be installed from the topside of the decking system. There shall be no through bolting of these items through the riser system.
 - 25. Guardrail system shall consist of all-aluminum guardrail posts and railings with black vinyl chain link fencing

26. Grandstand manufacture must have a written quality control program for manufacturing, shipping and installation.

1.02 RELATED REQUIREMENTS

- A. Section 03 3000 - Cast-in-Place Concrete: Concrete mix design and testing requirements.
- B. Section 13 3416.16 - Prefabricated Press Box

1.03 REFERENCE STANDARDS

- A. AISC (COMM) - Commentary on the Specification for Structural Steel Buildings; 2005.
- B. ANSI/NFSI B101.3 - Test Method for Measuring Wet DCOF of Common Hard-Surface Floor Materials; 2012.
- C. ANSI/NSFI B101.1 - Test Method for Measuring Wet SCOF of Common Hard-Surface Floor Materials; 2009.
- D. ASTM A1011/A1011M - Standard Specification for Steel, Sheet and Strip, Hot-Rolled, Carbon, Structural, High-Strength Low-Alloy, High-Strength Low-Alloy with Improved Formability, and Ultra-High Strength; 2018a.
- E. ASTM A123/A123M - Standard Specification for Zinc (Hot-Dip Galvanized) Coatings on Iron and Steel Products; 2017.
- F. ASTM A307 - Standard Specification for Carbon Steel Bolts, Studs, and Threaded Rod 60 000 PSI Tensile Strength; 2014 (Editorial 2017).
- G. ASTM A36/A36M - Standard Specification for Carbon Structural Steel; 2014.
- H. ASTM A500/A500M - Standard Specification for Cold-Formed Welded and Seamless Carbon Steel Structural Tubing in Rounds and Shapes; 2013.
- I. ASTM A992/A992M - Standard Specification for Structural Steel Shapes; 2011 (Reapproved 2015).
- J. IAS AC172 - Accreditation Criteria for Fabricator Inspection Programs for Structural Steel; International Accreditation Service, Inc; 2017.
- K. ICC (IBC)-2018 - International Building Code; 2018.
- L. ICC 300 - Standard for Bleachers, Folding and Telescopic Seating and Grandstands; 2017.

1.04 SUBMITTALS

- A. See Section 01 3000 - Administrative Requirements, for submittal procedures.
- B. Shop Drawings: Include construction details, material descriptions, dimensions of individual components and profiles, and finishes for each type of the following grandstand system components as follows: All approval drawings shall bear the seal of a registered professional engineer in the state of installation.
 1. Foundations:
 - a. Footings, foundations, reinforcement and anchor bolt setting plan.
 2. Structural framing: All structural framing members shall have a permanent piece mark that shall correspond to the shop drawings and bill of material.
 3. Primary and secondary framing including but not limited to the following:
 - a. Columns
 - b. Beams
 - c. Stringers
 - d. Bracing
 - e. Connecting hardware
 4. Welded Decking System:
 - a. Decking Platforms
 - b. Risers
 - c. Supports for Seats
 - d. Aisle Steps

- e. Aisle Handrails
 - f. Egress Stairs
 - g. Hardware
 - h. Seating
 - i. Handrails / Guardrails
- C. Finish Samples: 3 physical samples of each finish and product for approval.
 - D. Color Samples: 3 samples of each color selection for approval.
 - E. Manufacturer's Mill Certificate: Certify that products meet or exceed specified requirements.
 - F. Fabricator Test Reports: Comply with ASTM A1011/A1011M.
 - G. Designer's Qualification Statement.
 - H. Fabricator's Qualification Statement: Provide documentation showing steel fabricator is accredited under IAS AC172.
 - I. Welders Certificates: Certify welders employed on the Work, verifying AWS qualification within the previous 12 months.

1.05 QUALITY ASSURANCE

- A. Designer Qualifications: Perform design under direct supervision of a Professional Engineer experienced in design of this type of work and licensed in the State in which the Project is located.
- B. Manufacturer Qualifications: Company specializing in manufacturing products specified in this section, with at least five years of documented experience.
- C. Concrete Installers Qualifications: An experienced installer who has completed concrete work similar in material, design and extent indicated for this project and whose work has resulted in construction of grandstands with a record of successful in-service performance. Concrete installer must be certified by grandstand manufacturer.
- D. Erector Qualifications: An experienced erector who has specialized in erecting and installing grandstands similar in material, design, to the extent indicated for this project and whose work has resulted in construction of grandstands with a record of successful in-service performance. Grandstand Erector must be certified by grandstand manufacturer.
- E. Quality Control: Manufacturer's written quality control for manufacturing, shipping and installation shall be submitted prior to award of contract.
- F. Standards and Guidelines: Comply with the provisions of the following codes, specifications and standards, latest editions, except as otherwise noted or specified:
 - 1. American Concrete Institute (ACI)
 - 2. American Institute of Steel Construction (AISC (COMM))
 - 3. American Welding Society (AWS)
 - 4. Americans with Disabilities Act (ADA)
 - 5. Underwriters Laboratory (UL)
 - 6. National Electrical Code (NEC)
 - 7. International Building Code (ICC (IBC)-2018)
 - 8. International Building Code - Standard for Bleachers, Folding and Telescopic Seating and Grandstands (ICC 300).
 - 9. Site visitation: Bidder shall be responsible for visiting the job site prior to the bid date to verify site conditions.

1.06 DELIVERY, STORAGE AND HANDLING

- A. Grandstand materials and other manufactured items will be packaged and loaded for transport to prevent bending, warping, twisting, and surface damage of materials. Care will be taken at the job site to prevent any damage to materials.
- B. Grandstand materials must not be stored where they would come in contact with other materials that might cause staining, denting or other surface damage.

1.07 WARRANTY

- A. All products after proper erection, and under normal use for this type of structure shall carry a minimum five (5) year warranty against all defects in materials and workmanship.

PART 2 PRODUCT

2.01 MANUFACTURERS

- A. Basis of Design Manufacturer: Outdoor Aluminum, Inc: www.outdooraluminum.com.
- B. Other Acceptable Manufacturers: Subject to requirements, provide grandstand systems by one of the following:
 - 1. Southern Bleacher Company Inc: www.southernbleacher.com.
 - 2. Dant Clayton: www.stadiumbleachers.com.
 - 3. GT Grandstands: www.gtgrandstands.com.
 - 4. STURDISTEEL: www.sturdisteel.com.
 - 5. Substitutions: See Section 01 6000 - Product Requirements.

2.02 SYSTEM PERFORMANCE REQUIREMENTS

- A. General: Provide a complete system of mutually dependent components and assemblies that form a grandstand system. The grandstand shall be designed to conform to structural and other load requirements, thermally induced movement, and exposure to weather without failure. All primary and secondary framing, decking system, seating, handrails /guardrails, ramps and accessories shall comply with the requirements indicated, including those in this Article. Foundations, Structure and Reinforcement to be designed and installed to meet local Codes and ICC-300 requirements.
- B. Structural Performance: Provide grandstand system capable of withstanding the effects of gravity loads and the following loads and stresses within limits and under conditions indicated:
 - 1. Design Loads / Structural - Framing Members:
 - a. Dead Loading: 6 PSF for understructure
 - b. Live Loads: 100 PSF for understructure
 - c. Deflection Limits: engineer assemblies to withstand design loads with deflections no greater than the following:
 - 1) Stringers: vertical deflection of L/240.
 - 2. Design Loads / Decking System:
 - a. Dead Loading: 6 PSF for decking, platforms, stairs and ramps.
 - b. Live Loads: 100 PSF for decking, platforms, stairs and ramps.
 - c. Deflection Limits: engineer assemblies to withstand design loads with deflections no greater than the following:
 - 1) Decking, platforms, stairs and ramps: vertical deflection of L/360.
 - d. Sway loads of 24 PLF per row parallel to seat and 10 PLF per row perpendicular to seat run.
 - 3. Design Loads / Handrail / Guardrail:
 - a. 100 PLF Vertical.
 - b. 50 PLF applied in any direction at the top.
 - c. 200 LB Concentrated load any direction.
 - d. 50 PSF Fencing and guardrail infill.
 - 4. Design Loads / Seat Boards:
 - a. Live loads: (vertical) 120 pounds per lineal foot.

2.03 CONCRETE FOUNDATIONS

- A. Foundations shall be designed in accordance with mix designs per Section 03 3000- Cast-in-Place Concrete.
- B. Foundations shall be based on a subsurface exploration report furnished by the Architect/Owner.

- C. Foundations, Structure and Reinforcement to be designed and installed to meet local Codes and ICC 300 Requirements.

2.04 STRUCTURAL - FRAMING MEMEBERS

- A. Structural-Steel Shapes: ASTM A992/A992M tensile yield strength, 345 MPa (Fy = 50 ksi); tensile ultimate strength, 450 MPa (Fu = 65 ksi)
- B. Steel Plate, Bar or Strip: ASTM A36/A36M.
- C. Steel Tubing or Pipe: ASTM A500/A500M, Grade B.
- D. Bolts, Nuts and Washers: ASTM A307 hex carbon and alloy steel bolts, nuts, and washers.
- E. Anchor Rods, Bolts, Nuts and Washers: As follows:
 - 1. Headed Bolts: ASTM A307, Grade A carbon -steel, hex-head bolts; and carbon-steel nuts.
- F. Finish: Minimum 2 oz. hot dipped galvanized in accordance with ASTM A123/A123M with minimum thickness of 3.3 mils.
- G. Horizontal Beams: Horizontal beams shall be wide flange units, supported on columns as required to transfer stadium loads to foundations.
- H. Vertical Columns: Columns shall be of structural square tube. Use of wide flange beams for columns is prohibited.
- I. Bracing: All transverse bays shall be free of cross bracing. Longitudinal bays shall be braced in alternate bays where possible. All bracing shall be 7/8" rod and shall be double-nutted at connection points through the columns.
- J. Stringers: Stringers shall be wide flange material with welded angle riser and tread supports.

2.05 DECKING SYSTEM:

- A. Decking System Platforms
 - 1. Decking system platforms shall be an all-aluminum extruded system attached to the understructure by means of concealed aluminum clips, galvanized bolts, washers and nuts. The rear portion of the platform will turn ninety degrees vertical to accept the next row of decking platforms. The front portion of the platform shall be complete with a female front edge to allow for a positive male / female connection of a vertical riser. Individual aluminum components shall be joined by means of the metal inert gas process. The attachment of the riser to the platforms shall form a structurally integrated system.
 - 2. Individual platforms shall be tread depth x 37'-6" maximum length with the actual length designed to create the minimum number of expansion seams.
 - 3. Platform shall have a minimum aluminum wall thickness of .078" and aluminum shall be alloy 6063-T6.
 - 4. Walking surface shall be fluted high traction and aesthetically pleasing without showing traffic pattern wear.
 - 5. The platforms shall have integral bolt runners to allow for the attachment of seat supports, aisle steps and aisle handrails to be made without penetrating the decking system. Through bolting is prohibited. After installation of the above components, there shall be a full closure of the bolt runner using an aluminum cover strip. Open portions of the bolt runner are prohibited.
 - 6. Deck shall allow for reconfiguration of seating and aisles without alteration of the understructure.
 - 7. At locations where platforms meet end to end a four-inch wide aluminum threshold shall be provided to cover the walking surface. Threshold shall be beveled on both sides so as not to create a trip hazard and must have a fluted surface to prevent slipping. Threshold shall be integrated with front and rear covers for the platforms that conceal transition from the horizontal to the vertical portions of the deck. Threshold must comply with specified deflection criteria and once installed must allow for expansion and contraction.
- B. Decking System Riser

1. The decking system riser at aisles shall be extruded aluminum; alloy 6063-T6 with a powder-coated finish – Color Selection by Architect.
 2. This extrusion shall have a male ridge running continuous at the upper leading edge to interlock with the front portion of the decking system panel.
 3. The riser shall be structurally connected to the decking system panel every 12" longitudinal with ¼" diameter structural grade rivet.
 4. There shall be no gaps or cavities between the riser portion of the decking system and any supports or attachments.
 5. Max 3" offset from finish grade or finish floor whichever is adjacent.
- C. Decking System Seat Supports
1. The decking system seat support shall be of extruded aluminum angle. 2-1/2" x 2" x 3/16", alloy 6061T6, mill finish.
 2. Once installed the seat support shall have no noticeable gaps between the decking system riser and support.
- D. Decking System Aisle Handrails
1. The decking system aisle handrails shall be 1-5/8" schedule 40 anodized aluminum pipe and riser mounted. Flange deck mounted is unacceptable.
 2. Handrails shall have a center line handrail and the spacing between rails shall not be less than 22" or more than 36". Handrails shall be discontinuous and shall not span more than five rows of seating.
- E. Egress Stairs
1. The decking system egress stair stringers are to be constructed of 8" aluminum channel, alloy 6061-T6. Tread supports to be welded to 8" member to totally cap the end of the 2" x 12" stair tread against the channel web.
 2. Walking surface of tread shall be complete with female front edge to allow for positive male / female connection of the riser closure. All risers shall be powder coated and fastened to the rear tail of the stair tread with ¼" diameter structural grade aluminum rivets.
 3. Stair treads nosing to be anodized black. Nosing shall have no external fasteners. The leading edge of the step tread shall project ½" past the front of the vertical riser.
 - a.
 4. Stair grab rail to be constructed of 1-5/8" schedule 40 anodized aluminum pipe with no fittings at transition from sloped system to grade.
- F. Decking System Hardware
1. All bolts, washers and nuts shall be galvanized.
 2. End caps shall be of a heavy duty, clamping, aluminum channel design fastened to the ends of extrusions with aluminum rivets. End caps shall close all end openings of extrusions and shall be a full-length piece and match in both color and finish the extrusion to which they attach.
 3. All riser fasteners shall be structural ¼" diameter structural grade rivet.

2.06 SEATING

- A. Bench Seating
1. Seats shall be of extruded aluminum with a fluted surface, alloy 6063-T6, with 204R1 anodized clear finish
 2. Plank shall be 2" by 10" nominal with a wall thickness of .078" (+ / -.006" industry tolerance) at the smooth surface.
 3. Finish size shall be 1-3/4" by 9-1/2"
 4. Seats shall attach to the decking system seat supports by means of concealed aluminum clips, galvanized bolts, washers and nuts.
 5. End caps shall be of extruded aluminum and shall match in both color and finish the plank to which they attach. All end caps shall be single piece and shall attach to the underside of the plank with a minimum of two aluminum rivets.

6. Manufacturer's Continuous backrest to be installed at specific bench locations. Manufacturer to provide backrest with equivalent standards for finish and attachment to that of the bench installation. See plans for locations and manufacturer to use continuous manufacturer backrest.
- B. Interkal Aura Chairs (minimum 32" tread depth required).
1. Chairs shall be designed to allow the seat pan to flip up allowing for the specified clear aisle access way. Aisle access way shall be measured with the chair unoccupied.
 2. Seat portion of chair shall be gravity activated with an internal quieting bumper.
 3. Stanchions shall be an integral part of the grandstand system.
 4. Seat back and pan shall be the only installation required in the field.
 5. Seat pan and back shall be blow molded plastic with color throughout. Color shall be selected by the Architect and submitted for approval prior to install.

2.07 HANDRAILS / GUARDRAILS

- A. Handrail / Guardrail System
1. All railing shall consist of 1-5/8" schedule 40 anodized pipe.
 2. All pipe fittings shall be of cast aluminum.
 3. Guardrail supports to be 4" aluminum channel, alloy 6061-T6.
 4. Rail pipe shall be secured to the guardrail support by means of galvanized tension bands.
 5. The top rail shall be 42" minimum above the nearest seat on the sides and rear, and 42" above the tread on the front walkway.
 6. Handrails on stairs shall be 34" above the leading most edge of the stair tread.
 7. A black vinyl coated chain link fence shall be provided on the front, sides and rear of the grandstand and at all egress areas.
 8. Handrails shall be provided at all walking areas and shall extend 1-1/2" from guardrail material. Standoff shall be extruded aluminum, alloy 6061-T6
 9. Handrails shall have internal sleeves for splice purposes and finished rail shall be continuous and shall not exceed 1-5/8" diameter.

PART 3 - EXECUTION

3.01 EXAMINATION

- A. Before erection proceeds, certified grandstand installer will survey elevations and locations of concrete foundations or pads and anchor bolts to verify compliance with the requirements of grandstand manufacturers' tolerances.

3.02 ERECTION

- A. Erect grandstand system according to manufacturer's written instructions and erection drawings.
- B. Do not field cut, drill or alter structural members without written approval from grandstand system manufacturer's professional engineer.
- C. Set structural framing in locations to elevations indicated according to AISC specifications referenced in the specification.

3.03 CLEANING AND PROTECTION

- A. Clean all metal surfaces promptly after installation of work.
- B. Exercise care to avoid damage to protective coatings and finishes.
- C. Remove all excess construction material and dispose of all debris.
- D. Protect installed construction until Date of Substantial Completion.
- E. Protect installed structure from damage or deterioration until Date of Substantial Completion.
- F. Repair or replace damaged elements before Date of Substantial Completion.

END OF SECTION

SECTION 13 3416.16
PREFABRICATED PRESS BOX

PART 1 - GENERAL

1.01 SUMMARY

- A. Section includes prefabricated Press Box, complete and ready for use including the following:
 - 1. Floor construction.
 - 2. Exterior wall construction.
 - 3. Interior wall construction.
 - 4. Roof / ceiling construction.
 - 5. Roof railings.
 - 6. Windows and doors.
 - a. Door Hardware in accord with Section 08 7100 - Door Hardware. See Prefabricated Press Box hardware groups.
 - 7. Built-ins.
 - 8. Dimensional letter signage.
 - 9. Mechanical and electrical requirements including space conditioning, electrical power and lighting.

1.02 RELATED REQUIREMENTS

- A. Section 08 7100 - Door Hardware: Door hardware requirements and Hardware Groups.
- B. Section 13 3416.13 - Grandstands.
- C. Division 23 Sections and HVAC Drawings
- D. Division 26 Sections and Electrical Drawings.
- E. Architectural Drawings

1.03 REFERENCE STANDARDS

- A. 16 CFR 1201 - Safety Standard for Architectural Glazing Materials; Current Edition.
- B. AAMA/WDMA/CSA 101/I.S.2/A440 - North American Fenestration Standard/Specification for windows, doors, and skylights; 2017.
- C. AISC 360 - Specification for Structural Steel Buildings; 2016.
- D. ASCE 7 - Minimum Design Loads and Associated Criteria for Buildings and Other Structures; Most Recent Edition Cited by Referring Code or Reference Standard.
- E. ASTM A755/A755M - Standard Specification for Steel Sheet, Metallic Coated by the Hot-Dip Process and Prepainted by the Coil-Coating Process for Exterior Exposed Building Products; 2018.
- F. ASTM C1396/C1396M - Standard Specification for Gypsum Board; 2017.
- G. ASTM C518 - Standard Test Method for Steady-State Thermal Transmission Properties by Means of the Heat Flow Meter Apparatus; 2017.
- H. ASTM C665 - Standard Specification for Mineral-Fiber Blanket Thermal Insulation for Light Frame Construction and Manufactured Housing; 2017.
- I. ASTM D4434/D4434M - Standard Specification for Poly(Vinyl Chloride) Sheet Roofing; 2015.
- J. ASTM E136 - Standard Test Method for Behavior of Materials in a Vertical Tube Furnace At 750 Degrees C; 2016a.
- K. ASTM E1677 - Standard Specification for an Air Barrier (AB) Material or System for Low-Rise Framed Building Walls; 2011.
- L. ASTM E84 - Standard Test Method for Surface Burning Characteristics of Building Materials; 2018b.

- M. ASTM F1066 - Standard Specification for Vinyl Composition Floor Tile; 2004 (Reapproved 2018).
- N. ICC (IBC)-2018 - International Building Code; 2018.
- O. ICC 300 - Standard for Bleachers, Folding and Telescopic Seating and Grandstands; 2017.
- P. ICC A117.1 - Accessible and Usable Buildings and Facilities; 2017.
- Q. AWS D1.1/D1.1M - Structural Welding Code - Steel; 2015, with Errata (2016).
- R. MPI (APL) - Master Painters Institute Approved Products List; Master Painters and Decorators Association; Current Edition.
- S. NFPA 70 - National Electrical Code; Most Recent Edition Adopted by Authority Having Jurisdiction, Including All Applicable Amendments and Supplements.
- T. PS 1 - Structural Plywood; 2009.
- U. PS 20 - American Softwood Lumber Standard; 2015.

1.04 ADMINISTRATIVE REQUIREMENTS

- A. Coordination:
 - 1. Coordinate Prefabricated Press Box design and requirements with design of grandstands and bleachers. Coordinate structural and utilities details and connections to facilitate attachment.
 - 2. Provide hardware, in accord with provisions contained in Section 08 7100 - Door Hardware. Refer to Press Box Hardware Groups. All door hardware necessary for press box shall be provided in this Section.
 - 3. Coordinate HVAC and electrical requirements including rough-ins for field work by others.
- B. Pre-Installation Meeting: Conduct conference at Project site.
 - 1. Review methods and procedures related to prefabricated Press Box and interface with grandstands and bleacher systems including, but not limited to, the following:
 - a. Condition of foundations, structural supports, attachments and other preparatory work performed by other trades.
 - b. Structural load limitations on grandstand framing.
 - c. Construction schedule. Verify availability of materials and erector's personnel, equipment, and facilities needed to make progress and avoid delays.
 - d. Required tests, inspections, and certifications.
 - e. Unfavorable weather and forecasted weather conditions and impact on construction schedule.

1.05 SUBMITTALS

- A. See Section 01 3000 - Administrative Requirements, for submittal procedures.

1.06 ACTION SUBMITTALS:

- A. Product Data: For each type of product.
 - 1. Include construction details, material descriptions, dimensions of individual components and profiles, and finishes for prefabricated Press Box.
 - 2. Electrical equipment.
- B. Shop Drawings: Include plans, elevations, sections, details, accessories, and fastening and anchorage details, including mechanical fasteners.
 - 1. Show provisions for attaching prefabricated Press Box to grandstands.
 - 2. Accessory Drawings: Include details of the following items, at a scale of not less than 1-1/2 inches per 12 inches:
 - a. Flashing and trim.
 - b. Gutters.
 - c. Downspouts.
 - d. Service walkways.
 - e. Ladders.

- f. Roof hatch.
 - g. Roof railings.
 - h. Windows.
 - i. Work surfaces.
 - j. Signage including blocking in walls to facilitate attachment.
- C. Samples for Verification: For each type of exposed finish in manufacturer's standard sizes.
- 1. Include Samples of wall panels and accessories to verify finish selection.
- D. Door Schedule: For doors and frames. Use same designations indicated on Drawings.
- E. Door Hardware Schedule: Include details of fabrication and assembly of door hardware. Organize schedule using door hardware sets from Section 08 7100 indicating complete designations of every item required for each door or opening.
- 1. Keying Schedule: Detail Owner's final keying instructions for locks. Include schematic keying diagram and index each key set to unique door designations.
- F. Delegated-Design Submittal: For prefabricated Press Box.
- 1. Designer Qualifications: Perform design under direct supervision of a Professional Engineer experienced in design of this type of work and licensed in the State in which the Project is located.
 - 2. Include analysis data indicating compliance with performance requirements and design data signed and sealed by qualified professional engineer responsible for their preparation.

1.07 INFORMATION SUBMITTALS:

- A. Qualification Data: For manufacturer and erector.
- B. Letter of Design Certification: Signed and sealed by a qualified professional engineer. Include the following:
- 1. Name and location of Project.
 - 2. Order number.
 - 3. Name of manufacturer.
 - 4. Name of Contractor.
 - 5. Building dimensions including width, length, height, and roof slope.
 - 6. Indicate compliance with applicable building codes, including IBC, NFPA 70, and State Building Energy Code.
 - 7. Design Loads: Include dead load, roof live load, collateral loads, roof snow load, deflection, wind loads/speeds and exposure, and seismic design category or effective peak velocity-related acceleration/peak acceleration.
 - 8. Load Combinations: Indicate that loads were applied acting simultaneously with concentrated loads, according to governing building code.
- C. Material Test Reports: For each of the following products:
- 1. Wall and floor sheathing.
 - 2. Roofing.
 - 3. Wood framing.
 - 4. Windows and doors.
 - 5. Paints.
- D. Sample Warranties: For special warranties.

1.08 CLOSEOUT SUBMITTALS

- A. Maintenance Data: For the following materials to include in maintenance manuals:
- 1. Roofing.
 - 2. Exterior wall panels.
 - 3. Windows and doors.
 - 4. Interior floor finishes.

1.09 QUALITY ASSURANCE

- A. Designer Qualifications: Design structural components and related components such as ladders, stairs, rails etc, develop shop drawings, and perform shop and site work under direct supervision of a Professional Structural Engineer experienced in design of this type of work.
 - 1. Design Engineer Qualifications: Licensed in the State in which the Project is located.
 - 2. Comply with applicable code for submission of design calculations as required for acquiring permits.
 - 3. Cooperate with regulatory agency or authorities having jurisdiction (AHJ), and provide data as requested.
- B. Perform work in accordance with local codes and standards, ICC (IBC)-2018 and applicable provisions of ICC 300.
- C. Perform welding in accordance with AWS D1.1/D1.1M.
- D. Manufacturer Qualifications: Manufacturer must have 10 years of experience in the manufacture of prefabricated press boxes of the type and size specified.
- E. Installer Qualifications: A qualified installer regularly engaged for the past five years in the installation of prefabricated press boxes of similar type to that specified.

1.10 WARRANTY

- A. Special Warranty: Manufacturer agrees to repair finish or replace prefabricated Press Box components that fail in materials or workmanship within specified warranty period.
 - 1. Warranty Period for Roofing: 20 years from date of Substantial Completion.
 - 2. Warranty Period for Coated Glass: 10 years from date of Substantial Completion.
 - 3. Warranty Period for Insulating Glass: 10 years from date of Substantial Completion.
 - 4. Warranty Period for Windows: 10 years from date of Substantial Completion.
 - 5. Warranty Period for Wood Doors: Life of installation.

PART 2 - PRODUCTS

2.01 BASIS OF DESIGN MANUFACTURER

- A. Outdoor Aluminum Inc: www.outdooraluminum.com.
- B. Other Acceptable Manufacturers: Subject to requirements, provide press box systems by one of the following:
 - 1. Dant Clayton: www.stadiumbleachers.com.
 - 2. Southern Bleacher Company: www.southernbleacher.com.
 - 3. GT Grandstands: www.gtgrandstands.com.
 - 4. Sturdi Steel: www.sturdisteel.com.
 - 5. Substitutions: See Section 01 6000 - Product Requirements.

2.02 PERFORMANCE REQUIREMENTS

- A. Design Classification: ICC (IBC)-2018 Use Group B; Construction Type V-B.
- B. Energy Compliance: For walls, floor, roof, and window design, comply with State Building Energy Code.
 - 1. Press Box manufacturer shall provide proof of compliance with DOE Comcheck report.
- C. Structural Performance: Press Box shall withstand the following loads and stresses within limits and under conditions indicated according to ASCE 7:
 - 1. Loads: As indicated on Drawings, except as follows:
 - a. Roof Live Load: 50 psf.
 - b. Floor Live Load: 100 psf.
- D. Structural Performance: Railings, including attachment to building construction, 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.
3. Thermal Movements: Allow for thermal movements from ambient and surface temperature changes.
 - a. Temperature Change (Range): 120 deg F, ambient; 180 deg F, material surfaces.
- 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.
- F. Safety Glazing Products: Category II materials complying with testing requirements in 16 CFR 1201.
 1. Subject to compliance with requirements, obtain safety glazing products permanently marked with certification label of SGCC or another certification agency or manufacturer acceptable to authorities having jurisdiction.
- G. Regulatory Requirements: Comply with applicable provisions in the U.S. Architectural & Transportation Barriers Compliance Board's ADA-ABA Accessibility Guidelines and ICC A117.1.

2.03 WOOD PRODUCTS, GENERAL

- A. Lumber: DOC PS 20 and applicable rules of grading agencies indicated.
 1. Factory mark each piece of lumber with grade stamp of grading agency.
 2. Dress lumber, S4S, unless otherwise indicated.
 3. Maximum Moisture Content: 15 percent for 2-inch nominal.
- B. Plywood Wall Sheathing: DOC PS 1, Exposure 1, Structural I sheathing.
- C. Plywood Roof Sheathing: DOC PS 1, Exposure 1, Structural I sheathing.
- D. Plywood Subflooring: DOC PS 1, Exposure 1, Structural I single-floor panels or sheathing.
- E. Plywood Underlayment for Resilient Flooring: DOC PS 1, Exterior A-C with fully sanded face.
- F. Plywood Underlayment for Roofing: DOC PS 1, Exposure 1, Underlayment with fully sanded face.

2.04 EXTERIOR WALL AND ROOF MATERIALS

- A. Glass-Fiber Blanket Insulation, Unfaced: ASTM C665, Type I; with maximum flame-spread and smoke-developed indexes of 25 and 50, respectively, per ASTM E84; passing ASTM E136 for combustion characteristics.
- B. Weather Barrier: ASTM E1677, Type I air barrier; with flame-spread and smoke-developed indexes of less than 25 and 450, respectively, when tested according to ASTM E84; UV stabilized; and acceptable to authorities having jurisdiction.
- C. PVC Roofing Sheet: ASTM D4434/D4434M, Type III, fabric reinforced.
- D. Roof Trim: 26 gauge prefinished metal trim to match wall panels.
- E. Gutters and Downspouts: Metallic-coated steel sheet, prepainted by coil-coating process to comply with ASTM A755/A755M.
 1. Exposed Coil-Coated Finish:
 - a. Two-Coat Fluoropolymer: AAMA 621, color as selected by Architect.
- F. Roof Hatch: Aluminum roof hatch shall be insulated and baked enamel or powder coat finish.
 1. Type and Size: Single-leaf lid, 30 by 36 inches.

2.05 INTERIOR FINISH MATERIALS

- A. Predecorated Gypsum Board: ASTM C1396/C1396M, Class I - Laminated Sheet or Film, sizes to minimize joints in place; ends square cut.

1. Core Type: Regular.
 2. Thickness: 1/2 inch.
 3. Edges: Beveled, for shallow V-groove exposed joints.
 4. Predecorated Facing: Sheet vinyl, fabric reinforced; flame spread/smoke developed index of 25/50, maximum, when tested in accordance with ASTM E84; white.
 - a. Moldings and Trim: Manufacturer's standard shapes for specific project conditions, in color to match approved sample.
 - b. Batten Joints: Manufacturer's standard type, in color to match approved sample.
- B. Resilient Tile Standard: ASTM F1066, Class 2, through pattern.
- C. Interior Painting: Products shall comply with MPI standards MPI (APL) indicated and shall be listed in its "MPI Approved Products Lists."
1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
 - a. PPG Paints. <<http://www.specagent.com/Lookup?uid=123457035168>>
 - b. Sherwin-Williams Company (The) <<http://www.specagent.com/Lookup?uid=123456988495>>.
 - c. Benjamin Moore: www.benjaminmoore.com.
 2. Colors: As selected by Architect.

2.06 WINDOWS AND DOORS

- A. Vinyl Framed Windows: Comply with AAMA/WDMA/CSA 101/I.S.2/A440 for definitions and minimum standards of performance, materials, components, accessories, and fabrication.
1. Minimum Performance Class: CW.
 2. Minimum Performance Grade: 35.
 3. Thermal Transmittance: U-factor of 0.30 Btu/sq. ft. x h x deg F.
 4. Solar Heat-Gain Coefficient (SHGC): 0.40.
- B. Exterior Door Assemblies: Provide door assemblies with U-factor of not more than 0.38 deg Btu/F x h x sq. ft. when tested according to ASTM C518.
- C. Interior Wood Doors: WDMA I.S.1-A Performance Grade Heavy Duty.
1. Particleboard: ANSI A208.1, Grade LD-2.

2.07 PREFABRICATED PRESS BOX

- A. Provide a complete, integrated set of mutually dependent components and assemblies that form a prefabricated Press Box capable of withstanding structural and other loads, thermally induced movement, and exposure to weather without failure or infiltration of water into building interior.
- B. Floor Construction: Steel Joist framing, plywood subfloor, plywood underlayment, blanket insulation, fiber cement soffit panels, and resilient flooring.
1. Joist: 60CSJ16, 6" x 16ga. galvanized steel joists, on 16" centers, longitudinal framing.
 2. Plywood decking Subfloor: 3/4 inch nominal thickness; Underlayment grade T&G fir plywood. (Index 24" O.C.).
 3. Blanket Insulation: R-19 minimum with vapor barrier.
 4. Bottom Board: .030 gauge one-piece galvanized steel bottom pan. 1/2 inch CDX Plywood (factory painted Black).
 5. Resilient Flooring: 12 by 12 by 1/8 inch vinyl composition tile, and 4 inch rubber wall base.
 - a. Colors: As selected by Architect.
- C. Exterior Wall Construction: Wood framing, exterior wall sheathing, weather barrier, blanket insulation, interior vinyl faced gypsum board.
1. Siding: 26 gauge (PBU 3/4") Metal Panels colored with Kynar 500 Finish.
 - a. Colors: As selected by Architect.
 2. Air and vapor barrier.
 3. Exterior Wall Sheathing: 1/2 inch CDX plywood.
 4. Stud Framing: 362CSJ18, 3 5/8" x 18ga. galvanized steel studs, on 16" centers.

5. Top and Bottom Plates: 3 5/8" x 18ga. galvanized steel U-channels.
 6. Miscellaneous Blocking: 2 x 4 inch, No. 2 Grade SPF or better. Provide as required for attachment of signage.
 7. Headers: Per span and design requirements – Coordinate with Architectural drawings for opening sizes.
 8. Blanket Insulation: R-13 minimum with Vapor Barrier.
 9. Interior Gypsum Board: 5/8" vinyl-faced gypsum panels, Class A, F.S.R.
 - a. Colors/Pattern: As selected by Architect.
- D. Interior Wall Construction: Metal framing, interior vinyl faced gypsum board.
1. Stud Framing: 362CSJ18, 3 5/8" x 18ga. galvanized steel studs, on 16" centers.
 2. Top and Bottom Plates: 3 5/8" x 18ga. galvanized steel U-channels
 3. Headers: Per span and design requirements - Coordinate with Architectural drawings for opening sizes.
 4. Blanket Insulation: Sound attenuation insulation. Full thick mineral wool.
 5. Interior Gypsum Board: 5/8" vinyl-faced gypsum panels, Class A, F.S.R.
 - a. Colors/Pattern: As selected by Architect.
- E. Roof / Ceiling Construction: Metal framing, plywood sub-decking, roof underlayment, blanket insulation, and perforated aluminum soffit panels.
1. Roof Overhead: 16" over front wall; 6" over rear wall and side walls.
 - a. .019 aluminum fascia with perforated aluminum soffit panels.
 - b. Factory painted.
 - c. Color: As selected by Architect.
 2. Roof Membrane: Fully adhered, 60 mil EPDM membrane with skid and spike resistant surface fully adhered.
 - a. Color: As selected by Architect.
 3. Plywood Decking: 3/4" tongue & groove oriented strand board (Index 24" O.C.)
 4. Joist: 80CSJ16, 8" x 16ga. welded galvanized steel joists, 16" O.C. spacing.
 5. Blanket Insulation: R-21 minimum with vapor barrier.
 6. 2 by 2 foot acoustic suspended ceiling.
- F. Roof Railings: 1/2" galvanized threaded bolts & nuts through roof fascia on 48" centers along perimeter edge of roof galvanized chain link fence attached around perimeter of Press Box roof.
1. Railing mounts shall not be placed on the roof surface.
- G. Exterior Vinyl Windows: Impact-resistant, tempered, UV-stabilized PVC with clear, low-e, argon filled, 3/4 inch minimum insulating glass assembly.
1. Basis-of-Design Product: PGT WinGuard "SH5500"
 - a. Finish: Integral color as selected by Architect.
 2. Sill Cap/Track: Designed to comply with performance requirements indicated and to drain to the exterior.
 3. Locks and Latches: Operated from the inside only.
 4. Roller Assemblies: Low-friction design.
 5. Screens: Removable, glass-fiber mesh insect screens for each window.
- H. Exterior Doors: 1-3/4 inches thick; insulated steel clad door. With 10" x 10" insulated tempered glass lite.
1. Door Hardware by others - Coordinate door requirements with door hardware supplier prior to purchase of door and door hardware. See Door Hardware specification for all door hardware requirements.
- I. Interior Wood Doors: 1-3/8 inches thick solid-core stained birch with top half of door glazed.
1. Equip door with commercial lever-handled passage set and hinges.
 2. Fixed unit with 1/4" tempered clear glazing.
 3. Wood trim
 - a. Color of stain to be approved by Architect.

- J. Scorer's Counter: 24" deep x ¾" lauan grade plywood with 1-1/2" x 2" edge, surfaced with 0.60 plastic laminate and steel support brackets as required, but not greater than 32 inches on center. Provide Grommets per plan.
 - 1. Coordinate A/V and P/A equipment requirements with Electrical, Architectural and Owner Prior to approval of counter shop drawings. Cutouts within counter may be necessary or equipment installation.
- K. Electrical Power Service: 100-A, 120/240-V ac, single-phase, with main disconnect; three-wire load center, with no fewer than four open circuits; flush mounted inside Press Box with 1-1/2 inch conduit stub-out through floor for service line, as indicated on the electrical drawings. Run copper wiring in 1/2- inch EMT conduit.
 - 1. See electrical and architectural plans for junction boxes, conduits, power and av requirements and installations. Coordinate all electrical requirements prior to sending Architect and Engineer for review of shop drawings.
 - 2. All branch circuit wiring is minimum #12-2 W/G NM cable or THHN encased in EMT thin wall conduit or MC cable
 - 3. Coordinate with GC to determine minimum requirements for conduit stub-out for Score Board controller, av equipment, and additional power requirements prior to fabrication and must be included in submittal for review by engineers and architect. Provide conduit stub-out necessary for Score Board and all P.A./A.V./Security cabling and Controller cables. See Architectural interior plans/interior elevations and electrical drawings for additional equipment and conduit to coordinate.
 - 4. Provide a 2 additional 1 - 1/2 inch conduit stub-out through floor for future service lines and improvements. Cap all conduits in a way they can be removed in the future. Provide 3 pull ties at each empty conduits where elbows occur throughout the conduit.
 - a. Provide a minimum of 20 data receptacles with conduit stubbed above ceiling.
- L. Lighting Fixtures: Ceiling-mounted fluorescent lighting fixtures, 48 inches long, with low-glare parabolic diffusers, and two 40-W lamps in each fixture.
 - 1. Provide single-pole switch mounted adjacent to doors to control lighting fixtures.
- M. Emergency/Exit:
 - 1. Provide emergency combination exit/flood light with 90 min.
 - 2. Battery back-up and remote emergency flood light
 - 3. Emergency products to meet minimum building code and fire code requirements.
- N. HVAC Units: Minimum of three (3) Wall-mounted, thermostatically controlled units.
 - 1. Coordinate installation location of thermostats controllers with Owner.
 - 2. Press Box Manufacturer to design and provide HVAC to meet Building Code requirements.
 - 3. Equipment and installation shall be provided by the Press Box Manufacturer.
- O. Accessories:
 - 1. Dimensional Signage:
 - a. GC to provide and install Signage on the exterior face of the press box. GC to coordinate locations of signage so press box manufacture can provide additional blocking within the walls for bracing and mounting of the signage.
 - b. Shape and Size: As indicated on Drawings.
 - 2. Aluminum Roof Ladder: Tubular rail low parapet access ladder with walk-through rail extensions.
 - a. Products: Alaco Fixed ladder attached directly to wall.

2.08 FABRICATION

- A. Factory fabricate Press Box completely.
- B. Factory pre glaze windows and doors.
- C. Factory prewire Press Box, ready for connection to service at Project site.
- D. Fabricate Press Box with provisions for lifting into place above grandstands.

- E. Accessible Press Box: Where indicated to be accessible, fabricate as follows:
 - 1. Provide service windows located no higher than 34 inches above floor.
 - 2. Provide door opening with minimum 32-inch clear width.
 - 3. Provide minimum 60-inch clear turning spacing within the Press Box.
 - 4. Provide minimum 27-inch clearance beneath interior work surfaces. Locate work surfaces 28 inches minimum and 34 inches maximum above the floor.
 - 5. Locate controls and operable parts no lower than 15 inches and no higher than 48
 - 6. Inches above the floor where reach is unobstructed.
 - 7. Where side reach is obstructed, locate controls and operable parts no lower than
 - 8. 15 inches and no higher than 46 inches above the floor.

PART 3 - EXECUTION

3.01 EXAMINATION

- A. Examine substrates, areas, and conditions, with Installer present, for compliance with requirements for installation tolerances, including concrete bases; accurate placement, pattern, and orientation of anchor bolts; critical dimensions; and other conditions affecting performance of the Work.
- B. Examine roughing-in for electrical and communication systems to verify actual locations of connections before Press Box installation.
- C. Prepare written report, endorsed by Installer, listing conditions detrimental to performance of the Work.
- D. Proceed with installation only after unsatisfactory conditions have been corrected.

3.02 INSTALLATION

- A. Install Press Box according to manufacturer's written instructions.
- B. Install Press Box plumb, level, square, and straight.
- C. Fasten Press Box securely to grandstands.
- D. Connect to electrical power service and data systems.
- E. Perform startup checks of HVAC units according to manufacturer's written instructions.

3.03 ADJUSTING

- A. Adjust doors, operable windows, and hardware to operate smoothly, easily, properly, and without binding. Confirm that locks engage accurately and securely without forcing or binding.
- B. Lubricate hardware and other moving parts.
- C. After completing installation, inspect exposed finishes and repair damaged finishes.

END OF SECTION

**SECTION 13 3419
METAL BUILDING SYSTEMS**

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Provide complete metal building system including but not limited to:
 - 1. Design.
 - 2. Materials.
 - 3. Fabrication.
 - 4. Shipment.
 - 5. Erection.
 - 6. Other components as specified.
- B. Manufacturer-engineered, shop-fabricated structural steel building frame.
- C. Metal wall panels, metal roof panels, metal joist, metal beams, metal deck, metal gutters, metal downspouts, wall insulation system and roof insulation system.
- D. Interior wall liner panels where indicated; both at perimeter walls and interior partitions, and to include all necessary furring.

1.02 RELATED REQUIREMENTS

- A. Section 05 4000 - Cold Formed Metal Framing
- B. Section 05 5000 - Metal Fabrications.
- C. Section 06 6100 - Rough Carpentry: Wood blocking and nailers.
- D. Section 07 9200 - Joint Sealants: Sealing joints between accessory components and wall system.
- E. Section 08 1113 - Hollow Metal Doors and Frames.
- F. Section 09 9600 - High Performance Coatings: Metal building structural framing and bracing

1.03 DEFINITIONS

- A. Code: The word "code" refers to the Building Code.
- B. Installer, Erector or Applicator:
 - 1. Installer, erector or applicator is the person actually installing, erecting or applying the product in the field at the Project site.
 - 2. Installer, erector and applicator are synonymous.
- C. PVDF: Polyvinylidene fluoride.
 - 1. Nomenclature as listed in Bibliography of the MBMA Low Rise Building Systems Manual.

1.04 REFERENCE STANDARDS

- A. AISC 303 - Code of Standard Practice for Steel Buildings and Bridges; 2016.
- B. AISC 360 - Specification for Structural Steel Buildings; 2016.
- C. ASCE 7 – Minimum Design Loads and Associated Criteria for Buildings and Other Structures; 2016.
- D. ASHRAE Std 90.1 I-P - Energy Standard for Buildings Except Low-Rise Residential Buildings; 2013, Including All Amendments and Errata.
- E. ASTM A36/A36M - Standard Specification for Carbon Structural Steel; 2014.ASTM
- F. A153/A153M - Standard Specification for Zinc Coating (Hot-Dip) on Iron and Steel Hardware; 2016a.
- G. ASTM A307 - Standard Specification for Carbon Steel Bolts, Studs, and Threaded Rod 60 000 PSI Tensile Strength; 2014 (Editorial 2017).
- H. ASTM A500/A500M - Standard Specification for Cold-Formed Welded and Seamless Carbon Steel Structural Tubing in Rounds and Shapes; 2013.
- I. ASTM A501/A501M - Standard Specification for Hot-Formed Welded and Seamless Carbon Steel Structural Tubing; 2014.
- J. ASTM A529/A529M - Standard Specification for High-Strength Carbon-Manganese Steel of Structural Quality; 2014.
- K. ASTM A792/A792M - Standard Specification for Steel Sheet, 55% Aluminum-Zinc Alloy-Coated by the Hot-Dip Process; 2010 (Reapproved 2015).
- L. ASTM C665 - Standard Specification for Mineral-Fiber Blanket Thermal Insulation for Light Frame Construction and Manufactured Housing; 2012.

- M. ASTM C827/C827M - Standard Test Method for Change in Height at Early Ages of Cylindrical Specimens of Cementitious Mixtures; 2016.
- N. ASTM C920 - Standard Specification for Elastomeric Joint Sealants; 2014a.
- O. ASTM C991 - Standard Specification for Flexible Fibrous Glass Insulation for Metal Buildings; 2016.
- P. ASTM C1107/C1107M - Standard Specification for Packaged Dry, Hydraulic-Cement Grout (Nonshrink); 2014a.
- Q. ASTM F3125/F3125M - Standard Specification for High Strength Structural Bolts, Steel and Alloy Steel, Heat Treated, 120 ksi (830 MPa) and 150 ksi (1040 MPa) Minimum Tensile Strength, Inch and Metric Dimensions; 2015a. ding, Brazing, and Nondestructive Examination; 2012.
- R. AWS D1.1/D1.1M - Structural Welding Code - Steel; 2015 (with March 2016 Errata).
- S. IAS AC472 - Accreditation Criteria for Inspection Programs for Manufacturers of Metal Building Systems; 2012.
- T. ICC (IBC) - International Building Code; 2018.
- U. ICC (IECC) - International Energy Conservation Code; 2018.
- V. MBMA (MBSM) - Metal Building Systems Manual; 2012.
- W. SSPC-Paint 20 - Zinc-Rich Primers (Type I, "Inorganic," and Type II, "Organic"); 2002 (Ed. 2004).
- X. UL 580 - Standard for Tests for Uplift Resistance of Roof Assemblies; Current Edition, Including All Revisions.

1.05 ADMINISTRATIVE REQUIREMENTS

A. Coordination:

1. Coordinate the installation of wood blocking, bridging and nailers where necessary for attachment of equipment and other elements by others.
2. Coordinate the installation of structural elements and components necessary for support and attachment of canopies windows and doors and other elements requiring attachment to building structure.
3. Coordinate the installation of mechanical louvers, doors windows and other penetrations so intermediate framing and bracing is included in the design of the Metal building.
4. Metal building manufacturer to provide GC with approved method for sealing through-wall penetrations.
5. Coordinate primers for compatibility with proposed field-applied topcoats.

B. Pre-installation Meeting: Convene one week before starting work of this section.

1. Review preparation and installation procedures and coordinating and scheduling required with related work.
2. Attendance: Architect, Building Commission Inspector, Owner's Insurer (if applicable), General Contractor, metal building manufacturer and metal building erector. If rooftop equipment is to be placed on roof, mechanical contractor shall also attend.
3. Architect will prepare written report indicating actions taken, decisions made, and items discussed. Report will become a part of the record.
4. Distribution: General Contractor (for further distribution to subcontractors); Owner.

C. Project Record Documents: Record actual locations of concealed components and utilities.

1.06 SUBMITTALS

- A. See Section 01 3000 - Administrative Requirements, for submittal procedures.
- B. Product Data: Provide data on profiles, component dimensions, fasteners and energy code compliant roof and wall insulation systems.
- C. Shop Drawings: Indicate assembly dimensions, locations of structural members, connections; wall and roof system dimensions, panel layout, general construction details, anchorages and method of anchorage, installation, and structural bracing; Provisions for equipment and other building element loads to be hung from structure: framing anchor bolt settings, sizes, and locations from datum, foundation loads; indicate welded connections with AWS A2.4 welding symbols; indicate net weld lengths; provide professional seal and signature.
- D. Samples: Submit two samples of prefinished metal panels for each color selected, 16 by 16 inch in size illustrating color and texture of finish.
- E. Manufacturer's Instructions: Indicate preparation requirements, anchor bolt placement, and foundation requirements.
- F. Erection Drawings: Indicate members by label, assembly sequence, and temporary erection

bracing. Provide manufacturers standard details with erection drawings when submitted for Architectural review.

- G. Manufacturer Qualification Statement: Provide documentation showing metal building manufacturer is accredited under IAS AC472.
 - 1. Include statement that manufacturer designs and fabricates metal building system as integrated components and assemblies, including but not limited to primary structural members, secondary members, interior walls, raised floor systems, joints, roof, and wall cladding components specifically designed to support and transfer loads and properly assembled components form a complete or partial building shell.
- H. Informational Submittals:
 - 1. Manufacturer's and Erector's Qualifications.
 - 2. Manufacturer's approval of erector.
 - 3. Structural calculations stamped and signed by a professional Structural Engineer licensed in the State where Project is located.
 - i. Include list of design loads and loads transmitted to foundation through columns or walls and location where loads occur.
 - ii. Submit calculations for information only.
 - 4. Certificate of compliance by fabricator that steel was fabricated in accordance with the approved construction documents.
- I. Project Record Documents: Record actual locations of concealed components and utilities.

1.07 QUALITY ASSURANCE

- A. Design structural components, develop shop drawings, and perform shop and site work under direct supervision of a Professional Structural Engineer experienced in design of this Work.
 - 1. Design Engineer Qualifications: Licensed in the State in which the Project is located.
 - 2. Conform to applicable code for submission of design calculations as required for acquiring permits.
 - 3. Coordinate equipment loads with equipment manufacturers to support all applicable loads.
 - 4. Cooperate with regulatory agency or authority and provide data as requested.
- B. Perform work in accordance with ASHRAE 90.1 as applicable and MBMA (MBSM) and ICC (IBC).
- C. Perform welding in accordance with AWS D1.1/D1.1M.
- D. Manufacturer Qualifications: Company specializing in the manufacture of products similar to those required for this project.
 - 1. Not less than 5 years of documented experience
 - 2. Member in good standing of the MBMA.
 - 3. Accredited by IAS in accordance with IAS AC472.
- E. Erector Qualifications: Company specializing in performing the work of this section with minimum 10 years documented experience and approved by manufacturer.
 - 1. Installer's Field Supervisor: Experienced mechanic certified by metal building system manufacturer supervising work on site whenever work is underway.

1.08 WARRANTY

- A. See Section 01 7800 - Closeout Submittals, for additional warranty requirements.
- B. Correct defective Work within a five year period after Date of Substantial Completion.
- C. Provide 20 year manufacturer warranty for factory applied finishes and weather-tightness.
 - 1. Include coverage for exterior pre-finished surfaces to cover pre-finished color coat against chipping, cracking or crazing, blistering, peeling, chalking, or fading. Include coverage for weather tightness of building enclosure elements after installation.
- D. Special Installer's and General Contractor's Warranty: Submit roofing installer's and General Contractor's warranty, on warranty form ABC Form C-9 signed by installer and General Contractor, covering Work of this Section, including all components of membrane roofing system such as roof membrane, base flashings, roof insulation, adhesives and fasteners, cover boards, substrate boards, vapor retarders, roof pavers and walkway products for the following warranty period:
 - 1. Warranty Period: Five (5) years from date of Substantial Completion.

2. Warranty Note: This shall not deprive the Owner of other rights the Owner may have under other provisions of the Contract Documents and shall be in addition to, and run concurrent with other warranties made by the Contractor under requirements of the Contract Documents.

PART 2 PRODUCTS

201 MANUFACTURERS

- A. Basis of Design Metal Building: MESCO Building Solutions: www.mescobuildingsolutions.com.
- B. Other Acceptable Metal Buildings:
 - 1. ACI Building Systems, LLC: www.acibuildingsystems.com.
 - 2. American Buildings Company: www.americanbuildings.com.
 - 3. Bigbee Steel Buildings Inc.: www.bigbee.com.
 - 4. Butler Manufacturing Company: www.butlermfg.com.
 - 5. Ceco Building Systems: www.cecobuildings.com.
 - 6. Inland Buildings: www.inlandbuildings.com.
 - 7. Nucor Building Systems: www.nucorbuildingsystems.com.
 - 8. VP Buildings: www.vp.com.
 - 9. Vulcan Steel Structures: www.vulcansteel.com.
 - 10. CANAM Steel Building Corporation <https://www.canambuildings.com>
 - 11. Substitutions: See Section 01 6000 - Product Requirements.

202 METAL BUILDING

- A. Single and multi span rigid frame as indicated on Drawings. See Drawings.
- B. Exterior bay spacing: See Drawings.
- C. Interior bay spacing: See Drawings.
- D. Interior partition framing
- E. Primary Framing: Rigid frame of rafter beams and columns, canopy beams, intermediate columns, Acoustical door partition framing, end wall columns, and wind bracing.
- F. Secondary Framing: Purlins, Girts, hat Channels (Max 7/8") at reverse roll paneling, Eave struts, Flange bracing, Sill supports, Clips, through-wall opening framing (framing for jamb, sill and head of windows, doors and louvers.) and other items detailed in this specification or construction drawings.
- G. Wall System: Preformed metal panels of vertical & horizontal profile, with sub-girt framing/anchorage assembly, insulation, liner sheets, and structural framing for canopies, and accessory components.
- H. Roof System: Preformed metal panels oriented parallel to slope, with sub-girt framing/anchorage assembly, insulation, and canopies where shown on Drawings, and accessory components.
- I. Roof Slope: 2-1/4 inches in 12 inches.

203 MATERIALS - FRAMING

- A. Structural Steel Members: ASTM A36/A36M.
- B. Structural Tubing: ASTM A500/A500M, Grade B cold-formed.
- C. Plate or Bar Stock: ASTM A529/A529M, Grade 50.
- D. Anchor Bolts: ASTM A307, galvanized to ASTM A153/A153M.
Bolts, Nuts, and Washers: ASTM F3125/F3125M, Type 1; galvanized to ASTM A153/A153M.
- E. Welding Materials: Type required for materials being welded.
- F. Primer: SSPC-Paint 20, zinc rich.
- G. Grout: ASTM C1107/C1107M; Non-shrink; premixed compound consisting of non-metallic aggregate, cement, water reducing and plasticizing agents.
 - 1. Minimum Compressive Strength at 48 Hours: 2,000 pounds per square inch.
 - 2. Minimum Compressive Strength at 28 Days: 7,000 pounds per square inch.
 - 3. Height Change, Plastic State; when tested according to ASTM C827/C827M:
 - a. Maximum: Plus 4 percent.
 - b. Minimum: Plus 1 percent.

204 MATERIALS - WALLS AND ROOF

- A. Steel Sheet: ASTM A792/A792M aluminum-zinc alloy coated to AZ50/AZM150.
- B. Roof Insulation System R1: Linear banded, filled cavity system with continuous vapor

barrier below the purlins at roof construction and meeting the following levels of performance.

1. R-5 thermal block on purlins; Not less than R-13 unfaced fiberglass on minimum R-25 unfaced fiberglass filled cavity insulation.
 2. Fabric liner facing/vapor barrier composed of woven high-density polyethylene coated on both sides with polyethylene. Complies with the following:
 - a. ASTM C1136, Types I through Type VI
 - i. Type I-IV exception for dimensional stability (value is < 2.0%.)
 - b. Perm rating: 0.02 when tested in accordance with ASTM E 96 Procedure A.
 - c. Flame Spread Index < 25 and Smoke Developed Index < 50 when tested in accordance with ASTM E 84.
 - d. Color: White
 3. Vapor barrier adhesive. Complies with the following:
 - a. Application temperature 10°F to 110° F
 4. Double sided vapor barrier tape. Complies with the following:
 - a. Width 0.75
 - b. Rubber based and free film
 5. Patch tape. Complies with the following:
 - a. Adhesive added to one side
 - b. Installation temperature from 10°F to 110°F
 - c. 3" width
 6. Metal Banding/Straps. Complies with the following:
 - a. Coated steel
 - b. 1.0" wide
 - c. Structural Steel Grade 50 per ASTM C 653
 - d. Exposed color to match vapor barrier
 - e. Backing – White
 7. Thermal spacer blocks. Complies with the following:
 - a. Extruded polystyrene.
 - b. Minimum width 3.0"
 - c. Thickness 1.0"
 - d. Light gage steel fasteners
 - i. Zinc plated cold forged steel
 - ii. Head color to match vapor barrier
 - iii. Contain rubber sealing washer
 - e. Heavy gage steel fasteners
 - i. Zinc plated cold forged steel
 - ii. Head color to match vapor barrier
 - iii. Contain rubber sealing washer
 8. All materials used in OptiLiner Insulation System shall be approved by insulation system manufacturer.
 9. Basis of Design Product: OptiLiner Insulation System manufactured by Owens Corning Insulation Systems: www.owenscorning.com.
- C. Roof System (No insulation) R2: PEMB STANDING STEAM METAL ROOF WITH CONCEALED FASTENERS ON 1.5" STANDING SEAM PANEL CLIP WITH R-5 THERMAL SPACER BLOCK ON PEMB METAL PURLINS - NO INSULATION.
1. R-5 thermal block on purlins.
 2. Thermal spacer blocks. Complies with the following:
 - a. Extruded polystyrene.
 - b. Minimum width 3.0"
 - c. Thickness 1.0"
 - d. Light gage steel fasteners
 - i. Zinc plated cold forged steel
 - ii. Head color to match vapor barrier
 - iii. Contain rubber sealing washer
 - e. Heavy gage steel fasteners

- i. Zinc plated cold forged steel
- ii. Head color to match vapor barrier
- iii. Contain rubber sealing washer

D. Wall Insulation System:

1. Glass fiber blanket metal building insulation, R-19 vinyl vapor retarder faced fiberglass, vapor barrier facing to interior.
 - a. Thermal break
 - i. Closed cell polyethylene foam tape for wall applications. Complies with the following:
 - a) 0.375" thick
 - b) 3.0" wide
 - c) Minimum R-value: 1.5
 - ii. Thermal separation:
 - iii. Vapor Retarder Color: White.

E. Insulation Vapor Retarder Facing at Wall Insulation: Polypropylene/Fiberglass-Polyester blend fabric.

1. Weight: 36 pounds per 1000 square feet.
 2. Presence (ASTM E96 Procedure A): 0.02 perm.
 3. Bursting Strength (ASTM D774): 250 psi.
 4. Puncture Resistance (ASTM C1136): 650 Beach Units.
 5. Tensile Strength (ASTM C1136): 195 lb/in width (MD).
150 lb/in width (XD).
 6. Thickness: 0.007 inch.
 7. Accelerated Aging (30 days @ 95% RH, 120 degrees F): No corrosion, no delamination.
 8. Low Temperature Resistance (ASTM D1790, -40 degrees F): Remains flexible, no delamination.
 9. High Temperature Resistance (4 hours @ 240 degrees F): Remains flexible, no delamination.
 10. Water Immersion (24 hours @ 73 degrees F): No delamination.
 11. Mold Resistance (ASTM C665/C1338): No growth.
 12. Dimensional Stability (ASTM D1204): 0.25%.
 13. Fire Testing:
 - a. Flame Spread (ASTM E84/UL 723): Film Side - 0 Fabric Side - 5.
 - b. Smoke Developed (ASTM #84/UL 723): Film Side - 30 Fabric Side - 40.
 14. Basis of Design: Gymguard manufactured by Lamtec Corporation.
- F. Joint Seal Gaskets: Manufacturer's standard type.
- G. Fasteners: Manufacturer's standard type, galvanized to comply with requirements of ASTM A153/A153M, finish to match adjacent surfaces when exterior exposed.
- H. Bituminous Paint: Asphaltic type.
- I. Sealant: ASTM C920, elastomeric sealant with movement capability of at least plus/minus 50 percent; 100 percent silicone; for exposed applications, match adjacent colors as closely as possible.
- J. Metal Mesh: Galvanized steel wire, woven.
- K. Trim, Closure Pieces, Caps, Flashings, Gutters, Downspouts, Rain Water Diverter, Fascia's, and Infills: Same material, thickness and finish as exterior sheets; brake formed to required profiles.

205 ACCESSORY COMPONENTS

- A. Doors and Frames: Specified in Section 08 1113.

206 DESIGN CRITERIA

- A. Minimum Thermal Standards: In accord with ICC (IECC) requirements.
1. Roof: Maximum U-value 0.035.
 2. Wall: Maximum U-value 0.071

- B. Maximum Air Leakage: Provide properly sealed air barrier membrane in accord with C402.5 of ICC (IECC).
- C. Design members to withstand dead load, applicable snow load, and design loads due to pressure and suction of wind calculated in accordance with IBC 2018, ASCE 7 and other applicable codes.
 - 1. Risk Category III
 - 2. Wind Zone 3.
- D. Design members to withstand Uplift Per IBC 2018.
- E. Exterior wall system shall withstand imposed loads with maximum allowable deflection of L/240 of span.
- F. Exterior Roof system shall withstand imposed loads with maximum allowable deflection of L/180 of span.
- G. Provide support framing for netting system as shown in drawings or by needs of netting manufacturer whichever is most stringent.
- H. Permit movement of components without buckling, failure of joint seals, undue stress on fasteners or other detrimental effects, when subject to temperature range of not less than 100 degrees F.
- I. Size and fabricate wall and roof systems free of distortion or defects detrimental to appearance or performance.

207 FABRICATION - FRAMING

- A. Fabricate members in accordance with AISC 360 for plate, bar, tube, or rolled structural shapes.
- B. Anchor Bolts: Formed with bent shank, assembled with template for casting into concrete.
- C. Provide wall opening framing for doors, windows, and other accessory components.
- D. Design and provide all necessary framing for equipment platform, including but not limited to the columns, girts, joist, metal deck, angle, channels, accessories, trim, etc. Metal building Designer to coordinate metal building design to support all necessary loads for the equipment platform and concrete pad.
- E. Design requirements per the design documents, with GC and design documents for poured concrete pad to be installed on equipment platform.

208 FABRICATION - WALL AND ROOF PANELS

- A. Pre-Finished Exposed Vertical Siding Panels: Aluminum-zinc alloy coated steel, minimum 0.028 inch metal thickness, Vertical PBR Panel profile indicated, 1-1/4 inch deep, lapped edges.
 - 1. Provide stand-off semi-concealed fasteners to minimize insulation compression.
 - 2. Basis of Design: PBR Wall Panel, manufactured by Mesco Building Solutions
- B. Pre-Finished Exposed Vertical Reverse Roll Siding Panels: Aluminum-zinc alloy coated steel, minimum 0.028 inch metal thickness, Vertical Reverse Roll PBR Panel profile indicated, 1-1/4 inch deep, lapped edges.
 - 1. Provide stand-off semi-concealed fasteners to minimize insulation compression.
 - 2. Basis of Design: Reverse Roll PBR Panel, manufactured by Mesco Building Solutions
 - 3. Basis of Design: PBU Wall Panel, manufactured by Mesco Building Solutions
- C. Pre-Finished Metal Roofing Panels: Aluminum-zinc alloy, minimum 0.0299 inch metal thickness, Superlok, SSR profile, 2 inch deep, lapped and machine crimped edges fitted with continuous gaskets.
 - 1. Width: 16 inches.
 - 2. Provide 2 inch sliding clip - High to provide minimum 1-1/2 inch clear space between bottom of roof panel and perlin and thermal block as applicable to minimize insulation compression.
 - 3. Basis of Design: Superlok, SSR Roof Panel, manufactured by Mesco Building Solutions
- D. Pre-Finished Ceiling Liner: NOT USED
- E. Pre-Finished Wall Liner: NOT USED
- F. Girts/Purlins: Rolled formed structural shape to receive siding, roofing and liner sheet.
 - 1. Girts/Purlins designed to meet design criteria deflection
 - 2. Stiffened Girts to be used at North and South Walls where Double Girt conditions occur where façade bumps occurs. See design drawings.
- G. Internal and External Corners: Same material thickness and finish as adjacent material, profile brake formed to required angles. Back brace mitered internal corners with same material

thickness and finish as adjacent material.

- H. Expansion Joints: Same material and finish as adjacent material where exposed, 0.028 inch thick, manufacturer's standard brake formed type, of profile to suit system.
- I. Flashings, Closure Pieces, Fascia: Same material and finish as adjacent material, profile to suit system.
- J. Fasteners: To maintain load requirements and weather tight installation, same finish as cladding, non-corrosive type.

209 FABRICATION - GUTTERS AND DOWNSPOUTS

- A. Fabricate of same material and finish as roofing metal.
- B. Form gutters and downspouts and scuppers of rectangular profile and size to collect and remove water. Fabricate with connection pieces.
- C. Form sections in maximum possible lengths. Hem exposed edges. Allow for expansion at joints.
- D. Fabricate support straps of same material and finish as roofing metal, color as selected.

210 FINISHES

- A. Framing Members: Clean, prepare, and shop prime. Do not prime surfaces to be field welded.
- B. Exterior Surfaces of Wall Components and Accessories: Precoated enamel on steel of manufacturer's standard PVDF finish, coating color as selected from manufacturer's standard range.
 - 1. Fluoropolymer Two Coat System: Minimum 0.02 mil primer with minimum 0.07 mil 70 percent PVDF fluoropolymer color coat. Basis of Design Signature 300 by Mesco Building Solutions.
- C. Interior Surfaces of Wall Components and Accessories: Precoated enamel on steel of manufacturer's standard polyester finish, coating color as selected from manufacturer's standard range.

PART 3 EXECUTION

301 EXAMINATION

- A. Verify that foundation, floor slab, mechanical and electrical utilities, and placed anchors are in correct position

3.02 ERECTION - FRAMING

- A. Erect framing in accordance with AISC 360.
- B. Provide for erection and wind loads. Provide temporary bracing to maintain structure plumb and in alignment until completion of erection and installation of permanent bracing. Locate braced bays as indicated.
- C. Set column base plates with non-shrink grout to achieve full plate bearing.
- D. Do not field cut or alter structural members without approval.
- E. After erection, prime welds, abrasions, and surfaces not shop primed.

3.03 ERECTION - WALL AND ROOF PANELS

- A. Install in accordance with manufacturer's instructions.
- B. Exercise care when cutting prefinished material to ensure cuttings do not remain on finish surface.
- C. Fasten cladding system to structural supports, aligned level and plumb.
- D. Panel End Laps: Minimum of 6 IN, sealed with sealant (weather sealing compound), and fastened together by clamping plates.
 - 1. Sealants: Contain hard nylon beads, which prevent mastic from flowing out due to clamping actions.
 - a. Join panel laps by 2-piece clamped connection consisting of a bottom reinforcing plate and a top panel strap.
 - b. Locate panel end laps directly over, but not fastened to, supporting secondary roof structural member and stagger, to avoid 4-panel lap-splice condition.
- E. Metal Wall System Installation:
 - 1. Install wall system in accordance with metal building system manufacturer's instructions at locations indicated on the Drawings.
 - 2. Install wall system weathertight.

3. Verify structural system is plumb before wall panels are attached.
 4. Apply foam single-sided thermal separation tape to outside face of girts.
 5. Seal wall panels with molded-foam closure block that fits panel configuration at top and bottom of wall panels.
- N. Exterior Trim: Match exterior color and embossing of wall panel system – See drawings elevations.
- O. Interior Trim: NOT USED
- P. Flashings, Trim, Closures, and Similar Items: Install as indicated on erection drawings furnished by metal building system manufacturer.
- Q. Provide expansion joints where indicated.
- R. Install insulation and vapor retarder utilizing manufacturer's standard detail for attachment. Place wire mesh under vapor retarder for support between framing members.
- S. Install sealant and gaskets, providing weather tight installation. Non-metal building through-wall penetrations should follow manufacturer recommendation for complete water tight seal. PEMB Installer to coordinate with GC and other disciplines prior to other discipline work within or penetrations are made into the exterior walls.

3.04 INSTALLATION - INSULATION

- A. Instructions and approved Shop Drawings.
1. Refer to the Owens Corning publications listed below for product information, including uses, descriptions, physical properties, performance, specification compliance and application recommendations. Copies of these documents can be found at www.owenscorning.com.
 - a. OptiLiner® Banded Liner System Product Data Sheet - Owens Corning Publication 10011681
 - b. OptiLiner® Wall Installation Instructions - Owens Corning Publication 10011266
 - c. OptiLiner® Roof Installation Instructions - Owens Corning Publication 10011267
 - d. OptiLiner® Bi-Directional Banding Option - Owens Corning Publication 10011602
- B. Purlin and girt attachment surfaces should be clean and dry prior to attaching two-faced tape or sealing adhesive.
- C. Installed fiberglass insulation should fit snugly against purlin and girt walls in the cavity space. Avoid gaps, voids and any excess compression.

3.05 ERECTION - GUTTERS AND DOWNSPOUTS

- A. Rigidly support and secure components. Join lengths with formed seams sealed watertight. Flash and seal gutters to downspouts.
- B. Slope gutters minimum 1/8 inch/ft.
- C. Connect downspouts to storm sewer system.
- D. See Architectural Exterior Elevations for angle and dimensional requirements for the downspouts and downspout elbows.
- E. Metal building manufacturer to design and install min downspout size based on rain calculation per SMACNA OR IBC.

3.06 INSTALLATION - ACCESSORY COMPONENTS IN WALL SYSTEM

- A. Install door frames, doors, overhead doors, and windows and glass in accordance with manufacturer's instructions.
- B. Install liner panels where indicated on Drawings. Provide wall liner panels both at perimeter (exterior) walls and at interior partitions, including light gage metal furring where required.

3.07 TOLERANCES

- A. Framing Members: 1/4 inch from level; 1/8 inch from plumb.
- B. Siding and Roofing: 1/8 inch from true position.

3.08 FIELD QUALITY CONTROL

All inspections and tests are to be performed at the Project site by a third party independent testing agency.

Inspect field welding in accordance with AWS D1.1/D1.1M, Section 6 including the following non-destructive testing:

Visually inspect all welds.

Test 50 PCT of full penetration welds and 10 PCT of fillet welds with liquid dye penetrant.

Test 20 PCT of full penetration welds with ultrasonic or radiographic testing.

Inspect high-strength bolting in accordance with RCSC Specification for Structural Joints, Section 9.

Inspect while work is in progress.

Inspect structural steel which has been erected.

Prepare and submit test reports to Engineer.

END OF SECTION

SECTION 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 230500

SECTION 233000 - HVAC AIR DISTRIBUTION

PART 1 GENERAL

1.1 SUMMARY

- A. Section Includes:
 - 1. Ductwork.
 - 2. Ductwork accessories.
 - 3. Terminal units.
 - 4. Air Outlets.

1.2 SUBMITTALS

- A. Shop Drawings: Submit duct fabrication drawings.
- B. Operation and Maintenance Data: Submit instructions for lubrication, motor and drive replacement, spare parts lists, and wiring diagrams.
- C. Field Quality Control Reports
- D. Manufacturer's Installation Instructions: Submit relevant instructions.

1.3 CLOSEOUT SUBMITTALS

- A. Operation and Maintenance Data: Submit instructions for filter replacement, spare parts lists, and wiring diagrams.

1.4 QUALITY ASSURANCE

- A. Perform Work in accordance with Municipality standard.
- B. Maintain one copy of each document on site.

PART 2 PRODUCTS

2.1 DUCTWORK

- A. Duct Materials:
 - 1. Galvanized Steel Ducts: ASTM A653/A653M galvanized steel sheet, lock-forming quality, having G60.
 - a. Finish of steel components: Hot dipped galvanized steel with minimum 2.10 oz/sf zinc coating both sides measured in accordance with ASTM A90/A90M and zinc chromated aluminum paint. [Finish with electrostatic spray, thermosetting, polymer.]

2. Steel Ducts: ASTM A1008/A1008M.
3. Aluminum Ducts: ASTM B209; aluminum sheet, alloy 3003-H14. Aluminum Connectors and Bar Stock: Alloy 6061-T6 or of equivalent strength.
4. Stainless Steel Ducts: ASTM ASTM A240/A240M OR ASTM 666, Type 316.
5. Fasteners: Rivets, bolts, or sheet metal screws.
6. Hanger Rod: ASTM A36/A36M; steel [, galvanized]; threaded both ends, threaded one end, or continuously threaded.

B. Ductwork Fabrication:

1. Fabricate and support rectangular ducts in accordance with SMACNA HVAC Duct Construction Standards - Metal and Flexible and [as indicated on Drawings]. Provide duct material, gages, reinforcing, and sealing for operating pressures indicated.

C. Kitchen Hood Exhaust Ductwork Fabrication:

1. Fabricate in accordance with SMACNA HVAC Duct Construction Standards - Metal and Flexible and NFPA 96.
2. Exposed Kitchen Hood Exhaust Ducts: Construct of stainless steel ASTM ASTM A240/A240M OR ASTM 666, type [304] [316] using continuous external welded joints.
3. Concealed Kitchen Hood Exhaust Ducts: Construct of 16 gage carbon steel or 18 gage stainless steel ASTM ASTM A240/A240M OR ASTM 666, type 316 using continuous external welded joints.
4. Grease Duct: Provide factory built commercial grease ducts labeled and listed in accordance with UL 1978.

D. Flexible Ducts:

1. Product Description: UL 181, Class 1, aluminum laminate and polyester film with latex adhesive supported by helical-wound spring steel wire.
 - a. Pressure Rating: 10 inches wg positive and 1.0 inches wg negative.
 - b. Maximum Velocity: 4000 fpm.
 - c. Temperature Range: -20 degrees F to 210 degrees F.

E. Insulated Flexible Ducts:

1. Product Description: UL 181, Class 1, aluminum laminate and polyester film with latex adhesive supported by helical wound spring steel wire; fiberglass insulation; [polyethylene] [aluminized] vapor barrier film.
 - a. Pressure Rating: 10 inches wg positive and 1.0 inches wg negative.
 - b. Maximum Velocity: 4000 fpm.
 - c. Temperature Range: -20 degrees F to 210 degrees F.
 - d. Thermal Resistance: 4.2 square feet-hour-degree F per BTU.

2.2 DUCT ACCESSORIES

A. Volume Control Dampers:

1. Fabricate in accordance with SMACNA HVAC Duct Construction Standards - Metal and Flexible, and as indicated on Drawings.
2. Fabricate splitter dampers of material matching duct gage to 24 inches size in each direction, and two gages heavier for larger sizes. Secure with continuous hinge or rod. Operate with minimum 1/4 inch diameter rod.
3. Fabricate single blade dampers for duct sizes to 12 x 30 inch.
4. Fabricate multi-blade damper of opposed blade pattern with maximum blade sizes 8 x 72 inch. Assemble center and edge crimped blades in prime coated or galvanized channel frame with suitable hardware.
5. Except in round ductwork 12 inches and smaller, furnish end bearings.

6. Furnish locking, indicating quadrant regulators on single and multi-blade dampers. Where width exceeds 30 inches, furnish regulator at both ends.
- B. Turning Devices and Extractors:
 1. Multi-blade device with blades aligned in short dimension; steel or aluminum construction; with individually adjustable blades, mounting straps.
 2. Multi-blade device with radius blades attached to pivoting frame and bracket, steel or aluminum construction, with push-pull operator strap.
- C. Flexible Duct Connections:
 1. UL listed fire-retardant neoprene coated woven glass fiber fabric to NFPA 90A, approximately 3 inches wide, crimped into metal edging strip.
- D. Duct Access Doors:
 1. Fabricate in accordance with SMACNA HVAC Duct Construction Standards - Metal and Flexible.
 2. Access doors smaller than 12 inches square secured with sash locks. Access doors with sheet metal screw fasteners are not acceptable.
- E. Dynamic Fire Dampers:
 1. Fabricate in accordance with NFPA 90A and UL 555.
- F. Back-draft Dampers:
 1. Gravity back-draft dampers size 18 x 18 inches or smaller, furnished with air moving equipment, furnish of air moving equipment manufacturers standard construction.
 2. Fabricate multi-blade, parallel action gravity balanced back-draft dampers of galvanized steel, or extruded aluminum, with center pivoted blades, with sealed edges, linked together, steel ball bearings, and plated steel pivot pin.
- G. Kitchen Hood Supply and Exhaust Fans:
 1. Manufacturers:
 - a. See Drawings for the "basis of design" manufacturer and model number.
 - b. Products of other manufacturers will be considered if the product meets spatial and performance requirements set forth in the contract documents.

2.3 TERMINAL UNITS

- A. Manufacturers:
 1. See Drawings for the "basis of design" manufacturer and model number.
 2. Products of other manufacturers will be considered if the product meets spatial and performance requirements set forth in the contract documents.

2.4 AIR OUTLETS AND INLETS

- A. Manufacturers:

1. See Drawings for the "basis of design" manufacturer and model number.
2. Products of other manufacturers will be considered if the product meets spatial and performance requirements set forth in the contract documents.

PART 3 EXECUTION

3.1 EXAMINATION

- A. Verify sizes of equipment connections before fabricating transitions.
- B. Verify rated walls are ready for fire damper installation.
- C. Verify ducts and equipment installation are ready for accessories.
- D. Check location of air outlets and inlets and make necessary adjustments in position to conform to architectural features, symmetry, and lighting arrangement.

3.2 INSTALLATION

- A. Metal Ducts: Install in accordance with SMACNA Duct Construction Standards - Metal and Flexible.
- B. Connect flexible ducts to metal ducts with adhesive plus sheet metal screws.
- C. Use crimp joints with or without bead for joining round duct sizes 8 inch and smaller with crimp in direction of airflow.
- D. Install flexible connections immediately adjacent to fans and motorized equipment. Install flexible connections specified between fan inlet and discharge ductwork. Prevent flexible connectors being in tension while running.
- E. Install back-draft dampers on discharge of exhaust fans and as indicated on Drawings.
- F. Prevent passage of unfiltered air around filters by installing felt, rubber, or neoprene gaskets.
- G. Install filter gage static pressure taps upstream and downstream of filters. Mount filter gages on outside of filter housing or filter plenum, in accessible position. Adjust and level.
- H. Cut openings in ductwork to accommodate thermometers and controllers. Cut pitot tube openings for testing of systems, complete with metal can with spring device or screw to eliminate against air leakage.
- I. Locate ducts with sufficient space around equipment to allow normal operating and maintenance activities. Apply duct insulation specified in Section 22 07 00.
- J. Connect diffusers or troffer boots to low pressure ducts with 5 feet maximum length of flexible duct. Hold in place with strap or clamp.
- K. At installer's option, fiberglass ductwork may be substituted for internally or externally insulated or non-insulated low-pressure sheet metal ductwork.

- L. During construction install temporary closures of metal or taped polyethylene on open ductwork to prevent construction dust from entering ductwork system.
- M. Install fire dampers at locations as indicated on Drawings. Install with perimeter mounting angles, sleeves, breakaway duct connections, corrosion resistant springs, bearings, bushings and hinges.
- N. Access Doors: Install access doors at the following locations:
 - 1. Spaced every 50 feet (15 m) of straight duct.
 - 2. Upstream of each elbow.
 - 3. Upstream of each reheat coil.
 - 4. Before and after each duct mounted coil.
 - 5. Before and after each duct mounted fan.
 - 6. Before and after each automatic control damper.
 - 7. Before and after each fire damper.
 - 8. Downstream of each VAV box.
 - 9. Install at locations for cleaning kitchen exhaust ductwork in accordance with NFPA 96.
- O. Access Door Sizes: Install minimum 8 x 8 inch size for hand access, 18 x 18 inch size for shoulder access. Review locations prior to fabrication.
 - 1. Mark access doors for fire and smoke dampers on outside surface, with minimum 1/2 inch high letters reading: FIRE/SMOKE DAMPER, SMOKE DAMPER, OR FIRE DAMPER.
- P. Support terminal units individually from structure. Do not support from adjacent ductwork. Install with minimum of 5 ft of 2 inch thick lined ductwork downstream of units.
- Q. Install balancing dampers on duct take-off to diffusers and grilles and registers, regardless of whether dampers are specified as part of diffuser, or grille and register assembly.
- R. Do not locate air registers, diffusers or grilles in floors of toilet or bathing rooms.
- S. Paint ductwork visible matte black in accordance with Section 09 90 00.
- T. Do not operate fans until ductwork is clean, bearings lubricated, and fan has been test run under observation.
- U. Install fans with resilient mountings and flexible electrical leads.
- V. Install sheaves required for final air balance.
- W. Install safety screen where fan inlet or outlet is exposed.

3.3 TESTING

- A. For ductwork designed for 3 inches w.c. above ambient, pressure test minimum 25 percent of ductwork after duct cleaning, but before duct insulation is applied or ductwork is concealed. Submit test report.
 - 1. Test in accordance with SMACNA HVAC Air Duct Leakage Test Manual.
 - 2. Maximum Allowable Leakage: In accordance with ICC IECC.

3.4 CONCEALED GREASE DUCT TESTING

- A. Prior to concealing, wrapping, or insulating grease ductwork, or placing grease duct in service, perform leakage test in accordance with IMC, in presence of authority having jurisdiction.
- B. Perform light test by pulling minimum 100 W light through duct and observing for light leaks at duct joints.
- C. Test complete extent of duct installed, including joint at which duct connects to exhaust hood.

END OF SECTION 233000

SECTION 236313 – AIR COOLED REFRIGERANT CONDENSERS

PART 1 - GENERAL

1.1 SUMMARY

- A. Section includes refrigerant condenser package, charge of refrigerant and oil, controls and control connections, refrigerant piping and connections, motor starters, electrical power connections.
- B. Related Sections:
 - 1. Section 033000 - Cast-In-Place Concrete: Execution requirements for concrete foundations specified by this section.
 - 2. Section 230513 - Common Motor Requirements for HVAC Equipment: Product requirements for motors for placement by this section.
 - 3. Section 230548 - Vibration and Seismic Controls for HVAC Piping and Equipment: Product requirements for vibration isolation for placement by this section.
 - 4. Section 232300 - Refrigerant Piping: Execution requirements for connection to refrigerant piping specified by this section.
 - 5. Section 260503 - Equipment Wiring Connections: Execution requirements for connection to electrical service specified by this section.

1.2 REFERENCES

- A. Air-Conditioning and Refrigeration Institute:
 - 1. ARI 210/240 - Unitary Air-Conditioning and Air-Source Heat Pump Equipment.
 - 2. ARI 365 - Commercial and Industrial Unitary Air-Conditioning Condensing Units.
 - 3. ARI 460 - Remote Mechanical-Draft Air-Cooled Refrigerant Condensers.
- B. American Society of Heating, Refrigerating and Air-Conditioning Engineers:
 - 1. ASHRAE 15 - Safety Code for Mechanical Refrigeration.
 - 2. ASHRAE 20 - Method of Testing for Rating Remote Mechanical-Draft Air-Cooled Refrigerant Condensers.
 - 3. ASHRAE 90.1 - Energy Standard for Buildings Except Low-Rise Residential Buildings.
- C. National Electrical Manufacturers Association:
 - 1. NEMA 250 - Enclosures for Electrical Equipment (1000 Volts Maximum).
- D. Underwriters Laboratories Inc.:
 - 1. UL 207 - Refrigerant-Containing Components and Accessories, Nonelectrical.

1.3 SUBMITTALS

- A. Section 013300 - Submittal Procedures: Submittal procedures.
- B. Shop Drawings: Indicate components, assembly, dimensions, weights and loading, required clearances, and location and size of field connections. Include schematic layouts showing condenser, refrigeration compressors, cooling coils, refrigerant piping and accessories required for complete system.
- C. Product Data: Submit rated capacities, weights, accessories, electrical requirements, and wiring diagrams.
- D. Manufacturer's Certificate: Certify products meet or exceed specified requirements.
- E. Manufacturer's Field Reports: Submit start-up report for each unit.

1.4 CLOSEOUT SUBMITTALS

- A. Section 017000 - Execution and Closeout Requirements: Closeout procedures.
- B. Operation and Maintenance Data: Submit start-up instructions, maintenance instructions, parts lists, controls, and accessories.

1.5 QUALITY ASSURANCE

- A. Construction and Ratings: In accordance with ARI 210/240. Testing in accordance with ASHRAE 20.
- B. Performance Ratings: Energy Efficiency Ratio (EER) not less than prescribed by ASHRAE 90.1 when tested in accordance with ARI 210/240.
- C. Perform Work in accordance with KY City of Ashland, standards.
- D. Maintain one copy each document on site.

1.6 QUALIFICATIONS

- A. Manufacturer: Company specializing in manufacturing products specified in this section with minimum three years' experience.
- B. Installer: Company specializing in performing Work of this section with minimum three years' experience.

1.7 PRE-INSTALLATION MEETINGS

- A. Section 013000 - Administrative Requirements: Pre-installation meeting.
- B. Convene minimum one week prior to commencing work of this section.

1.8 DELIVERY, STORAGE, AND HANDLING

- A. Section 016000 - Product Requirements: Product storage and handling requirements.

- B. Comply with manufacturer's installation instruction for rigging, unloading and transporting units.
- C. Protect units on site from physical damage.

1.9 FIELD MEASUREMENTS

- A. Verify field measurements prior to fabrication.

1.10 WARRANTY

- A. Section 017000 - Execution and Closeout Requirements: Product warranties and product bonds.
- B. Furnish five year manufacturer warranty for compressors.

1.11 MAINTENANCE SERVICE

- A. Section 017000 - Execution and Closeout Requirements: Requirements for maintenance service.
- B. Furnish service and maintenance of condensing units for five years from Date of Substantial Completion.
- C. Examine unit components monthly. Clean, adjust, and lubricate equipment.
- D. Include systematic examination, adjustment, and lubrication of unit, including fan belt replacement, and controls checkout and adjustments. Repair or replace parts in accordance with manufacturer's operating and maintenance data. Use parts produced by manufacturer of original equipment.
- E. Perform work without removing units from service during building normal occupied hours.
- F. Provide emergency call back service during working hours for this maintenance period.
- G. Maintain locally, near Place of the Work, adequate stock of parts for replacement or emergency purposes. Have personnel available to ensure fulfillment of this maintenance service, without unreasonable loss of time.
- H. Perform maintenance work using competent and qualified personnel under supervision of manufacturer or original installer.
- I. Do not assign or transfer maintenance service to agent or subcontractor without prior written consent of Owner.

1.12 EXTRA MATERIALS

- A. Section 017000 - Execution and Closeout Requirements: Spare parts and maintenance products.
- B. Furnish two sets of fan belts.

PART 2 - PRODUCTS

2.1 CONDENSING UNITS

A. Product Description:

1. Packaged, factory assembled, pre-wired unit, suitable for outdoor or indoor use consisting of casing, condensing coil and fans, integral sub-cooling coil and controls.

2.2 HOUSING

- A. House components in galvanized steel panels with weather resistant, baked enamel finish.
- B. Mount starters, disconnects, and controls in weatherproof panel with full opening access doors. Furnish mechanical interlock to disconnect power when door is opened.
- C. Furnish removable access doors or panels with quick fasteners.
- D. Furnish welded steel floor mounting stand and duct collars at coil inlet and fan outlet.

2.3 CONDENSER COILS

- A. Coils: Aluminum fins mechanically bonded to seamless copper tubing. Furnish sub-cooling circuits as applicable. Air test under water to 425 psig and vacuum dehydrate. Seal with holding charge of refrigerant.
- B. Coil Guard: Expanded metal.
- C. Configuration: Two refrigeration circuits each.

2.4 FANS AND MOTORS

- A. Vertical or Horizontal discharge direct driven propeller type condenser fans with fan guard on discharge.
- B. Weatherproof motors suitable for outdoor use, single phase permanent split capacitor or 3 phase, with permanent lubricated ball bearings and built-in current and thermal overload protection.
- C. Horizontal discharge, double width, double inlet type condenser fans, equipped with roller or ball bearings with grease fittings extended to outside of casing, V-belt drive with belt guard.

2.5 CONTROLS

- A. Factory wired and mounted control panel, NEMA 250 Type 1 enclosure, containing fan motor starters, head pressure controls, compressor interlock and control transformer.
- B. Furnish thermostat to cycle fan motors in response to outdoor temperature.
- C. Furnish head pressure switch to cycle fan motors in response to refrigerant condensing pressure.

- D. Furnish solid state control to vary speed of one condenser fan motor in response to refrigerant condensing pressure.
- E. Furnish electronic low ambient control consisting of mixing damper assembly, controlled to maintain constant refrigerant condensing pressure.

2.6 ELECTRICAL CHARACTERISTICS AND COMPONENTS

- A. Electrical Characteristics: In accordance with Section 260503.
- B. Motors: In accordance with Section 230513.
- C. Disconnect Switch: Factory mount disconnect switch in on equipment.

PART 3 - EXECUTION.

3.1 INSTALLATION

- A. Install in accordance with ASHRAE 15.
- B. Install refrigerant piping from unit to condensing unit. Install refrigerant specialties furnished with unit.
- C. Install connection to electrical power wiring in accordance with Section 260503.

3.2 INTERFACE WITH OTHER PRODUCTS

- A. Install units on vibration isolators on concrete foundations. Refer to Section 230548.

3.3 MANUFACTURER'S FIELD SERVICES

- A. Section 014000 - Quality Requirements: Manufacturer's Field services.
- B. Furnish cooling season start-up and winter season shutdown service, for first year of operation. If initial start-up and testing takes place in winter and machines are to remain inoperative. Repeat start-up and testing operation at beginning of first cooling season.

3.4 ADJUSTING

- A. Section 017000 - Execution and Closeout Requirements: Testing, adjusting, and balancing.

3.5 DEMONSTRATION AND TRAINING

- A. Section 017000 - Execution and Closeout Requirements: Requirements for demonstration and training.
- B. Demonstrate starting, maintenance, and operation of unit.
- C. Demonstrate low ambient operation during winter testing or service specified above.

ORANGE BEACH BASEBALL/SOFTBALL FIELD RENOVATIONS
CITY OF ORANGE BEACH
ORANGE BEACH, ALABAMA

May 04, 2020
DAI 3916

END OF SECTION 220100 6

SECTION 260519 - LOW-VOLTAGE ELECTRICAL POWER CONDUCTORS AND CABLES

PART 1 - GENERAL

1.1 SUMMARY

- A. Section includes building wire and cable and wiring connectors and connections.

- B. Related Sections:
 - 1. Section 260553 - Identification for Electrical Systems: Product requirements for wire identification.

1.2 REFERENCES

- A. International Electrical Testing Association:
 - 1. NETA ATS - Acceptance Testing Specifications for Electrical Power Distribution Equipment and Systems.

- B. National Fire Protection Association:
 - 1. NFPA 70 - National Electrical Code.
 - 2. NFPA 262 - Standard Method of Test for Flame Travel and Smoke of Wires and Cables for Use in Air-Handling Spaces.

- C. Underwriters Laboratories, Inc.:
 - 1. UL 1277 - Standard for Safety for Electrical Power and Control Tray Cables with Optional Optical-Fiber Members.

1.3 SYSTEM DESCRIPTION

- A. Product Requirements: Provide products as follows:
 - 1. Solid conductor for feeders and branch circuits 10 AWG and smaller.
 - 2. Stranded conductors for control circuits.
 - 3. Conductor not smaller than 12 AWG for power and lighting circuits.
 - 4. Conductor not smaller than 16 AWG for control circuits.
 - 5. Increase wire size in branch circuits to limit voltage drop to a maximum of 3 percent.

- B. Wiring Methods: Provide the following wiring methods:
 - 1. Concealed Dry Interior Locations: Use only building wire, Type THHN/THWN insulation, in raceway.
 - 2. Exposed Dry Interior Locations: Use only building wire, Type THHN/THWN insulation, in raceway.
 - 3. Above Accessible Ceilings: Use only building wire, Type THHN/THWN insulation, in raceway.
 - 4. Wet or Damp Interior Locations: Use only building wire, Type THHN/THWN insulation, in raceway.
 - 5. Exterior Locations: Use only building wire, Type THHN/THWN insulation, in raceway.
 - 6. Underground Locations: Use only building wire, Type THHN/THWN insulation, in raceway.

1.4 DESIGN REQUIREMENTS

- A. Conductor sizes are based on copper per NEC.

1.5 SUBMITTALS

- A. Product Data: Submit for building wire.

1.6 QUALIFICATIONS

- A. Manufacturer: Company specializing in manufacturing products specified in this section with minimum three years experience.

1.7 COORDINATION

- A. Where wire and cable destination is indicated and routing is not shown, determine routing and lengths required.
- B. Wire and cable routing indicated is approximate unless dimensioned.

PART 2 - PRODUCTS

2.1 BUILDING WIRE

- A. Product Description: Single conductor insulated wire.
- B. Conductor: Copper. Soft drawn annealed copper having a conductivity of not less than 98% of that of pure copper.
- C. Insulation Voltage Rating: 600 volts.
- D. Insulation Temperature Rating: 75 degrees C.
- E. Insulation: NFPA 70; Type THHN/THWN insulation for feeders and branch circuits

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Verify interior of building has been protected from weather.
- B. Verify mechanical work likely to damage wire and cable has been completed.
- C. Verify raceway installation is complete and supported.

3.2 PREPARATION

- A. Completely and thoroughly swab raceway before installing wire.

3.3 INSTALLATION

- A. All wiring shall be run in conduit or other type raceways unless specifically noted.
- B. Horizontal runs of low voltage fire alarm, telephone, data, and controls may be run without a raceway in equipment rooms and accessible ceiling spaces where allowed by code. Where run without raceways, cables shall be routed and grouped together utilizing U.L. approved J hooks by Caddy, Raco or approved equal attached to the building structure and space 4'-0" maximum in a neat orderly arrangement. Wiring shall be routed parallel or perpendicular to building lines. Ceilings considered accessible shall only be those with lay in panels or T bar grids. Hangers used to support wiring run without raceways shall be Caddy CAT series or B-Line BCH series J-hooks or other hangers with mounting as appropriate to the location. Hangers shall be submitted for approval. Do not use wire wraps or tie straps to support cable. Provide attachment accessory suitable for the substrate the hanger is being attached to. Wiring run without raceways shall be bundled together with reusable Velcro wraps (not nylon tie wraps) at least once between each 4'-0" support. Wiring must be routed on the supports as high as possible, free and clear of mechanical equipment, lighting fixtures, piping, conduits, ductwork, building structural members and any other building equipment or items. Each wiring system (fire alarm, telecom, etc.) shall be run separate with separate hangers. Do not support from ceiling systems supports, HVAC ductwork, conduit, piping, etc. Where wiring run without raceways penetrates walls or ceilings a metal conduit sleeve with bushings at each end shall be provided for the penetration. Cables shall not be run through holes in walls or ceilings. Each cable shall be continuous, without splices or connections from the source to the connected device. Routing shall be parallel or perpendicular to building walls. Support arrangement and tension on cables shall be minimized to prevent exceeding the maximum cable bending radius. Where cables transition from sections run without a raceway into sections run with a raceway, a bushing shall be installed on the entrance to the raceway (conduit, wire mold, etc.). All fire alarm wiring shall have a red colored jacket.
- C. Route wire and cable to meet Project conditions.
- D. Install wire and cable in accordance with NECA "Standard of Installation".
- E. Neatly train and lace wiring inside boxes, equipment, and panelboards.
- F. Identify and color code wire and cable under provisions of Section 260553. Identify each conductor with its circuit number or other designation indicated.
- G. Special Techniques--Building Wire in Raceway:
 - 1. Pull conductors into raceway at same time.
 - 2. Install building wire 4 AWG and larger with pulling equipment.
- H. Special Techniques - Wiring Connections:
 - 1. Clean conductor surfaces before installing lugs and connectors.
 - 2. Make splices, taps, and terminations to carry full ampacity of conductors with no perceptible temperature rise.
 - 3. Tape uninsulated conductors and connectors with electrical tape to 150 percent of insulation rating of conductor.
- I. Install terminal lugs on ends of 600 volt wires unless lugs are furnished on connected device, such as circuit breakers.
- J. Size lugs in accordance with manufacturer's recommendations terminating wire sizes. Install 2-hole type lugs to connect wires 4 AWG and larger to copper bus bars.

- K. For terminal lugs fastened together such as on motors, transformers, and other apparatus, or when space between studs is small enough that lugs can turn and touch each other, insulate for dielectric strength of 2-1/2 times normal potential of circuit.
- L. Except where specifically allowed, feeders shall be run their entire length without joints or splices.
- M. Splices in branch circuit wiring shall be made only at outlets or in accessible junction boxes. Splices in branch circuit wiring shall be listed for the quantity, types and sizes of the conductors connected. Splices shall be made with compression type solderless connectors or spring loaded, tapered, screw on type insulated units (wirenuts). Push-in, plastic body type connectors are not allowed. Do not use wirenuts on splices of solid wiring to stranded wiring. Terminations or splices for conductors No. 6 AWG and larger shall use compression type connecting lugs made with a hydraulic type compression tool approved by the manufacturer. All splices and terminations shall be insulated in an approved manner by an integral or separate cover or by taping to provide insulating value equal to that of the conductors being joined.
- N. For multiwire branch circuits, there shall be a maximum of three phase conductors (of different phases) for each neutral conductor.
- O. For multiwire branch circuits (multiple phases sharing a common neutral) which are not the end of the line, the neutral conductor shall not route through the receptacle per NEC 300-13 (b). For such instances, splice from the incoming neutral conductor in the box with one conductor going to the device and one continuing to the next receptacle on the run such that the device can be removed without losing the neutral connection to the downstream devices.

3.4 WIRE COLOR

- A. General:
 - 1. For all wire sizes, install wire colors in accordance with the following:
 - a. Black and red for single phase circuits at 120/240 volts. Neutral – White and Ground – Green.
 - b. Black, red, and blue for circuits at 120/208 volts single or three phase. Neutral – White and Ground – Green.
 - c. Brown, orange, and yellow for circuits at 277/480 volts three phase. Neutral – Gray and Ground – Green.
 - d. Color coding shall be continuous the full length of wire No. 10 and smaller. On larger sizes, identification shall be by color-coded phasing tape at each box and connection.
- B. Neutral Conductors: White or Gray. When two or more neutrals are located in one conduit, provide separate neutral conductors with a continuous, factory applied tracer stripe matching the color of the respective phase conductor.
- C. Branch Circuit Conductors: Install three or four wire home runs with each phase uniquely color coded.
- D. Feeder Circuit Conductors: Uniquely color code each phase.
- E. Ground Conductors: Green colored insulation shall only be used for equipment grounding conductors. Insulation for isolated equipment grounding conductors shall be green with yellow tracers.
- F. Surface printing at regular intervals on all conductors shall indicate manufacturer, size, voltage and insulation type.

3.5 FIELD QUALITY CONTROL

- A. Inspect and test in accordance with NETA ATS, except Section 4.
- B. Perform inspections and tests listed in NETA ATS, Section 7.3.1.

END OF SECTION 260519

SECTION 260526 - GROUNDING AND BONDING FOR ELECTRICAL SYSTEMS

PART 1 GENERAL

1.1 SUMMARY

- A. Section Includes:
 - 1. Rod electrodes.
 - 2. Active electrodes.
 - 3. Wire.
 - 4. Grounding well components.
 - 5. Mechanical connectors.
 - 6. Exothermic connections.
- B. Related Sections:
 - 1. Section 264100 - Facility Lightning Protection: Grounding of lightning protection system.

1.2 REFERENCES

- A. Institute of Electrical and Electronics Engineers:
 - 1. IEEE 142 - Recommended Practice for Grounding of Industrial and Commercial Power Systems.
 - 2. IEEE 1100 - Recommended Practice for Powering and Grounding Electronic Equipment.
- B. International Electrical Testing Association:
 - 1. NETA ATS - Acceptance Testing Specifications for Electrical Power Distribution Equipment and Systems.
- C. National Fire Protection Association:
 - 1. NFPA 70 - National Electrical Code.

1.3 SYSTEM DESCRIPTION

- A. Grounding systems use the following elements as grounding electrodes:
 - 1. Metal underground water pipe.
 - 2. Metal building frame.
 - 3. Ground ring.
 - 4. Rod electrode.

1.4 PERFORMANCE REQUIREMENTS

- A. Grounding System Resistance: 5 ohms maximum.

1.5 SUBMITTALS

- A. Product Data: Submit data on grounding electrodes and connections.

- B. Test Reports: Indicate overall resistance to ground and resistance of each electrode.
- C. Manufacturer's Installation Instructions: Submit for active electrodes.
- D. Manufacturer's Certificate: Certify Products meet or exceed specified requirements.

1.6 CLOSEOUT SUBMITTALS

- A. Project Record Documents: Record actual locations of components and grounding electrodes.

1.7 QUALITY ASSURANCE

- A. Provide grounding materials conforming to requirements of NEC, IEEE 142, and UL labeled.
- B. Perform Work in accordance with State, Local Municipality and the National Electric Code.

1.8 QUALIFICATIONS

- A. Manufacturer: Company specializing in manufacturing Products specified in this section with minimum three years experience.
- B. Installer: Company specializing in performing work of this section with minimum 3 years experience.

1.9 DELIVERY, STORAGE, AND HANDLING

- A. Accept materials on site in original factory packaging, labeled with manufacturer's identification.
- B. Protect from weather and construction traffic, dirt, water, chemical, and mechanical damage, by storing in original packaging.
- C. Do not deliver items to project before time of installation. Limit shipment of bulk and multiple-use materials to quantities needed for immediate installation.

1.10 COORDINATION

- A. Complete grounding and bonding of building reinforcing steel prior concrete placement.

PART 2 PRODUCTS

2.1 ROD ELECTRODES

- A. Furnish materials in accordance with State, Local Municipality and the National Electric Code.
- B. Product Description:
 - 1. Material: Copper.

2. Diameter: 3/4 inch.
3. Length: 10 feet.

C. Connector: Connector for exothermic welded connection.

2.2 WIRE

- A. Material: Stranded copper.
- B. Foundation Electrodes: 4 AWG.
- C. Grounding Electrode Conductor: Copper conductor bare.
- D. Bonding Conductor: Copper conductor bare.

2.3 GROUNDING WELL COMPONENTS

- A. Well Pipe: 8 inches NPS by 24 inches long concrete or fiberglass pipe with belled end.
- B. Well Cover: Cast iron or Fiberglass with legend "GROUND" embossed on cover.

2.4 EXOTHERMIC CONNECTIONS

- A. Furnish materials in accordance with State, Local Municipality and the National Electric Code.
- B. Product Description: Exothermic materials, accessories, and tools for preparing and making permanent field connections between grounding system components.

PART 3 EXECUTION

3.1 EXAMINATION

- A. Verify final backfill and compaction has been completed before driving rod electrodes.

3.2 PREPARATION

- A. Remove paint, rust, mill oils, surface contaminants at connection points.

3.3 INSTALLATION

- A. Install in accordance with IEEE 142.
- B. Install rod electrodes at locations as indicated on Drawings. Install additional rod electrodes to achieve specified resistance to ground.

- C. Install grounding and bonding conductors concealed from view.
- D. Install grounding well pipe with cover at each rod location. Install well pipe top flush with finished grade.
- E. Install 4 AWG bare copper wire in foundation footing as indicated on Drawings.
- F. Equipment Grounding Conductor: Install separate, insulated conductor within each feeder and branch circuit raceway. Terminate each end on suitable lug, bus, or bushing.
- G. Bond to lightning protection system. Refer to Section 264100.
- H. Install continuous grounding using underground cold water system and building steel as grounding electrode. Where water piping is not available, install artificial station ground by means of driven rods or buried electrodes.
- I. Permanently ground entire light and power system in accordance with NEC, including service equipment, distribution panels, lighting panelboards, switch and starter enclosures, motor frames, grounding type receptacles, and other exposed non-current carrying metal parts of electrical equipment.
- J. Install branch circuits feeding isolated ground receptacles with separate insulated grounding conductor, connected only at isolated ground receptacle, ground terminals, and at ground bus of serving panel.
- K. Accomplish grounding of electrical system by using insulated grounding conductor installed with feeders and branch circuit conductors in conduits. Size grounding conductors in accordance with NEC. Install from grounding bus of serving panel to ground bus of served panel, grounding screw of receptacles, lighting fixture housing, light switch outlet boxes or metal enclosures of service equipment. Ground conduits by means of grounding bushings on terminations at panelboards with installed number 12 conductor to grounding bus.
- L. Grounding electrical system using continuous metal raceway system enclosing circuit conductors in accordance with NEC.
- M. Permanently attach equipment and grounding conductors prior to energizing equipment.
- N. For receptacle and switches which are not the end of the line, the equipment grounding conductor shall not route through the device per NEC 250-114. For such instances, splice from the incoming conductor in the box with one conductor going to the device and one continuing to the next device on the run such that the device can be removed without losing the ground connection to the downstream devices.

3.4 FIELD QUALITY CONTROL

- A. Inspect and test in accordance with NETA ATS, except Section 4.
- B. Grounding and Bonding: Perform inspections and tests listed in NETA ATS, Section 7.13.
- C. Perform ground resistance testing in accordance with IEEE 142.
- D. Perform leakage current tests in accordance with NFPA 99.
- E. Perform continuity testing in accordance with IEEE 142.
- F. When improper grounding is found on receptacles, check receptacles in entire project and correct. Perform retest.

END OF SECTION 260526

SECTION 260529 - HANGERS AND SUPPORTS FOR ELECTRICAL SYSTEMS

PART 1 GENERAL

1.1 SUMMARY

A. Section Includes:

1. Conduit supports.
2. Formed steel channel.
3. Spring steel clips.
4. Sleeves.
5. Mechanical sleeve seals.
6. Firestopping relating to electrical work.
7. Firestopping accessories.
8. Equipment bases and supports.

B. Related Sections:

1. Section 270529 - Hangers and Supports for Communications Systems.
2. Section 280528.29 - Hangers and Supports for Electronic Safety and Security.

1.2 REFERENCES

A. ASTM International:

1. ASTM E84 - Standard Test Method for Surface Burning Characteristics of Building Materials.
2. ASTM E119 - Standard Test Methods for Fire Tests of Building Construction and Materials.
3. ASTM E814 - Standard Test Method for Fire Tests of Through-Penetration Fire Stops.
4. ASTM E1966 - Standard Test Method for Fire-Resistive Joint Systems.

B. FM Global:

1. FM - Approval Guide, A Guide to Equipment, Materials & Services Approved By Factory Mutual Research For Property Conservation.

C. National Fire Protection Association:

1. NFPA 70 - National Electrical Code.

D. Underwriters Laboratories Inc.:

1. UL 263 - Fire Tests of Building Construction and Materials.
2. UL 723 - Tests for Surface Burning Characteristics of Building Materials.
3. UL 1479 - Fire Tests of Through-Penetration Firestops.
4. UL 2079 - Tests for Fire Resistance of Building Joint Systems.
5. UL - Fire Resistance Directory.

E. Intertek Testing Services (Warnock Hersey Listed):

1. WH - Certification Listings.

1.3 DEFINITIONS

- A. Firestopping (Through-Penetration Protection System): Sealing or stuffing material or assembly placed in spaces between and penetrations through building materials to arrest movement of fire, smoke, heat, and hot gases through fire rated construction.

1.4 SYSTEM DESCRIPTION

- A. Firestopping Materials: UL 263 and UL 1479 to achieve fire ratings as noted on Drawings for adjacent construction, but not less than 1 hour fire rating.
 - 1. Ratings may be 3-hours for firestopping in through-penetrations of 4-hour fire rated assemblies unless otherwise required by applicable codes.

1.5 PERFORMANCE REQUIREMENTS

- A. Firestopping: Conform to applicable codes, FM, UL, WH, for fire resistance ratings and surface burning characteristics.
- B. Firestopping: Provide certificate of compliance from authority having jurisdiction indicating approval of materials used.

1.6 SUBMITTALS

- A. Shop Drawings: Indicate system layout with location and detail of trapeze hangers.
- B. Product Data:
 - 1. Hangers and Supports: Submit manufacturers catalog data including load capacity.
 - 2. Firestopping: Submit data on product characteristics, performance and limitation criteria.
- C. Firestopping Schedule: Submit schedule of opening locations and sizes, penetrating items, and required listed design numbers to seal openings to maintain fire resistance rating of adjacent assembly.
- D. Design Data: Indicate load carrying capacity of hangers and supports.
- E. Manufacturer's Installation Instructions:
 - 1. Hangers and Supports: Submit special procedures and assembly of components.
 - 2. Firestopping: Submit preparation and installation instructions.
- F. Manufacturer's Certificate: Certify products meet or exceed specified requirements.
- G. Firestopping Engineering Judgments: For conditions not covered by UL or WH listed designs, submit judgments by licensed professional engineer suitable for presentation to authority having jurisdiction for acceptance as meeting code fire protection requirements.

1.7 QUALITY ASSURANCE

- A. Perform Work in accordance with State, Local Municipality and the National Electric Code.

1.8 QUALIFICATIONS

- A. Manufacturer: Company specializing in manufacturing Products specified in this section with minimum three years experience.
- B. Installer: Company specializing in performing work of this section with minimum 3 years experience.

1.9 DELIVERY, STORAGE, AND HANDLING

- A. Accept materials on site in original factory packaging, labeled with manufacturer's identification.
- B. Protect from weather and construction traffic, dirt, water, chemical, and mechanical damage, by storing in original packaging.

1.10 ENVIRONMENTAL REQUIREMENTS

- A. Do not apply firestopping materials when temperature of substrate material and ambient air is below 60 degrees F.
- B. Maintain this minimum temperature before, during, and for minimum 3 days after installation of firestopping materials.
- C. Provide ventilation in areas to receive solvent cured materials.

PART 2 - PRODUCTS

2.1 CONDUIT SUPPORTS

- A. Manufacturers:
 - 1. Allied Tube & Conduit Corp.
 - 2. Electroline Manufacturing Company
 - 3. O-Z Gedney Co.
- B. Furnish materials in accordance with State, Local Municipality and the National Electric Code.
- C. Hanger Rods: Threaded high tensile strength galvanized carbon steel with free running threads.
- D. Beam Clamps: Malleable Iron, with tapered hole in base and back to accept either bolt or hanger rod. Set screw: hardened steel.
- E. Conduit clamps for trapeze hangers: Galvanized steel, notched to fit trapeze with single bolt to tighten.
- F. Conduit clamps - general purpose: One hole malleable iron for surface mounted conduits.
- G. Cable Ties: High strength nylon temperature rated to 185 degrees F. Self locking.

2.2 FORMED STEEL CHANNEL

- A. Manufacturers:
 - 1. Allied Tube & Conduit Corp.
 - 2. B-Line Systems.
 - 3. Midland Ross Corporation, Electrical Products Division.
 - 4. Unistrut Corp.
- B. Furnish materials in accordance with State, Local Municipality and the National Electric Code.
- C. Product Description: Galvanized 12 gage) thick steel. With holes 1-1/2 inches on center.

2.3 SPRING STEEL CLIPS

- A. Manufacturers:
 - 1. Allied Tube & Conduit Corp.
 - 2. B-Line Systems.
 - 3. Midland Ross Corporation, Electrical Products Division.
 - 4. Unistrut Corp.
- B. Furnish materials in accordance with State, Local Municipality and the National Electric Code.
- C. Product Description: Mounting hole and screw closure.

2.4 SLEEVES

- A. Furnish materials in accordance with State, Local Municipality and the National Electric Code.
- B. Sleeves for Through Non-fire Rated Floors: 18 gage thick galvanized steel.
- C. Sleeves for Through Non-fire Rated Beams, Walls, Footings, and Potentially Wet Floors: Steel pipe or 18 gage thick galvanized steel.
- D. Sleeves for Through Fire Rated and Fire Resistive Floors and Walls, and Fire Proofing: Prefabricated fire rated sleeves including seals, UL listed.
- E. Fire-stopping Insulation: Glass fiber type, non-combustible.

2.5 MECHANICAL SLEEVE SEALS

- A. Manufacturers:
 - 1. Thunderline Link-Seal, Inc.
 - 2. NMP Corp.
- B. Furnish materials in accordance with State, Local Municipality and the National Electric Code.
- C. Product Description: Modular mechanical type, consisting of interlocking synthetic rubber links shaped to continuously fill annular space between object and sleeve, connected with bolts and pressure plates causing rubber sealing elements to expand when tightened, providing watertight seal and electrical insulation.

2.6 FIRESTOPPING

- A. Manufacturers:
 - 1. Dow Corning Corp.
 - 2. Fire Trak Corp.
 - 3. Hilti Corp.
 - 4. International Protective Coating Corp.
 - 5. 3M Fire Protection Products
- B. Furnish materials in accordance with State, Local Municipality and the National Electric Code.
- C. Color: As selected from manufacturer's full range of colors.

2.7 FIRESTOPPING ACCESSORIES

- A. Primer: Type recommended by firestopping manufacturer for specific substrate surfaces and suitable for required fire ratings.
- B. Dam Material: Permanent:
 - 1. Mineral fiberboard.
 - 2. Mineral fiber matting.
 - 3. Sheet metal.
 - 4. Plywood or particle board.
 - 5. Alumina silicate fire board.
- C. Installation Accessories: Provide clips, collars, fasteners, temporary stops or dams, and other devices required to position and retain materials in place.
- D. General:
 - 1. Furnish UL listed products.
 - 2. Select products with rating not less than rating of wall or floor being penetrated.
- E. Non-Rated Surfaces:
 - 1. Stamped steel, chrome plated, hinged, split ring escutcheons or floor plates or ceiling plates for covering openings in occupied areas where conduit is exposed.
 - 2. For exterior wall openings below grade, furnish modular mechanical type seal consisting of interlocking synthetic rubber links shaped to continuously fill annular space between conduit and cored opening or water-stop type wall sleeve.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Verify openings are ready to receive sleeves.
- B. Verify openings are ready to receive firestopping.

3.2 PREPARATION

- A. Clean substrate surfaces of dirt, dust, grease, oil, loose material, or other matter affecting bond of firestopping material.
- B. Remove incompatible materials affecting bond.
- C. Install damming materials to arrest liquid material leakage.
- D. Obtain permission from Architect/Engineer before using powder-actuated anchors.
- E. Do not drill or cut structural members.

3.3 INSTALLATION - HANGERS AND SUPPORTS

A. Anchors and Fasteners:

1. Concrete Structural Elements: Provide expansion anchors.
2. Steel Structural Elements: Provide beam clamps or welded fasteners.
3. Concrete Surfaces: Provide self-drilling anchors and expansion anchors.
4. Hollow Masonry, Plaster, and Gypsum Board Partitions: Provide toggle bolts and hollow wall fasteners.
5. Solid Masonry Walls: Provide expansion anchors and preset inserts.
6. Sheet Metal: Provide sheet metal screws.
7. Wood Elements: Provide wood screws.

B. Inserts:

1. Install inserts for placement in concrete forms.
2. Install inserts for suspending hangers from reinforced concrete slabs and sides of reinforced concrete beams.
3. Provide hooked rod to concrete reinforcement section for inserts carrying pipe over 4 inches.
4. Where concrete slabs form finished ceiling, locate inserts flush with slab surface.
5. Where inserts are omitted, drill through concrete slab from below and provide through-bolt with recessed square steel plate and nut above slab.

C. Locate and install anchors, fasteners, and supports in accordance with NECA "Standard of Installation".

D. Install conduit and raceway support and spacing in accordance with NEC.

E. Do not fasten supports to pipes, ducts, mechanical equipment, or conduit.

F. Install multiple conduit runs on common hangers.

G. Supports:

1. Fabricate supports from structural steel or formed steel channel. Install hexagon head bolts to present neat appearance with adequate strength and rigidity. Install spring lock washers under nuts.
2. Install surface mounted cabinets and panelboards with minimum of four anchors.
3. In wet and damp locations install steel channel supports to stand cabinets and panelboards 1 inch off wall.
4. Support vertical conduit at every other floor.

3.4 INSTALLATION - FIRESTOPPING

A. Install material at fire rated construction perimeters and openings containing penetrating sleeves, piping, ductwork, conduit and other items, requiring firestopping.

B. Apply primer where recommended by manufacturer for type of firestopping material and substrate involved, and as required for compliance with required fire ratings.

C. Apply firestopping material in sufficient thickness to achieve required fire and smoke rating.

D. Compress fibered material to maximum 40 percent of its uncompressed size.

E. Fire Rated Surface:

1. Seal opening at floor, wall, partition, ceiling, and roof as follows:
 - a. Install sleeve through opening and extending beyond minimum of 1 inch on both sides of building element.
 - b. Size sleeve allowing minimum of 1 inch void between sleeve and building element.

- c. Pack void with backing material.
 - d. Seal ends of sleeve with UL listed fire resistive silicone compound to meet fire rating of structure penetrated.
 2. Where cable tray and conduit penetrates fire rated surface, install firestopping product in accordance with manufacturer's instructions.
- F. Non-Rated Surfaces:
 1. Seal opening through non-fire rated wall, partition floor, ceiling, and roof opening as follows:
 - a. Install sleeve through opening and extending beyond minimum of 1 inch on both sides of building element.
 - b. Size sleeve allowing minimum of 1 inch void between sleeve and building element.
 - c. Install type of firestopping material recommended by manufacturer.
 2. Install escutcheons, floor plates or ceiling plates where conduit, penetrates non-fire rated surfaces in occupied spaces. Occupied spaces include rooms with finished ceilings and where penetration occurs below finished ceiling.
 3. Exterior wall openings below grade: Assemble rubber links of mechanical seal to size of conduit and tighten in place, in accordance with manufacturer's instructions.
 4. Interior partitions: Seal pipe penetrations at computer rooms, telecommunication rooms and data rooms. Apply sealant to both sides of penetration to completely fill annular space between sleeve and conduit.

3.5 INSTALLATION - EQUIPMENT BASES AND SUPPORTS

- A. Provide housekeeping pads of concrete, minimum 3-1/2 inches thick and extending 6 inches beyond supported equipment.
- B. Using templates furnished with equipment, install anchor bolts, and accessories for mounting and anchoring equipment.
- C. Construct supports of steel members. Brace and fasten with flanges bolted to structure.

3.6 INSTALLATION - SLEEVES

- A. Exterior watertight entries: Seal with adjustable interlocking rubber links.
- B. Conduit penetrations not required to be watertight: Sleeve and fill with silicon foam.
- C. Set sleeves in position in forms. Provide reinforcing around sleeves.
- D. Size sleeves large enough to allow for movement due to expansion and contraction. Provide for continuous insulation wrapping.
- E. Extend sleeves through floors 1 inch above finished floor level. Caulk sleeves.
- F. Where conduit or raceway penetrates floor, ceiling, or wall, close off space between conduit or raceway and adjacent work with stuffing, fire stopping or insulation and caulk airtight. Provide close fitting metal collar or escutcheon covers at both sides of penetration.
- G. Install chrome plated steel escutcheons at finished surfaces.

3.7 FIELD QUALITY CONTROL

- A. Inspect installed firestopping for compliance with specifications and submitted schedule.

3.8 CLEANING

- A. Clean adjacent surfaces of firestopping materials.

3.9 PROTECTION OF FINISHED WORK

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

END OF SECTION 260529

SECTION 260533 - RACEWAY AND BOXES FOR ELECTRICAL SYSTEMS

PART 1 - GENERAL

1.1 SUMMARY

- A. Section includes conduit and tubing, surface raceways, wireways, outlet boxes, pull and junction boxes, and handholes.
- B. Related Sections:
 - 1. Section 260526 - Grounding and Bonding for Electrical Systems.
 - 2. Section 260529 - Hangers and Supports for Electrical Systems.
 - 3. Section 260553 - Identification for Electrical Systems.
 - 4. Section 262716 - Electrical Cabinets and Enclosures.
 - 5. Section 262726 - Wiring Devices.
 - 6. Section 270533 - Conduits and Backboxes for Communications Systems.
 - 7. Section 270536 - Cable Trays for Communications Systems.
 - 8. Section 280528.33 - Conduits and Backboxes for Electronic Safety and Security.

1.2 UNIT PRICE - MEASUREMENT AND PAYMENT

- A. Raceway:
 - 1. Basis of Measurement: By linear foot.
 - 2. Basis of Payment: Includes materials, delivery, handling, and installing.
- B. Boxes:
 - 1. Basis of Measurement: By cubic foot.
 - 2. Basis of Payment: Includes materials, delivery, handling, and installing.

1.3 REFERENCES

- A. American National Standards Institute:
 - 1. ANSI C80.1 - Rigid Steel Conduit, Zinc Coated.
 - 2. ANSI C80.3 - Specification for Electrical Metallic Tubing, Zinc Coated.
 - 3. ANSI C80.5 - Aluminum Rigid Conduit - (ARC).
- B. National Electrical Manufacturers Association:
 - 1. NEMA 250 - Enclosures for Electrical Equipment (1000 Volts Maximum).
 - 2. NEMA FB 1 - Fittings, Cast Metal Boxes, and Conduit Bodies for Conduit and Cable Assemblies.
 - 3. NEMA OS 1 - Sheet Steel Outlet Boxes, Device Boxes, Covers, and Box Supports.
 - 4. NEMA OS 2 - Nonmetallic Outlet Boxes, Device Boxes, Covers, and Box Supports.
 - 5. NEMA RN 1 - Polyvinyl Chloride (PVC) Externally Coated Galvanized Rigid Steel Conduit and Intermediate Metal Conduit.
 - 6. NEMA TC 2 - Electrical Polyvinyl Chloride (PVC) Tubing and Conduit.
 - 7. NEMA TC 3 - PVC Fittings for Use with Rigid PVC Conduit and Tubing.

1.4 SYSTEM DESCRIPTION

- A. Raceway and boxes located as indicated on Drawings, and at other locations required for splices, taps, wire pulling, equipment connections, and compliance with regulatory requirements. Raceway and boxes are shown in approximate locations unless dimensioned. Provide raceway to complete wiring system.
- B. Underground: Provide Schedule 40 PVC. Provide nonmetallic handholes.
- C. Underground MV feeders: Provide Schedule 40 PVC encased in 3" minimum of red concrete unless directionally bored. Conduit for directional bores shall be continuous Schedule 80 HDPE coiled in reels for direct burial service. There shall be no splices in directionally bored conduit.
- D. In or Under Slab on Grade: Provide Schedule 40 PVC.
- E. Outdoor Locations, Above Grade: Provide galvanized rigid steel conduit with threaded fittings. Provide galvanized rigid steel outlet, pull, and junction boxes.
- F. Embedded in or run through concrete Slab Above Grade: Provide galvanized rigid steel with threaded fittings.
- G. Wet Locations: Provide Schedule 40 PVC. Provide nonmetallic outlet, junction, and pull boxes. Provide flush mounting outlet box in finished areas.
- H. Damp Locations: Provide galvanized rigid steel. Provide galvanized rigid steel outlet with threaded fittings, junction, and pull boxes. Provide flush mounting outlet box in finished areas.
- I. Concealed Dry Locations: Provide electrical metallic tubing (EMT) with compression type fittings. Set screw fittings shall not be used. Provide sheet-metal boxes. Provide flush mounting outlet box in finished areas. Provide hinged enclosure for large pull boxes.
- J. Exposed Dry Locations: electrical metallic tubing (EMT) with compression type fittings. Provide sheet-metal boxes. Provide flush mounting outlet box in finished areas. Provide hinged enclosure for large pull boxes.
- K. Provide an insulated bushing on the ends of all conduits 1" size and larger.
- L. Conduit connections to outdoor enclosures shall be watertight with listed weatherproof hubs, not with only locknuts and shall be made on the bottom or sides of the enclosure (no top penetrations).
- M. Conduits exposed in the Outdoor Court Seating Structure (both levels) which is exterior by protected from the weather may be EMT.

1.5 DESIGN REQUIREMENTS

- A. Minimum Raceway Size: 3/4 inch unless otherwise specified.

1.6 SUBMITTALS

- A. Product Data: Submit for the following:
 - 1. Flexible metal conduit.
 - 2. Liquidtight flexible metal conduit.
 - 3. Nonmetallic conduit.
 - 4. Flexible nonmetallic conduit.

5. Nonmetallic tubing.
6. Raceway fittings.
7. Conduit bodies.
8. Surface raceway.
9. Wireway.
10. Pull and junction boxes.
11. Handholes.

- B. Manufacturer's Installation Instructions: Submit application conditions and limitations of use stipulated by Product testing agency specified under Regulatory Requirements. Include instructions for storage, handling, protection, examination, preparation, and installation of Product.

1.7 CLOSEOUT SUBMITTALS

- A. Project Record Documents:
1. Record actual routing of conduits larger than 2 inch.
 2. Record actual locations and mounting heights of outlet, pull, and junction boxes.

1.8 DELIVERY, STORAGE, AND HANDLING

- A. Protect conduit from corrosion and entrance of debris by storing above grade. Provide appropriate covering.
- B. Protect PVC conduit from sunlight.

1.9 COORDINATION

- A. Coordinate mounting heights, orientation and locations of outlets mounted above counters, benches, and backsplashes.

PART 2 - PRODUCTS

2.1 METAL CONDUIT

- A. Manufacturers:
1. Carlon Electrical Products.
 2. Hubbell Wiring Devices
 3. Thomas & Betts Corp.
- B. Rigid Steel Conduit: ANSI C80.1.
- C. Rigid Aluminum Conduit: ANSI C80.5.
- D. Fittings and Conduit Bodies: NEMA FB 1; material to match conduit.

2.2 FLEXIBLE METAL CONDUIT

- A. Manufacturers:

1. Carlon Electrical Products.
2. Hubbell Wiring Devices
3. Thomas & Betts Corp.

B. Product Description: Interlocked aluminum construction.

C. Fittings: NEMA FB 1.

2.3 LIQUIDTIGHT FLEXIBLE METAL CONDUIT

A. Manufacturers:

1. Carlon Electrical Products.
2. Hubbell Wiring Devices
3. Thomas & Betts Corp.

B. Product Description: Interlocked aluminum construction with PVC jacket.

C. Fittings: NEMA FB 1.

2.4 ELECTRICAL METALLIC TUBING (EMT)

A. Manufacturers:

1. Carlon Electrical Products.
2. Hubbell Wiring Devices
3. Thomas & Betts Corp.

B. Product Description: ANSI C80.3; galvanized tubing.

C. Fittings and Conduit Bodies: NEMA FB 1; steel type.

2.5 NONMETALLIC CONDUIT

A. Manufacturers:

1. Carlon Electrical Products.
2. Hubbell Wiring Devices
3. Thomas & Betts Corp.

B. Product Description: NEMA TC 2; Schedule 40 PVC.

C. Fittings and Conduit Bodies: NEMA TC 3.

2.6 SURFACE METAL RACEWAY

A. Manufacturers:

1. Carlon Electrical Products.
2. Hubbell Wiring Devices
3. Thomas & Betts Corp.

B. Product Description: Sheet metal channel with fitted cover, suitable for use as surface metal raceway.

- C. Size: as required.
- D. Finish: Gray enamel.
- E. Fittings, Boxes, and Extension Rings: Furnish manufacturer's standard accessories; match finish on raceway.

2.7 WIREWAY

- A. Manufacturers:
 - 1. Carlon Electrical Products.
 - 2. Hubbell Wiring Devices
 - 3. Thomas & Betts Corp.
- B. Product Description: Oiltight and dust-tight type wireway.
- C. Knockouts: Manufacturer's standard.
- D. Size: length and size as indicated on Drawings.
- E. Cover: Screw cover with full gaskets.
- F. Connector: Flanged.
- G. Fittings: Lay-in type with drip shield.
- H. Finish: Rust inhibiting primer coating with gray enamel finish.

2.8 OUTLET BOXES

- A. Manufacturers:
 - 1. Carlon Electrical Products.
 - 2. Hubbell Wiring Devices
 - 3. Thomas & Betts Corp.
- B. Sheet Metal Outlet Boxes: NEMA OS 1, galvanized steel.
 - 1. Luminaire and Equipment Supporting Boxes: Rated for weight of equipment supported; furnish 1/2 inch male fixture studs where required.
 - 2. Concrete Ceiling Boxes: Concrete type.
 - 3. Outlet boxes shall have the required volume capacity for the number of conductors and devices housed.
 - 4. Outlet boxes in concealed conduit systems shall be flush mounted, galvanized steel of sufficient size to accommodate the devices contained and be securely fastened to wall or ceiling framing for a rigid installation.
 - 5. Outlet boxes for lighting fixtures shall be 4" octagon, galvanized steel, not less than 1-1/2" deep, with fixture stud fastened through from the back of the box.
 - 6. Outlet boxes for receptacles and switches shall be not less than 4" square and 1-1/2" deep.
 - 7. Outlet boxes for data and communications outlets shall be deep type, not less than 4" square and 2-1/4" deep.
- C. Nonmetallic Outlet Boxes: NEMA OS 2.

- D. Cast Boxes: NEMA FB 1, Type FD, cast ferrous alloy. Furnish gasketed cover by box manufacturer. Furnish threaded hubs.
 - 1. Outlet boxes for switches and receptacles in exposed conduit systems shall be cast iron or aluminum, factory finished, Type FS or FD, with number of gangs as required.
- E. Wall Plates for Finished Areas: As specified in Section 262726.
- F. Wall Plates for Unfinished Areas: Furnish gasketed cover.
- G. Device boxes shall have box extension rings with the required number of gang openings and with a depth to match the wall finish material so that the face of the box extension is exactly flush with wall face.
- H. Outlet boxes shall not be installed back to back in walls or floors.

2.9 PULL AND JUNCTION BOXES

- A. Manufacturers:
 - 1. Carlon Electrical Products.
 - 2. Hubbell Wiring Devices
 - 3. Thomas & Betts Corp.
- B. Sheet Metal Boxes: NEMA OS 1, galvanized steel.
- C. Hinged Enclosures: As specified in Section 262716.
- D. Surface Mounted Cast Metal Box: NEMA 250, Type 4X; flat-flanged, surface mounted junction box:
 - 1. Material: Cast aluminum.
 - 2. Cover: Furnish with ground flange, neoprene gasket, and stainless steel cover screws.
- E. In-Ground Cast Metal Box: NEMA 250, Type 6, outside flanged, recessed cover box for flush mounting:
 - 1. Material: composite, fiberglass.
 - 2. Cover: Nonskid cover with neoprene gasket and stainless steel cover screws.
 - 3. Cover Legend: "ELECTRIC".
- F. Fiberglass Concrete composite Handholes: Die-molded, glass-fiber concrete composite hand holes:
 - 1. Cable Entrance: Pre-cut 6 inch x 6 inch cable entrance at center bottom of each side.
 - 2. Cover: Glass-fiber concrete composite, weatherproof cover with nonskid finish.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Verify outlet locations and routing and termination locations of raceway prior to rough-in.

3.2 INSTALLATION

- A. Install raceway and boxes in accordance with NECA "Standard of Installation".
- B. Ground and bond raceway and boxes in accordance with Section 260526.

- C. Fasten raceway and box supports to structure and finishes in accordance with Section 260529.
- D. Identify raceway and boxes in accordance with Section 260553.
- E. Arrange raceway and boxes to maintain headroom and present neat appearance.

3.3 INSTALLATION - RACEWAY

- A. Raceway routing is shown in approximate locations unless dimensioned. Route to complete wiring system.
- B. Arrange raceway supports to prevent misalignment during wiring installation.
- C. Support raceway using coated steel or malleable iron straps, lay-in adjustable hangers, clevis hangers, and split hangers.
- D. Group related raceway; support using conduit rack. Construct rack using steel channel specified in Section 260529 ; provide space on each for 25 percent additional raceways.
- E. Do not support raceway with wire or perforated pipe straps. Remove wire used for temporary supports
- F. Do not attach raceway to ceiling support wires or other piping systems.
- G. Construct wireway supports from steel channel specified in Section 260529.
- H. Route exposed raceway parallel and perpendicular to walls.
- I. Route raceway installed above accessible ceilings parallel and perpendicular to walls.
- J. Route conduit in and under slab from point-to-point.
- K. Maximum Size Conduit in Slab Above Grade: 3/4 inch. Do not cross conduits in slab larger than 1/2 inch.
- L. Maintain clearance between raceway and piping for maintenance purposes.
- M. Maintain 12 inch clearance between raceway and surfaces with temperatures exceeding 104 degrees F.
- N. Cut conduit square using saw or pipe cutter; de-burr cut ends.
- O. Bring conduit to shoulder of fittings; fasten securely.
- P. Join nonmetallic conduit using cement as recommended by manufacturer. Wipe nonmetallic conduit dry and clean before joining. Apply full even coat of cement to entire area inserted in fitting. Allow joint to cure for minimum 20 minutes.
- Q. Install conduit hubs to fasten conduit to sheet metal boxes in damp and wet locations and to cast boxes.
- R. Install no more than equivalent of three 90 degree bends between boxes. Install conduit bodies to make sharp changes in direction, as around beams. Install hydraulic one-shot bender to fabricate bends in metal conduit larger than 2 inch size.
- S. Avoid moisture traps; install junction box with drain fitting at low points in conduit system.

- T. Install fittings to accommodate expansion and deflection where raceway crosses expansion joints.
- U. Install suitable pull string or cord in each empty raceway except sleeves and nipples.
- V. Install suitable caps to protect installed conduit against entrance of dirt and moisture.
- W. Surface Raceway: Install flat-head screws, clips, and straps to fasten raceway channel to surfaces; mount plumb and level. Install insulating bushings and inserts at connections to outlets and corner fittings.
- X. Close ends and unused openings in wireway.
- Y. For recessed light fixtures, provide a maximum of 4 feet of steel constructed flexible metal conduit or MC cable between the last branch circuit wiring junction box and the fixture. Wiring in flexible conduit or MC cable shall be #12 size minimum with a green equipment ground wire. Flexible conduit to each fixture shall be from a hard conduit connected junction box to the fixture. Looping from fixture to fixture with flexible conduit or MC cable is not allowed.

3.4 INSTALLATION - BOXES

- A. Install wall mounted boxes at elevations to accommodate mounting heights as indicated on Drawings.
- B. Adjust box location up to 10 feet prior to rough-in to accommodate intended purpose.
- C. Orient boxes to accommodate wiring devices oriented as specified in Section 262726.
- D. Install pull boxes and junction boxes above accessible ceilings and in unfinished areas only.
- E. In Accessible Ceiling Areas: Install outlet and junction boxes no more than 6 inches from ceiling access panel or from removable recessed luminaire.
- F. Locate flush mounting box in masonry wall to require cutting of masonry unit corner only. Coordinate masonry cutting to achieve neat opening.
- G. Do not install flush mounting box back-to-back in walls; install with minimum 6 inches separation. Install with minimum 24 inches separation in acoustic rated walls.
- H. Secure flush mounting box to interior wall and partition studs. Accurately position to allow for surface finish thickness.
- I. Install stamped steel bridges to fasten flush mounting outlet box between studs.
- J. Install flush mounting box without damaging wall insulation or reducing its effectiveness.
- K. Install adjustable steel channel fasteners for hung ceiling outlet box.
- L. Do not fasten boxes to ceiling support wires or other piping systems.
- M. Support boxes independently of conduit.
- N. Install gang box where more than one device is mounted together. Do not use sectional box.
- O. Install gang box with plaster ring for single device outlets.

3.5 INTERFACE WITH OTHER PRODUCTS

- A. Install conduit to preserve fire resistance rating of partitions and other elements, using materials and methods as required.
- B. Route conduit through roof openings for piping and ductwork or through suitable roof jack with pitch pocket.
- C. All penetrations made in walls, floors or other building partitions for raceways, cables, equipment, etc. including penetrations in concealed areas (ceilings, chases, etc.) shall be either bore drilled or core drilled as required. Bust/poke-throughs with hand tools shall not be used to penetrate and will not be accepted. Any bust/poke through penetrations will be patched and redone with a drilled penetration by the contractor. All penetration work shall be neat and debris cleaned up after completion. Any walls or ceilings damaged due to penetration work shall be repaired. Any penetrations through walls or ceilings in visible finished areas shall be patched and painted, as required, to restore the finish around the penetration to its original condition.
- D. Locate outlet boxes to allow luminaires positioned as indicated on reflected ceiling plan.
- E. Align adjacent wall mounted outlet boxes for switches, thermostats, and similar devices.

3.6 ADJUSTING

- A. Adjust flush-mounting outlets to make front flush with finished wall material.
- B. Install knockout closures in unused openings in boxes.

3.7 CLEANING

- A. Clean interior of boxes to remove dust, debris, and other material.
- B. Clean exposed surfaces and restore finish.

END OF SECTION 260533

SECTION 260923 - LIGHTING CONTROL DEVICES

PART 1 – GENERAL

1.1 SUMMARY

- A. Section Includes:
 - 1. Lighting contactors.
 - 2. Occupancy sensors.
 - 3. Photocells.

- B. Related Sections:
 - 1. Section 260519 – Low-Voltage Electrical Power Conductors and Cables.
 - 2. Section 260533 – Raceway and Boxes for Electrical Systems: Product requirements for raceway and boxes for placement by this section.
 - 3. Section 260553 – Identification for Electrical Systems: Product requirements for electrical identification items for placement by this section.
 - 4. Section 262416 – Panelboards.
 - 5. Section 262726 – Wiring Devices: Product requirements for wiring devices for placement by this section.

1.2 REFERENCES

- A. National Electrical Manufacturers Association:
 - 1. NEMA FU 1 – Low Voltage Cartridge Fuses.
 - 2. NEMA ICS 2 – Industrial Control and Systems: Controllers, Contractors, and Overload Relays, Rated Not More Than 2000 Volts AC or 750 Volts DC.
 - 3. NEMA ICS 4 – Industrial Control and Systems: Terminal Blocks.
 - 4. NEMA ICS 5 – Industrial Control and Systems: Control Circuit and Pilot Devices.
 - 5. NEMA ICS 6 – Industrial Control and Systems: Enclosures.
 - 6. NEMA KS 1 – Enclosed and Miscellaneous Distribution Equipment Switches (600 Volts Maximum).

1.3 SYSTEM DESCRIPTION

- A. Where indicated on drawings or required by applicable code, provide automatic shutoff for lighting inside building larger than 5000 square feet. Control shutoff by method conforming to ICC IECC.

- B. Where indicated on drawings or required by applicable code, provide automatic shutoff for lighting outside building. Control shutoff by method conforming to ICC IECC.

1.4 SUBMITTALS

- A. Shop Drawings: Indicate dimensioned drawings of lighting control system components and accessories.
 - 1. One Line Diagram: Indicating system configuration indicating panels, number and type of switches or devices.
 - 2. Include typical wiring diagrams for each component.

- B. Product Data: Submit manufacturer's standard product data for each system component.

- C. Manufacturer's Installation Instructions: Submit for each system component.
- D. Manufacturer's Certificate: Certify Products meet or exceed specified requirements.

1.5 CLOSEOUT SUBMITTALS

- A. Project Record Documents: Record the following information:
 - 1. Actual locations of components and record circuiting and switching arrangements.
 - 2. Wiring diagrams reflecting field installed conditions with identified and numbered, system components and devices.
- B. Operation and Maintenance Data:
 - 1. Submit replacement parts numbers.
 - 2. Submit manufacturer's published installation instructions and operating instructions.
 - 3. Recommended renewal parts list.

1.6 QUALITY ASSURANCE

- A. Perform Work in accordance with State, Local Municipality and the National Electric Code.

1.7 QUALIFICATIONS

- A. Manufacturer: Company specializing in manufacturing products specified in this section with minimum three years experience.

1.8 DELIVERY, STORAGE, AND HANDLING

- A. Accept components on site in manufacturer's packaging. Inspect for damage.
- B. Protect components by storing in manufacturer's containers indoor protected from weather.

1.9 WARRANTY

- A. Furnish five year manufacturer warranty for components.

1.10 EXTRA MATERIALS

- A. Furnish two of each switch type.
- B. Furnish two of each occupancy sensor type.

PART 2 – PRODUCTS

2.1 LIGHTING CONTACTORS

- A. Furnish materials in accordance with State, Local Municipality and the National Electric Code.
- B. Product Description: NEMA ICS 2, magnetic lighting contactor.
- C. Configuration: Electrically held.
- D. Coil Operating Voltage: 120 volts, 60 Hertz.
- E. Poles: To match circuit configuration and control function.
- F. Contact Rating: Conductor overcurrent protection, considering derating for continuous loads.
- G. Accessories:
 - 1. Selector Switch: ON/OFF/AUTOMATIC function, with rotary action.
 - 2. Indicating Light: Green lens, transformer type, with led lamp.
 - 3. Auxiliary Contacts: One, field convertible in addition to seal-in contact.
 - 4. Relays: NEMA ICS 2, 30Ampere.
- H. Enclosure: NEMA ICS 6, to meet conditions. Fabricate enclosure from steel finished with manufacturer's standard gray enamel aluminum.
 - 1. Interior Dry Locations: Type 1.
 - 2. Exterior Locations: Type 3R.

2.2 OCCUPANCY SENSOR

- A. Furnish materials in accordance with State, Local Municipality and the National Electric Code.
- B. Compatible with modular relay panels. Capable of being wired directly to Class 2 or 2P wiring without auxiliary components or devices.
- C. Separate sensitivity and time delay adjustments with LED indication of sensed movement. User adjustable time-delay: 30 seconds to 30 minutes.
- D. Furnish with manual override.
- E. Operation: Silent.
- F. Room Sensors: As indicated on Drawings and appropriate for the space.
- G. Corridor and Hallway Sensors:
 - 1. Capable of detecting motion 14 feet wide and 80 feet long with one sensor mounted 10 feet above floor.
 - 2. Capable of detecting motion in warehouse aisle 10 feet wide and 60 feet long or 100 feet long when mounted 22 feet above floor.
 - 3. Capable of being wired in master-slave configuration to extend area of coverage.

2.3 PHOTOCELLS

- A. Furnish materials in accordance with State, Local Municipality and the National Electric Code.
- B. General: Consist of sensor mounted as indicated on Drawings with separate control-calibration module. Sensor connected to control-calibration module via single shielded conductor with maximum distance of 500 feet. Control unit powered by 24 VAC.
- C. Control-Calibration Module: Furnish with the following:
 - 1. Capable of being switched between 4 measurement ranges.
 - 2. Separate trip points for high and low response settings.
 - 3. Momentary contact device to override photocell relays.
 - 4. Three minute time delay between switching outputs to avoid nuisance tripping.
- D. Sensor Devices: Each sensor employs photo diode technology to allow linear response to daylight within illuminance range.
 - 1. Exterior Lighting: Hooded sensor, horizontally mounted, employing flat lens, and working range 1-10 footcandles in 10 percent increments. Entire sensor encased in optically clear epoxy resin.
 - 2. Indoor Lighting: Sensor with Fresnel lens providing for 60 degree cone shaped response area to monitor indoor office lighting levels.
 - 3. Atriums: Sensor with translucent dome with 180 degree field of view and respond in range of 100-1,000 footcandles.

2.4 PHOTOCCELL CONTROL UNIT

- A. Furnish materials in accordance with State, Local Municipality and the National Electric Code.
- B. Product Description: Photodiode control unit with PHOTOCCELL ENABLE and MASTER OVERRIDE inputs for remote control, 3 minute time delay, and with selectable ranges for 1-10 footcandle and 10-100 footcandle.

PART 3 - EXECUTION

3.1 INSTALLATION

- A. Mount occupancy sensors, and photocells as indicated on Drawings.
- B. Install wiring in accordance with Section 260519.
- C. Use only properly color coded, stranded wire. Install wire sizes as indicated on Drawings. Install wire in conduit in accordance with Section 260533.
- D. Label each low voltage wire clearly indicating connecting relay panel. Refer to Section 260553.
- E. Mount relay as indicated on Drawings. Wire numbered relays in panel to control power to each load. Install relays to be accessible. Allow space around relays for ventilation and circulation of air.
- F. Identify power wiring with circuit breaker number controlling load. When multiple circuit breaker panels are feeding into relay panel, label wires to indicate originating panel designation.
- G. Label each low voltage wire with relay number at each switch or sensor.

3.2 MANUFACTURER'S FIELD SERVICES

- A. Furnish services for minimum of one day for check, test, and start-up. Perform the following services:
 - 1. Check installation of panelboards.
 - 2. Test operation of remote controlled devices.
 - 3. Repair or replace defective components.

3.3 ADJUSTING

- A. Test each system component after installation to verify proper operation.
- B. Test relays, contactors, and switches after installation to confirm proper operation.
- C. Confirm correct loads are recorded on directory card in each panel.

3.4 DEMONSTRATION

- A. Demonstrate operation of the following system components:
 - 1. Operation of occupancy sensors.
 - 2. Operation of photocell.
- B. Furnish 4 hours to instruct Owner's personnel in operation and maintenance of system. Schedule training with Owner, provide at least 7 days notice to Architect/Engineer of training date.

END OF SECTION 260923

SECTION 262726 - WIRING DEVICES

PART 1 - GENERAL

1.1 SUMMARY

- A. Section includes wall switches; wall dimmers; receptacles; multi-outlet assembly; and device plates and decorative box covers.
- B. Related Sections:
 - 1. Section 260533 - Raceway and Boxes for Electrical Systems: Outlet boxes for wiring devices.

1.2 REFERENCES

- A. National Electrical Manufacturers Association:
 - 1. NEMA WD 1 - General Requirements for Wiring Devices.
 - 2. NEMA WD 6 - Wiring Devices-Dimensional Requirements.

1.3 SUBMITTALS

- A. Product Data: Submit manufacturer's catalog information showing dimensions, colors, and configurations.

1.4 QUALIFICATIONS

- A. Manufacturer: Company specializing in manufacturing products specified in this section with minimum three years experience.

1.5 EXTRA MATERIALS

- A. Furnish two of each style, size, and finish wall plate.

PART 2 - PRODUCTS

2.1 WALL SWITCHES

- A. Manufacturers; Wall Switches:
 - 1. Hubbell.
 - 2. Cooper.
 - 3. Leviton.
 - 4. Lutron.
 - 5. Pass & Seymour.

- B. Product Description: NEMA WD 1, Heavy-Duty, AC only general-use snap switch.
- C. Body and Handle: White plastic with toggle handle.
- D. Ratings:
 - 1. Voltage: 120-277 volts, AC.
 - 2. Current: 20 amperes.

2.2 RECEPTACLES

- A. Manufacturers:
 - 1. Hubbell.
 - 2. Cooper.
 - 3. Pass & Seymour.
- B. Product Description: NEMA WD 1, Heavy-duty general use receptacle.
- C. Device Body: White plastic.
- D. Configuration: NEMA WD 6, type.
- E. Convenience Receptacle: Type 5-20.
- F. GFCI Receptacle: Convenience receptacle with integral ground fault circuit interrupter to meet regulatory requirements.

2.3 WALL PLATES

- A. Manufacturers:
 - 1. Hubbell.
 - 2. Cooper.
 - 3. Pass & Seymour.
- B. Decorative Cover Plate: White, smooth lined nylon.
- C. Weatherproof Cover Plate: Gasketed, non-metallic type plate with upward operating self-closing spring door cover.
- D. Provide permanent label on the coverplate with the panel designation and circuit number of the circuit serving the device. Labeling shall use laminated, scratch resistant, 1/2" wide polyester adhesive backed tape, black letters on clear background, Panduit LS4M or Brother P-Touch labeling system or equal system.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Verify outlet boxes are installed at proper height.

- B. Verify wall openings are neatly cut and completely covered by wall plates.
- C. Verify branch circuit wiring installation is completed, tested, and ready for connection to wiring devices.

3.2 PREPARATION

- A. Clean debris from outlet boxes.

3.3 INSTALLATION

- A. Install in accordance with NECA "Standard of Installation".
- B. Install devices plumb and level.
- C. Wiring devices shall mount securely to the device backboxes with no play.
- D. For receptacles securely attach the devices yoke to the back box or back box to wall structure such that there is minimal movement of the device when a plug is inserted or removed and the device is not dependent on the plate to keep it in position. For instances where the back box is loose, secure the back box to the wall structure. For instances where the mounting ears of the device do not touch the box ring due to improper extension ring depth and do not securely sit on the wall finish due to incorrect wall opening size, where boxes are set back more than 1/4" 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 1/4" 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 32 3113
CHAIN LINK FENCES AND GATES

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Posts, rails, and frames.
- B. Excavation for post bases; concrete foundation for posts and center drop for gates.
- C. Concrete.
- D. Manual gates with related hardware.
- E. Accessories.

1.02 RELATED REQUIREMENTS

- A. Section 03 3000 - Cast-in-Place Concrete: Concrete anchorage for posts.
- B. Section 08 7100 - Door Hardware: Gate locking device.

1.03 REFERENCE STANDARDS

- A. ASTM A153/A153M - Standard Specification for Zinc Coating (Hot-Dip) on Iron and Steel Hardware; 2016a.
- B. ASTM F567 - Standard Practice for Installation of Chain-Link Fence; 2011.
- C. CLFMI CLF-PM0610 - Product Manual; 2017.
- D. CLFMI CLF-SFR0111 - Security Fencing Recommendations; 2014.
- E. CLFMI WLG 2445 - Wind Load Guide for the Selection of Line Post and Line Post Spacing; 2018.

1.04 SUBMITTALS

- A. See Section 01 3000 - Administrative Requirements, for submittal procedures.
- B. Product Data: Provide data on fabric, posts, accessories, fittings and hardware.
- C. Design Calculations: For high wind load areas, provide calculations for fence fabric and accessory selection as well as line post spacing and foundation details. See CLFMI WLG 2445 for line post and spacing guidance.
- D. Shop Drawings: Indicate plan layout, spacing of components, post foundation dimensions, hardware anchorage, and schedule of components. See CLFMI CLF-SFR0111 for planning and design recommendations.
- E. Samples: Submit two samples of fence fabric, 12 inch by 12 inch in size illustrating construction and colored finish.
- F. Manufacturer's Installation Instructions: Indicate installation requirements and foundation requirements.
- G. Manufacturer's Qualification Statement.
- H. Fence Installer Qualification Statement.

1.05 QUALITY ASSURANCE

- A. Manufacturer Qualifications: Company specializing in manufacturing products specified in this section, with not less than five years of documented experience.
- B. Fence Installer: Company with demonstrated successful experience installing similar projects and products, with not less than five years of documented experience.

1.06 WARRANTY

- A. See Section 01 7800 - Closeout Submittals, for additional warranty requirements.
- B. Correct defective Work within a five year period after Date of Substantial Completion.

PART 2 PRODUCTS

2.01 MATERIALS AND COMPONENTS

- A. Materials and Components: Conform to CLFMI CLF-PM0610 Product Manual.
- B. Wind Load Requirements: Conform to CLFMI WLG 2445
- C. Fabric Size: CLFMI Heavy Industrial service.
- D. Intermediate Posts: Type I round.
- E. Terminal, Corner, Rail, Brace, and Gate Posts: Type I round.

2.02 MANUAL GATES AND RELATED HARDWARE

- A. Hardware for Single Swinging Gates: 180 degree hinges, 2 for gates up to 60 inches high, 3 for taller gates; fork latch with gravity drop and padlock hasp; keeper to hold gate in fully open position.
- B. Hardware for Double Swinging Gates: 180 degree hinges, 2 for gates up to 60 inches high, 3 for taller gates; drop bolt on inactive leaf engaging socket stop set in concrete, active leaf latched to inactive leaf preventing raising of drop bolt, padlock hasp; keepers to hold gate in fully open position.
- C. Hinges: Finished to match fence components. Galvanized malleable iron or heavy gauge pressed steel post and frame hinges.
 - 1. Brackets: Round.
 - 2. Mounting: Center.
 - 3. Closing: Manual.
- D. Latches: Finished to match fence components.
 - 1. Brackets: Round.
 - 2. Locking: Mechanical.

2.03 ACCESSORIES

- A. Caps: Cast steel galvanized; sized to post diameter, set screw retainer.
- B. Fittings: Sleeves, bands, clips, rail ends, tension bars, fasteners and fittings; steel.
- C. Privacy Screen Fabric:
 - 1. Visibility Blockage: 90 percent.
 - 2. Airflow: Good.
 - 3. Color: As selected by Architect.
 - 4. Product:
 - a. FenceScreen Inc; Privacy Screen Plus 200 Series 90% Blockage: www.fencescreen.com.
 - b. Substitutions: See Section 01 6000 - Product Requirements.

2.04 FINISHES

- A. Components and Fabric: Where indicated on Drawings, provide:
 - 1. Components (Other than Fabric): Galvanized in accordance with ASTM A123/A123M, at 1.7 ounces per square foot.
 - 2. Fabric: ASTM A392 zinc coated steel chain link fabric.
- B. Components and Fabric: Where indicated on drawings provide:
 - 1. Vinyl coated over coating of 2.0 oz/sq ft galvanizing.
- C. Hardware: Hot-dip galvanized to weight required by ASTM A153/A153M.
- D. Accessories: Same finish as fabric.
- E. Color(s): To be selected by Architect from manufacturer's standard range.

PART 3 EXECUTION

3.01 EXAMINATION

- A. Verification of Conditions: Verify that areas are clear of obstructions or debris and ready to receive fencing system.

3.02 PREPARATION

- A. Removal: Obstructions or debris.

3.03 INSTALLATION

- A. Install framework, fabric, accessories and gates in accordance with ASTM F567.
- B. Place fabric on inside of posts and rails.
- C. Set intermediate posts plumb, in concrete footings with top of footing 2 inches above finish grade. Slope top of concrete for water runoff.
- D. Line Post Footing Depth Below Finish Grade: ASTM F567.
- E. Corner, Gate and Terminal Post Footing Depth Below Finish Grade: ASTM F567.
- F. Brace each gate and corner post to adjacent line post with horizontal center brace rail _____. Install brace rail one bay from end and gate posts.
- G. Provide top rail through line post tops and splice with 6 inch long rail sleeves.
- H. Install center brace rail on corner gate leaves.
- I. Do not stretch fabric until concrete foundation has cured 28 days.
- J. Stretch fabric between terminal posts or at intervals of 100 feet maximum, whichever is less.
- K. Position bottom of fabric 2 inches above finished grade.
- L. Fasten fabric to top rail, line posts, braces, and bottom tension wire with tie wire at maximum 15 inches on centers.
- M. Attach fabric to end, corner, and gate posts with tension bars and tension bar clips.
- N. Install bottom tension wire stretched taut between terminal posts.
- O. Do not attach the hinged side of gate to building wall; provide gate posts.
- P. Install gate with fabric to match fence. Install hardware.
- Q. Provide concrete center drop to footing depth and drop rod retainers at center of double gate openings.

3.04 TOLERANCES

- A. Maximum Variation From Plumb: 1/4 inch.
- B. Maximum Offset From True Position: 1 inch.
- C. Do not infringe on adjacent property lines.

END OF SECTION