WARD SCOTT MORRIS ARCHITECTURE

ADDENDUM NO. 1:

Date:	February 2, 2026
Project:	Verbena HS Gym
	DCM# 2025629
	WSM# 25-032
Owner:	Chilton County Board of Education
Architect:	Ward Scott Morris Architecture, Inc.
BID DATE:	February 10, 2026
BID TIME:	2:00 PM local time:
BID LOCATION:	Chilton County Board of Education, 1705 Lay Dam Road, Clanton, AL

This Addendum forms a part of the Contract Documents and modifies the original Bid Documents dated 11/01/24 as noted below. Acknowledge receipt of this Addendum in the location provided on the Bid Proposal Form.

1.1 GENERAL

A. See attached pre-bid conference agenda and sign-in sheet.
B. List of approved equal manufacturers:
   1. 105113 - METAL LOCKERS – **Lockers MFG**
   2. 126600 - TELESCOPING STANDS
      a. Hussey Seating Company
      b. Interkal

1.2 SPECIFICATIONS

A. 012100 -ALLOWANCES; Replace in Project Manual.
B. 012200 – UNIT PRICES; Replace in Project Manual.
C. 074113 - STANDING-SEAM METAL ROOF PANELS: Added to project manual.
D. 081113_HOLLOW METAL DOORS AND FRAMES: Replace specification with attached version.
E. 085113 - ALUMINUM WINDOWS: Added to project manual.
F. 087100 DOOR HARDWARE: door 1104A has been upgraded to 2HR rating.
G. 101419 - DIMENSIONAL LETTER SIGNAGE: Added to project manual
H. 107516 - GROUND-SET FLAGPOLES: Added to project manual
I. 116623 - GYMNASIUM EQUIPMENT: Replace specification with attached version. Side court requirements have been omitted from project.
J. 126600 - TELESCOPING STANDS: Replace specification with attached version. Video platform has been omitted from project.
K. 133419 - METAL BUILDING SYSTEMS: Replace specification with attached version. Roof panel size and finish have been revised.
L. 323119 FL - DECORATIVE METAL FENCES AND GATES: Added to project manual.

1.3 DRAWINGS

A. G201, A002: Room 1104 has updated to have 2HR rated walls and door.
B. S000, See attached reflects sheets revised as part of Addendum #1.
C. S001, See attached revisions.
D. S002, added pier detail.
E. A001:
   1. See revised reference note #26 regarding metal lockers.
   2. Reference note #3 regarding gym divider curtain has been removed from project
F. A002: revised Door Schedule.
G. A101: See revised paving at rear of gymnasium showing mechanical pad and dimensions. See added fencing & gates around mechanical pad.
H. A103, Kitchen Equipment Schedule; add the following:
   1. R/F-2 – Convertible Double Door, Basis-of-Design: True Manufacturing Company, Inc., Model #T-49FG-FLX-HC-FGD01 Freestanding, Glass Doors.
I. A111, Reference Notes; change the following:
   1. Note #8; change to read “Ice Machine - see Kitchen Equipment Schedule on sheet A103.
   2. Note #9; change to read “Commercial Refrigerator **(R/F-2)** - see Kitchen Equipment Schedule on sheet A103.
   3. Note #12; change to read “60” Stainless Steel Food Prep Table” to “refer to Kitchen Equipment Schedule on sheet A103.

1.4 ATTACHED TO ADDENDUM

Revised Architectural Sheets, G201, A001, A002, A101
Revised Structural Sheets, S000, S001, S002
Revised Specification Sections

END OF ADDENDUM

Pre-Bid Conference Check List (Lump Sum Contract)

1.1 GENERAL

A. Welcome (and silence radios/cell phones)
B. Pre-bid conference [is not] mandatory; Sign-in Sheet
C. Name and location of project- Verbena HS – Gym, 202 County Road 510, Verbena, AL
D. Introduce Owner, Architect, and affiliation of key personnel- Corey Clements-Superintendent, Billy Wyatt-Construction Director, Jordan Morris- Architect, Patrick Howell & Wally Burge-Project Managers
E. General Lump Sum Contract project
F. Project funding (local)
G. Electronic communication is required, provide primary contact for firm.

1.2 SUMMARY

A. Overall summary-
Constructing a new gymnasium and plaza, along with an expanded parking lot. Additionally, a new ticket booth and a combined restroom and concession building will be constructed to serve the baseball and football facilities.
B. Site visit to existing building is required (schedule of visits) – Billy Wyatt bgwyatt@chiltonboe.com (205) 296-0274
C. Organization of contract documents (drawings, project manual, "Summary" section, addenda)
D. Sets of plans available – WSM Arch. Plan Room

1.3 RECEIPT OF BIDS

A. Date and Time and Place: February 10th, 2026, 2:00pm,
Location: Chilton County Board of Education Office, 1705 Lay Dam Rd, Clanton, AL
B. Proposal form, show receipt of all addenda, submit one copy
C. Bid Bond with Power of Attorney
D. Proposal envelope must have state license number

1.4 CONTRACTUAL REQUIREMENTS

A. Payment and labor/material bonds [will] be required
B. This is a tax-exempt project, and all bidders WILL NOT include taxes in their bid. Refer to specification sections 012910 Sales and Use Tax Savings, and Form ST: EXC-01 Sales and Use Tax Certificate of Exemption for Government Entity Project (including the Instructions for Preparation) documents provided in the specifications for proper procedures.
C. Required permits and licenses (by the contractor)
D. Builder's Risk Insurance – by Contractor
E. Costs of testing (by Owner, if required)
F. Liquidated damages. Amount: $500.00/per calendar day
G. Alternates, Allowances, and Unit Prices
H. Present project schedule and required phasing:
1. Notice to Proceed: March 9th, 2026 (Tentative) *Board Mtg 2/17/26
2. Completion Date: April 3rd, 2027 (390 Calendar days)

1.5 SITE CONDITIONS

A. Access for construction operations
B. Construction limits
C. Job site offices
D. On-site mobile communications
E. Security at site
F. Job Safety and Cleanup

1.6 MISCELLANEOUS

A. Services provided by Owner
B. Project comments from Owner, Consulting Engineers

1.7 QUESTIONS FROM BIDDERS

SECTION 012100 – ALLOWANCES (ADD #01)

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

A. Section includes administrative and procedural requirements governing allowances.

B. Types of allowances include the following:

1. Lump-sum allowances.
2. Unit-cost allowances.
3. Quantity allowances.
4. Contingency allowances.
5. Testing and inspecting allowances.

C. Related Requirements:

1. Section 012200 "Unit Prices" for procedures for using unit prices, including adjustment of quantity allowances when applicable.
2. Section 014000 "Quality Requirements" for procedures governing the use of allowances for field testing by an independent testing agency.

1.3 DEFINITIONS

A. Allowance is a quantity of work or dollar amount established in lieu of additional requirements, used to defer selection of actual materials and equipment to a later date when direction will be provided to Contractor. If necessary, additional requirements will be issued by Change Order.

1.4 SELECTION AND PURCHASE

A. At the earliest practical date after award of the Contract, advise Architect of the date when final selection, or purchase and delivery, of each product or system described by an allowance must be completed by the Owner to avoid delaying the Work.

B. At Architect's request, obtain proposals for each allowance for use in making final selections. Include recommendations that are relevant to performing the Work.

C. Purchase products and systems selected by Architect from the designated supplier.

1.5 ACTION SUBMITTALS

A. Submit proposals for purchase of products or systems included in allowances in the form specified for Change Orders.

1.6 INFORMATIONAL SUBMITTALS

A. Submit invoices or delivery slips to show actual quantities of materials delivered to the site for use in fulfillment of each allowance.

B. Submit time sheets and other documentation to show labor time and cost for installation of allowance items that include installation as part of the allowance.

C. Coordinate and process submittals for allowance items in same manner as for other portions of the Work.

1.7 LUMP-SUM ALLOWANCES

A. Allowance shall include cost to Contractor of specific products and materials ordered by Owner or selected by Architect under allowance and shall include taxes, freight, and delivery to Project site.

B. Unless otherwise indicated, Contractor's costs for receiving and handling at Project site, labor, installation, overhead and profit, and similar costs related to products and materials ordered by Owner or selected by Architect under allowance shall be included as part of the Contract Sum and not part of the allowance.

C. Unused 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.

1.8 UNIT-COST ALLOWANCES

A. Allowance shall include cost to Contractor of specific products and materials ordered by Owner or selected by Architect under allowance and shall include taxes, freight, and delivery to Project site.

B. Unless otherwise indicated, Contractor's costs for receiving and handling at Project site, labor, installation, overhead and profit, and similar costs related to products and materials ordered by Owner or selected by Architect under allowance shall be included as part of the Contract Sum and not part of the allowance.

C. Unused 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.

1.9 QUANTITY ALLOWANCES

A. Allowance shall include cost to Contractor of specific products and materials ordered by Owner or selected by Architect under allowance and shall include taxes, freight, and delivery to Project site.

B. Unless otherwise indicated, Contractor's costs for receiving and handling at Project site, labor, installation, overhead and profit, and similar costs related to products and materials ordered by Owner or selected by Architect under allowance shall be included as part of the Contract Sum and not part of the allowance.

C. Unused 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.

1.10 CONTINGENCY ALLOWANCES

A. Use the contingency allowance only as directed by Architect for Owner's purposes and only by Change Orders that indicate amounts to be charged to the allowance.

B. Contractor's overhead, profit, and related costs for products and equipment ordered by Owner under the contingency allowance are included in the allowance and are not part of the Contract Sum. These costs include delivery, installation, taxes, insurance, equipment rental, and similar costs.

C. Change Orders authorizing use of funds from the contingency allowance will include Contractor's related costs and reasonable overhead and profit.

D. At Project closeout, credit unused amounts remaining in the contingency allowance to Owner by Change Order.

1.11 TESTING AND INSPECTING ALLOWANCES

A. Testing and inspecting allowances include the cost of engaging testing agencies, actual tests and inspections, and reporting results.

B. The allowance does not include incidental labor required to assist the testing agency or costs for retesting if previous tests and inspections result in failure. The cost for incidental labor to assist the testing agency shall be included in the Contract Sum.

C. Costs of testing and inspection services not required by the Contract Documents are not included in the allowance.

D. At Project closeout, credit unused amounts remaining in the testing and inspecting allowance to Owner by Change Order.

1.12 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 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 markups.
3. Submit substantiation of a change in scope of Work, if any, claimed in Change Orders related to unit-cost allowances.
4. Owner reserves the right to establish the quantity of work-in-place by independent quantity survey, measure, or count.

B. Submit claims for increased costs because of a change in scope or nature of the allowance described in the Contract Documents, whether for the purchase order amount or Contractor's handling, labor, installation, overhead, and profit.

1. Do not include Contractor's or subcontractor's indirect expense in the Change Order cost amount unless it is clearly shown that the nature or extent of Work has changed from what could have been foreseen from information in the Contract Documents.

2. No change to Contractor's indirect expense is permitted for selection of higher- or lower-priced materials or systems of the same scope and nature as originally indicated.

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine products covered by an allowance promptly on delivery for damage or defects. Return damaged or defective products to manufacturer for replacement.

3.2 PREPARATION

A. Coordinate materials and their installation for each allowance with related materials and installations to ensure that each allowance item is completely integrated and interfaced with related work.

3.3 SCHEDULE OF ALLOWANCES

A. Schedule of Allowances

1. Allowance No. 1 – Removal / Offsite Disposal / Replacement of Unsuitable Material (Quantity Allowance – Base Bid) (Unit Price #1):

   a. Includes 1,350 cubic yards in place, to be include in the base bid, of Removal / Offsite Disposal / Replacement of Unsuitable Material. Payment for "Removal / Offsite Disposal/ Replacement of Unsuitable Material" shall be made at the unit price bid, per cubic yard in place (CYIP) removed, and shall be compensation in full for furnishing all materials, equipment, tools, labor and incidentals necessary to complete the work. Payment for this item will include Removal of Unsuitable Material, if encountered, as directed by the Geotechnical Representative in areas underneath the proposed asphalt parking, sidewalks, buildings, fence columns, etc. This includes unsuitable excavation/removal, offsite disposal of the material, and replacement with approved offsite borrow material to return the ground back to its original elevation. Haul tickets shall not be considered a valid determination of quantities. In cut sections, following topsoil striping, the Contractor shall grade the area to finished subgrade and verify he is at the proper elevations before the Owner's Representative shall review the area for any unsuitable materials requiring removal. In fill sections, the Contractor shall remove topsoil, debris, etc. and identify the area as a fill section before the Owner's Representative shall review the area for any unsuitable materials requiring removal. Following topsoil stripping and excavation to subgrade, the Contractor shall notify the Owner's Representative twenty-four (24) hours before any unsuitable material is excavated, so the area of unsuitable material may be delineated and removed as directed by the Owner's Representative. Any unsuitable material shall be hauled offsite and disposed of. Following the removal of unsuitable material, the Contractor shall again notify the Owner's Representative before any offsite replacement material is placed so the area may be measured for removal depths by Owner's Representative to derive the cubic yards of unsuitable removal. Failure to notify the Owner's Representative and performing unsuitable excavation without their presence for measurement shall forfeit payment of that amount of unobserved work. Following measurement of depth, the Contractor shall replace the unsuitable material with approved fill material as required by the Geotechnical Report to the required elevation grades. The Contractor shall note that any areas originally determined to be suitable but overtime result in unsuitable areas as a result of their failure to properly maintain the site, drain it properly, etc. will not be paid for as part of this allowance but shall be removed/replaced at no additional cost to the project.

   b. It is possible that upon completion of the project that this allowance may not have been used. Should this quantity be increased or decreased by direction from the Owner's Representative, any adjustments to the contract amount for this item will be based on the unit cost provided as Unit Price No. 1 in the Unit Price Specification Section.

2. **Allowance No. 2 – Removal / Condition / Reuse of Unsuitable Material** (Quantity Allowance – Base Bid):

   a. Includes **400 cubic yards in place,** to be include in the base bid, of Removal / Condition / Reuse of Unsuitable Material. Payment for "Removal / Condition / Reuse of Unsuitable Material" shall be made at the unit price bid, per cubic yard in place (CYIP) removed, and shall be compensation in full for furnishing all materials, equipment, tools, labor and incidentals necessary to complete the work. Payment for this item will include Removal of Unsuitable Material, if encountered, as directed by the Geotechnical Representative in areas underneath the proposed asphalt parking, sidewalks, buildings, fence columns, etc. This includes unsuitable excavation/removal, onsite stock pile and conditioning of the material, and reusing the material to return the ground back to its original elevation. Conditioning may include tasks such as spreading, drying, discing, etc. to make the soil useable as approved fill material. Haul tickets shall not be considered a valid determination of quantities. In cut sections, following topsoil striping, the Contractor shall grade the area to finished subgrade and verify he is at the proper elevations before the Owner's

Representative shall review the area for any unsuitable materials requiring removal. In fill sections, the Contractor shall remove topsoil, debris, etc. and identify the area as a fill section before the and removed as directed by the Owner's Representative. Following the removal of unsuitable material, the Contractor shall again notify the Owner's Representative before any reused material is placed so the area may be measured for removal depths by Owner's Representative to derive the cubic yards of unsuitable removal. Failure to notify the Owner's Representative and performing unsuitable excavation without their presence for measurement shall forfeit payment of that amount of unobserved work. Following measurement of depth Owner's Representative shall review the area for any unsuitable materials requiring removal. Following topsoil stripping and excavation to subgrade, the Contractor shall notify the Owner's Representative twenty-four (24) hours before any unsuitable material is excavated, so the area of unsuitable material may be delineated, the Contractor shall replace the unsuitable material with approved fill material as required by the Geotechnical Report to the required elevation grades. The Contractor shall note that any areas originally determined to be suitable but overtime result in unsuitable areas as a result of their failure to properly maintain the site, drain it properly, etc. will not be paid for as part of this allowance but shall be removed/replaced at no additional cost to the project.

b. It is possible that upon completion of the project that this allowance may not have been used. Should this quantity be increased or decreased by direction from the Owner's Representative, any adjustments to the contract amount for this item will be based on the unit cost provided as **Unit Price No. 2** in the Unit Price Specification Section.

3. **Allowance No. 3 – Asphalt Patching (6.5" Compacted Thickness)** (Quantity Allowance – Base Bid):
   a. Includes **200 square yards,** to be included in the base bid, of Asphalt Patching (6.5" Compacted Thickness). Payment for "Asphalt Patching (6.5" Compacted Thickness)" shall be made at the unit price bid, per square yards of specified mix, and shall be compensation in full for furnishing all materials, equipment, tools, labor, and incidentals necessary to complete the work. This pay item also includes 12" ALDOT No. 825B crushed stone base. It also includes saw cutting and removal of existing failed pavement and subgrade material necessary to install the deep patch. It also includes the installation of the 1" wearing surface and any associated milling for its installation. This pay item shall be used only when specified by the Owner's Representative. Installation of Asphalt Patching without the prior approval of the Owner's Representative shall forfeit payment of that amount of unapproved work.
   b. It is possible that upon completion of the project this allowance may not have been used. Should this quantity be increased or decreased by direction from the Owner's Representative, any adjustments to the contract amount for this item will be based on the unit cost provided as **Unit Price No. 3** in the Schedule of Unit Prices.
4. **Allowance No. 04 – Crushed Aggregate Base Course, ALDOT Section 825, Type B** (Quantity Allowance – Base Bid):
   a. Includes **1,370 square yards**, to be included in the base bid, of Crushed Aggregate Base Course, ALDOT Section 825, Type B. Payment for "Crushed Aggregate Base Course, ALDOT Section 825, Type B" shall be made at the unit price bid, per Square Yard Compacted In Place, and shall be compensation in full for furnishing all materials, equipment, tools, labor, and incidentals necessary to complete the work. Crushed Aggregate Base Course, Type B (6" Thick), also referred to as base material, shall be as defined in section 825 of the ALDOT Standard Specifications for Highway Construction, Latest Edition. Square Yards will be calculated by multiplying the length and width of the placed material. Only placed and compacted materials will be paid for. Haul tickets shall not be considered a valid determination of base material. Base material shall be placed per the typical sections or as directed by the Engineer. The intent of this item is for final gravel road surface improvements in areas that arise during the course of construction beyond those shown in the construction plans. This item includes removal and disposal of damaged gravel surface (if necessary) and replacement with Crushed Aggregate Base Course, ALDOT Section 825, Type B (6" thick). This item shall not be used in lieu of temporary stones needed to maintain serviceability to the school, school facilities, and local residences, or areas damaged due to carelessness by the contractor. Installation of Crushed Aggregate Base Course without the prior approval of the Owner's Representative shall forfeit payment of that amount of unapproved work.
   b. It is possible that upon completion of the project this allowance may not have been used. Should this quantity be increased or decreased by direction from the Owner's Representative, any adjustments to the contract amount for this item will be based on the unit cost provided as **Unit Price No. 04** in the Schedule of Unit Prices.

5. **Allowance No. 05 – Slurry Fill of Abandoned Pipes** (Quantity Allowance – Base Bid): **(ADD #01)**
   a. Includes **100 cubic yards**, to be included of the base bid, of Slurry Fill of Abandoned Pipes. Payment for "Slurry Fill of Abandoned Pipes" shall be made at the unit price bid, cubic yard, and shall be compensation in full for furnishing all materials, equipment, tools, labor and incidentals necessary to complete the work. No extra payment will be made for plugs, bulkheads, opening the pipe at sufficient intervals to install the slurry fill and to release air, pavement patches in areas not designated to be patched on the Drawings,

surface restoration including providing and installing pavement replacement materials, topsoil, seed and sod, special equipment or cleanup work, but costs for these items shall be included in the pay item for Slurry Fill of Abandoned Pipes. Haul tickets shall be collected the day of delivery and logged for payment. Failure to provide haul tickets for that day's cubic yards hauled will forfeit payment for that amount placed. Miscellaneous haul tickets turned in randomly at the end of the month for payment shall be ignored. Slurry fill shall be 150 psi minimum.

b. It is possible that upon completion of the project this allowance may not have been used. Should this quantity be increased or decreased by direction from the Owner's Representative, any adjustments to the contract amount for this item will be based on the unit cost provided as **Unit Price No. 05** in the Schedule of Unit Prices.

6. Allowance No. 6: Reinforcing Steel. **(ADD #01)**
   a. Quantity Allowance: Include an allowance of **2.0 tons** of reinforcing steel in place in addition to the steel shown on the contract documents. This steel is to be placed in sizes and locations at the direction of the Owner, Architect, Engineer, or the Construction Manager.
7. Allowance No. 7: Structural Concrete in place **(ADD #01)**
   a. Quantity Allowance: Include in base bid, **50 cu. yd.** of concrete for spread footings in place to support PEMB frames/bents foundations. Contractor to provide an in-place unit price for concrete spread footings based on these quantities. Coordinate quantity allowance adjustment with unit-price requirements in Section 012200 "Unit Prices."
8. Allowance No. 8: Structural Steel.
   a. Quantity Allowance: Include in base bid, **1.5 tons** structural steel in place in addition to the steel shown on the contract documents. This steel is to be placed in sizes and locations at the direction of the Owner, Architect, Engineer, or the Construction Manager.
9. Allowance No. 9: Masonry
   a. Quantity Allowance: Include an allowance of $600 per thousand for face brick.
   b. Quantity Allowance: Include an allowance of $20 per bag for pigmented mortar.
10. Allowance No. 10: Interior & Exterior Graphics
    a. Lump Sum Allowance: Include an allowance of $40,000.00 for the purchase and installation of interior and exterior surface-applied graphics as instructed by the Owner, Architect, or Construction Manager.
11. Allowance No. 11: Gym – Audio Visual Equipment (including Scorer's Table, Digital Scoreboards, & Shot Clocks)
    a. Lump Sum Allowance: Include an allowance of $**250,000.00** for the purchase and installation of audio-visual equipment, scorer's table and digital scoreboards for the Gym as instructed by the Owner, Architect, or Construction Mgr. **Contractor still responsible for raceways and power in scope outside of allowance.**
12. **Allowance No. 12: Display Cases & Custom Wood/Phenolic Lockers. (ADD #01)**
    a. Lump Sum Allowance: Include an allowance of **$100,000.00** for the purchase and installation of display cases as instructed by the Owner, Architect, or Construction Manager.
13. Allowance No. 13: BDA System
    a. Contingency Allowance: Include a Lump Sum Allowance of **$15,000.00** to cover any additional requirements to the BDA system beyond the scope as described on electrical drawings and specifications.
14. Allowance No. 12: Project Contingency
    a. Contingency Allowance: Include a contingency allowance of **$200,000.00** for use as instructed by the Owner or Architect.

END OF SECTION 012100

SECTION 012200 - UNIT PRICES (ADD #01)

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

A. Section includes administrative and procedural requirements for unit prices.

B. Related Requirements:

1. Section 012100 "Allowances" for procedures for using unit prices to adjust quantity allowances.
2. Section 012600 "Contract Modification Procedures" for procedures for submitting and handling Change Orders.
3. Section 014000 "Quality Requirements" for field testing by an independent testing agency.

1.3 DEFINITIONS

A. Unit price is an amount incorporated into the Agreement, applicable during the duration of the Work as a price per unit of measurement for materials, equipment, or services, or a portion of the Work, added to or deducted from the Contract Sum by appropriate modification, if the scope of Work or estimated quantities of Work required by the Contract Documents are increased or decreased.

1.4 PROCEDURES

A. Unit prices include all necessary material, plus cost for delivery, installation, insurance, [applicable taxes, overhead, and profit.

B. Measurement and Payment: See individual Specification Sections for work that requires establishment of unit prices. Methods of measurement and payment for unit prices are specified in those Sections.

C. Owner reserves the right to reject Contractor's measurement of work-in-place that involves use of established unit prices and to have this work measured, at Owner's expense, by an independent surveyor acceptable to Contractor.

D. List of Unit Prices: A schedule of unit prices is included in Part 3. Specification Sections referenced in the schedule contain requirements for materials described under each unit price.

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION

3.1 SCHEDULE OF UNIT PRICES (ADD #01)

A. Unit Price No. 1: Unsuitable Soils

1. Undercutting unsuitable soils, disposing of material off site, and replacing with offsite borrow structural fill compacted in place.

Unit Price per Cubic Yard In Place $_____

B. Unit Price No. 2: Unsuitable Soils

1. Undercutting unsuitable soils, conditioning material on site, replacing conditioned soil and compacted in place.

Unit Price per Cubic Yard In Place $_____

C. Unit Price No. 3: Asphalt Patching

1. See patch build up described in Allowance No. 03

Unit Price per Square Yard In Place $_____

D. Unit Price No. 4: Crushed Aggregate Base
   1. ALDOT Section 825, Type B in place.

Unit Price per Square Yard In Place $_____

E. Unit Price No. 5: Slurry Fill of Abandoned Pipes
   1. Slurry Fill of Abandoned pipes.

Unit Price per Cubic Yard In Place $_____

F. Unit Price No. 6: Reinforcing Steel
   1. Reinforcing steel in place and installed as directed by the Owner, Architect, Engineer or the Construction Manager.

Unit Price per Ton in Place $_____

G. Unit Price No. 7: Concrete
   1. 3000 psi Concrete in place and installed as directed by the Owner, Architect, Engineer or the Construction Manager.

Unit Price per Cubic Yard in Place $_____

END OF SECTION 012200

SECTION 074113.16 - STANDING-SEAM METAL ROOF PANELS

GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

A. Section Includes:
   1. Flat Batten Lock Architectural standing seam metal roof panels.
      a. All straight panels.

B. Related Sections:
   1. Division 7 Section "Sheet Metal Flashing and Trim" for field-formed sheet metal work not part of metal roof panel assemblies.
   2. Division 7 Section "Manufactured Roof Specialties" for manufactured roof specialties such as perimeter roof drainage system.
   3. Division 7 Section "Joint Sealants" for field-applied sealants not otherwise specified in this Section.

1.3 DEFINITIONS

A. Metal Roof Panel Assembly: Metal roof panels, attachment system components, miscellaneous metal framing, thermal insulation, and accessories necessary for a complete weathertight roofing system.

1.4 PERFORMANCE REQUIREMENTS

A. General Performance: Metal roof panels shall comply with performance requirements without failure due to defective manufacture, fabrication, installation, or other defects in construction.

B. Air Infiltration: Air leakage through assembly of not more than 0.06 cfm/sq. ft. (0.3 L/s per sq. m) of roof area when tested according to ASTM E 1680 at the following test-pressure difference:
   1. Test-Pressure Difference: Negative 1.57 lbf/sq. ft. (75 Pa).
   2. Positive Preload Test-Pressure Difference: Greater than or equal to 15.0 lbf/sq. ft. (720 Pa) and the greater of 75 percent of building live load or 50 percent of building design positive wind-pressure difference.
   3. Negative Preload Test-Pressure Difference: 50 percent of design wind-uplift-pressure difference.

C. Water Penetration: No water penetration when tested according to ASTM E 1646 at the following test-pressure difference:
   1. Test-Pressure Difference: 2.86 lbf/sq. ft. (137 Pa).
   2. Positive Preload Test-Pressure Difference: Greater than or equal to 15.0 lbf/sq. ft. (720 Pa) and the greater of 75 percent of building live load or 50 percent of building design positive wind-pressure difference.
   3. Negative Preload Test-Pressure Difference: 50 percent of design wind-uplift-pressure difference.

D. Wind-Uplift Resistance: Provide metal roof panel assemblies that comply with UL 580 for wind-uplift-resistance class indicated.
   1. Uplift Rating: ASCE 7-10 / 160 mph

E. FMG Listing: Provide metal roof panels and component materials that comply with requirements in FMG 4471 as part of a panel roofing system and that are listed in FMG's "Approval Guide" for Class 1 or noncombustible construction, as applicable. Identify materials with FMG markings.
   1. Fire/Windstorm Classification: Class 1A-90.
   2. Hail Resistance: MH.

F. Thermal Movements: Allow for thermal movements resulting from ambient and surface temperature changes. Base calculations on surface temperatures of materials due to both solar heat gain and nighttime-sky heat loss.
   1. Temperature Change (Range): 120 deg F (67 deg C), ambient; 180 deg F (100 deg C), material surfaces.

G. Energy Performance: Provide roof panels with solar reflectance index not less than 78 when calculated according to ASTM E 1980 based on testing identical products by a qualified testing agency.

H. Energy Performance: Provide roof panels that are listed on the U.S. Department of Energy's ENERGY STAR Roof Products Qualified Product List for low-slope roof products.

1.5 SUBMITTALS

A. Product Data: For each type of product indicated. Include construction details, material descriptions, dimensions of individual components and profiles, and finishes for each type of roof panel and accessory.

B. Shop Drawings: Show fabrication and installation layouts of metal roof panels; details of edge conditions, side-seam and endlap joints, panel profiles, corners, anchorages, trim, flashings, closures, and accessories; and special details. Distinguish between factory- and field-assembled work.

1. Accessories: Include details of the following items, at a scale of not less than 1-1/2 inches per 12 inches (1:10):
   a. Flashing and trim.

C. Samples for Initial Selection: For each type of metal roof panel indicated with factory-applied color finishes.

1. Include similar Samples of trim and accessories involving color selection.

D. Samples for Verification: For each type of exposed finish required, prepared on Samples of size indicated below:

1. Metal Roof Panels: 12 inches (300 mm) long by actual panel width. Include fasteners, clips, closures, and other metal roof panel accessories.
2. Trim and Closures: 12 inches (300 mm) long. Include fasteners and other exposed accessories.
3. Accessories: 12-inch- (300-mm-) long Samples for each type of accessory.

E. Coordination Drawings: Roof plans, drawn to scale, on which the following are shown and coordinated with each other, based on input from installers of the items involved:

1. Roof panels and attachments.
2. Roof-mounted items

F. Manufacturer Certificates: Signed by manufacturer certifying that roof panels comply with energy performance requirements specified in "Performance Requirements" Article.

1. Submit evidence of meeting performance requirements.

G. Qualification Data: For qualified Installer.

H. Field quality-control reports.

I. Maintenance Data: For metal roof panels to include in maintenance manuals.

J. Warranties: Samples of special warranties.

1.6 QUALITY ASSURANCE

A. Installer Qualifications: An employer of workers trained and approved by manufacturer.

B. Testing Agency Qualifications: Qualified according to ASTM E 329 for testing indicated.

C. Source Limitations: Obtain each type of metal roof panels from single source from single manufacturer.

D. Pre-roofing Conference:

1. 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, Department of Construction Management 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.
2. 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.
3. The following are to be accomplished during the conference:
   a. Review all Factory Mutual and Underwriters Laboratories requirements listed in the specifications and resolve any questions or conflicts that may arise.
   b. Establish trade-related job schedules, including the installation of roof-mounted mechanical equipment.
   c. Establish roofing schedule and work methods that will prevent roof damage.
   d. Require that all roof penetrations and walls be in place prior to installing the roof.
   e. Establish those areas on the job site that will be designated as work and storage areas for roofing operations.
   f. Establish weather and working temperature conditions to which all parties must agree.
   g. Establish acceptable methods of protecting the finished roof if any trades must travel across or work on or above any areas of the finished roof.

4. The Architect shall prepare a written report indicating actions taken and decisions made at this pre-roofing conference. This report shall be made a part of the project record and copies furnished the General Contractor, the Owner, the Department of Construction Management, and the Department of Construction Management Inspector."

1.7 DELIVERY, STORAGE, AND HANDLING

A. Deliver components, sheets, metal roof panels, and other manufactured items so as not to be damaged or deformed. Package metal roof panels for protection during transportation and handling.

B. Unload, store, and erect metal roof panels in a manner to prevent bending, warping, twisting, and surface damage.

C. Stack metal roof panels on platforms or pallets, covered with suitable weathertight and ventilated covering. Store metal roof panels to ensure dryness. Do not store metal roof panels in contact with other materials that might cause staining, denting, or other surface damage.

D. Protect strippable protective covering on metal roof panels from exposure to sunlight and high humidity, except to extent necessary for period of metal roof panel installation.

1.8 PROJECT CONDITIONS

A. Weather Limitations: Proceed with installation only when existing and forecasted weather conditions permit metal roof panel work to be performed according to manufacturer's written instructions and warranty requirements.

B. Field Measurements: Verify actual dimensions of construction contiguous with metal roof panels by field measurements before fabrication.

1.9 COORDINATION

A. Coordinate sizes and locations of roof curbs, equipment supports, and roof penetrations with actual equipment provided.

B. Coordinate metal roof panels with rain drainage work, flashing, trim, and construction of decks, parapets, walls, and other adjoining work to provide a leakproof, secure, and noncorrosive installation.

1.10 WARRANTY

A. Standard manufacturer's roofing guarantees which contain language regarding the governing of the guarantee by any state other than the State of Alabama, must be amended to exclude such language, and substituting the requirement that the Laws of the State of Alabama shall govern all such guarantees.

B. Special Warranty: Manufacturer's standard form in which manufacturer agrees to repair or replace metal roof panel assemblies that fail in materials or workmanship within specified warranty period.

1. Failures include, but are not limited to, the following:
   a. Structural failures including rupturing, cracking, or puncturing.
   b. Deterioration of metals, metal finishes, and other materials beyond normal weathering.
2. Warranty Period: 20 years from date of Substantial Completion.

C. Special Warranty on Panel Finishes: Manufacturer's standard form in which manufacturer agrees to repair finish or replace metal roof panels that show evidence of deterioration of factory-applied finishes within specified warranty period.

1. Exposed Panel Finish: Deterioration includes, but is not limited to, the following:
   a. Cracking, checking, peeling, or failure to bare metal.
2. Finish Warranty Period: 20 years from date of Substantial Completion.

D. Special Weathertightness Warranty: Manufacturer's standard form in which manufacturer agrees to repair or replace metal roof panel assemblies that fail to remain weathertight, including leaks, within specified warranty period.

1. Weathertight Warranty Period: 20 years from date of Substantial Completion.

PART 2 - PRODUCTS

2.1 CONCEALED-FASTENER, STRUCTURAL STANDING SEAM METAL ROOF PANELS

A. General: Provide factory-formed metal roof panels designed to be installed by lapping and interconnecting side edges of adjacent panels and mechanically attaching through panel to supports using concealed fasteners and factory-applied sealant in side laps. Include accessories required for weathertight installation.

B. Standing-Seam-Profile, architectural standing seam roof panel equal to MBCI Curved and flat - BattenLok panel, with 2" high x ¾" inch wide rib x 16" wide, striated panel with 2 pencil ribs.

1. Panels by one of the following:
   a. Arch. Integrated Metals
   b. ATAS

c. Centria
d. Berridge
e. Ceco
f. United States Steel
g. Butler
h. Imetco
i. Allsouth Pre-Engineered Components LLC
j. Morin Standing Seam Series SLR-16
k. Or approved equal

2. Material: Aluminum-zinc alloy-coated steel sheet, 24 gauge nominal thickness, minimum.
   a. Exterior Finish: to be picked from manufacturer's full range of standard, non-patterned, non-mica, non-metallic colors.
3. Panel Coverage: 16 inches (305 mm).
4. Panel Height: 1.5" nominal

2.2 PANEL MATERIALS

A. Metallic-Coated Steel Sheet: Restricted flatness steel sheet metallic coated by the hot-dip process and painted by the coil-coating process to comply with ASTM A 755/A 755M.
   1. Recycled Content: Provide steel sheet with average recycled content such that postconsumer recycled content plus one-half of pre-consumer recycled content is not less than 25 percent.
   2. Aluminum-Zinc Alloy-Coated Steel Sheet: ASTM A 792/A 792M, Class AZ50 coating designation, Grade 40 (Class AZM150 coating designation, Grade 275); structural quality.
   3. Surface: Smooth, flat finish.
   4. Exposed Coil-Coated Finish:
      a. Galvalume Satin Finish: Free of oils, chemicals and residue. Ship and store with surfaces protected

B. Panel Sealants:
   1. Sealant Tape: Pressure-sensitive, 100 percent solids, gray polyisobutylene compound sealant tape with release-paper backing. Provide permanently elastic, nonsag, nontoxic, nonstaining tape 1/2 inch (13 mm) wide and 1/8 inch (3 mm) thick.
   2. Joint Sealant: ASTM C 920; elastomeric polyurethane, polysulfide, or silicone sealant; of type, grade, class, and use classifications required to seal joints in metal roof panels and remain weathertight; and as recommended in writing by metal roof panel manufacturer.
   3. Butyl-Rubber-Based, Solvent-Release Sealant: ASTM C 1311.

2.3 MISCELLANEOUS MATERIALS

A. Panel Fasteners: Self-tapping screws, bolts, nuts, self-locking rivets and bolts, end-welded studs, and other suitable fasteners designed to withstand design loads. Provide exposed fasteners with heads matching color of metal roof panels by means of plastic caps or factory-applied coating. Provide EPDM, PVC, or neoprene sealing washers. Provide fasteners with non-corrosive surfaces or of non-corrosive material.

B. Bituminous Coating: Cold-applied asphalt mastic, SSPC-Paint 12, compounded for 15-mil (0.4-mm) dry film thickness per coat. Provide inert-type noncorrosive compound free of asbestos fibers, sulfur components, and other deleterious impurities.

2.4 ACCESSORIES

A. Roof Panel Accessories: Provide components approved by roof panel manufacturer and as required for a complete metal roof panel assembly including trim, copings, fasciae, corner units, ridge closures, clips, flashings, sealants, gaskets, fillers, closure strips, and similar items. Match material and finish of metal roof panels unless otherwise indicated.
   1. Closures: Provide closures at eaves and ridges, fabricated of same metal as metal roof panels.
   2. Closure Strips: Closed-cell, expanded, cellular, rubber or crosslinked, polyolefin-foam or closed-cell laminated polyethylene; minimum 1-inch- (25-mm-) thick, flexible closure strips; cut or premolded to match metal roof panel profile. Provide closure strips where indicated or necessary to ensure weathertight construction.
   3. Backing Plates: Provide metal backing plates at panel end splices, fabricated from material recommended by manufacturer.

B. Flashing and Trim: Formed from same material as roof panels, prepainted with coil coating, minimum 24 GA thick. Provide flashing and trim as required to seal against weather and to provide finished appearance. Locations include, but are not limited to, eaves, rakes, corners, bases, framed openings, ridges, fasciae, and fillers. Finish flashing and trim with same finish system as adjacent metal roof panels.

2.5 FABRICATION

A. Fabricate and finish metal roof panels and accessories at the factory to greatest extent possible, by manufacturer's standard procedures and processes and as necessary to fulfill indicated performance requirements. Comply with indicated profiles and with dimensional and structural requirements.

B. Provide panel profile, including major ribs and intermediate stiffening ribs, if any, for full length of panel.

C. Fabricate metal roof panel side laps with factory-installed captive gaskets or separator strips that provide a tight seal and prevent metal-to-metal contact, in a manner that will seal weathertight and minimize noise from movements within panel assembly.

D. Sheet Metal Accessories: Fabricate flashing and trim to comply with recommendations in SMACNA's "Architectural Sheet Metal Manual" that apply to the design, dimensions, metal, and other characteristics of item indicated.

1. Form exposed sheet metal accessories that are without excessive oil canning, buckling, and tool marks and that are true to line and levels indicated, with exposed edges folded back to form hems.
2. End Seams for Aluminum: Fabricate nonmoving seams with flat-lock seams. Form seams and seal with epoxy seam sealer. Rivet joints for additional strength.
3. End Seams for Other Than Aluminum: Fabricate nonmoving seams with flat-lock seams. Tin edges to be seamed, form seams, and solder.
4. Sealed Joints: Form nonexpansion but movable joints in metal to accommodate elastomeric sealant to comply with SMACNA standards.
5. Conceal fasteners and expansion provisions where possible. Exposed fasteners are not allowed on faces of accessories exposed to view.
6. Fabricate cleats and attachment devices of size and metal thickness recommended by SMACNA's "Architectural Sheet Metal Manual" or by metal roof panel manufacturer for application, but not less than thickness of metal being secured.

2.6 FINISHES

A. Comply with NAAMM's "Metal Finishes Manual for Architectural and Metal Products" for recommendations for applying and designating finishes.

B. Protect mechanical and painted finishes on exposed surfaces from damage by applying a strippable, temporary protective covering before shipping.

C. Appearance of Finished Work: Noticeable variations in same piece are not acceptable. Variations in appearance of adjoining components are acceptable if they are within the range of approved Samples and are assembled or installed to minimize contrast.

2.7 UNDERLAYMENT MATERIALS

A. Self-Adhering, High-Temperature Sheet: 30 to 40 mils (0.76 to 1.0 mm) thick minimum, consisting of slip-resisting, polyethylene-film top surface laminated to layer of butyl or SBS-modified asphalt adhesive, with release-paper backing; cold applied. Provide primer when recommended by underlayment manufacturer.

1. Thermal Stability: Stable after testing at 240 deg F (116 deg C); ASTM D 1970.
2. Low-Temperature Flexibility: Passes after testing at minus 20 deg F (29 deg C); ASTM D 1970.
3. Products: Subject to compliance with requirements, provide one of the following:
   a. Carlisle Coatings & Waterproofing Inc., Div. of Carlisle Companies Inc.; CCW WIP 300HT.
   b. Grace Construction Products; a unit of Grace, W. R. & Co.; Ultra.
   c. Owens Corning; WeatherLock Metal High Temperature Underlayment.

2.8 SUBSTRATE BOARDS

A. Glass-Mat Gypsum Sheathing Board: ASTM C 1177/C 1177M.

1. Type and Thickness: Regular, 5/8 inch.
2. Product: Subject to compliance with requirements, provide “DensDeck” Roof Board by Georgia-Pacific Corporation.

B. Substrate-Board Fasteners: Factory-coated steel fasteners and metal or plastic plates complying with corrosion-resistance provisions in FMG 4470, designed for fastening substrate board to substrate.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine substrates, areas, and conditions, with Installer present, for compliance with requirements for installation tolerances, metal roof panel supports, and other conditions affecting performance of the Work.

B. Examine solid roof sheathing and substrates to verify that sheathing joints are supported by framing or blocking and that installation is within flatness tolerances required by metal roof panel manufacturer.

C. Examine roughing-in for components and systems penetrating metal roof panels to verify actual locations of penetrations relative to seam locations of metal roof panels before metal roof panel installation.

D. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 PREPARATION

A. Clean substrates of substances harmful to insulation, including removing projections capable of interfering with insulation attachment.

B. Substrate Board: Install substrate boards over roof deck on entire roof surface. Attach with substrate-board fasteners.

1. Install substrate board with long joints in continuous straight lines, perpendicular to roof slopes with end joints staggered between rows. Tightly butt substrate boards together.

3.3 UNDERLAYMENT INSTALLATION

A. Self-Adhering Sheet Underlayment: Apply primer if required by manufacturer. Comply with temperature restrictions of underlayment manufacturer for installation. Apply at locations indicated on Drawings, wrinkle free, in shingle fashion to shed water, and with end laps of not less than 6 inches (150 mm) staggered 24 inches (600 mm) between courses. Overlap side edges not less than 3-1/2 inches (90 mm). Extend underlayment onto roof edge flashing. Roll laps with roller. Cover underlayment within 14 days.

1. Install under all metal roof panels.

B. Install flashings to cover underlayment to comply with requirements specified in Division 7 Section "Sheet Metal Flashing and Trim."

3.4 METAL ROOF PANEL INSTALLATION, GENERAL

A. Provide metal roof panels of full length from eave to ridge unless otherwise indicated or restricted by shipping limitations.

B. Install metal roof panels as follows:

1. Commence metal roof panel installation and install minimum of 300 sq. ft. (27.8 sq. m.) in presence of factory-authorized representative.
2. Field cutting of metal panels by torch is not permitted.
3. Locate and space fastenings in uniform vertical and horizontal alignment.
4. Provide metal closures at rake edges rake walls and each side of ridge caps.
5. Flash and seal metal roof panels with weather closures at eaves, rakes, and perimeter of all openings.
6. Install ridge caps as metal roof panel work proceeds.
7. Install metal flashing to allow moisture to run over and off metal roof panels.

C. Fasteners:

1. Steel Roof Panels: Use stainless-steel fasteners for surfaces exposed to the exterior and galvanized-steel fasteners for surfaces exposed to the interior.

D. Anchor Clips: Anchor metal roof panels and other components of the Work securely in place, using manufacturer's approved fasteners according to manufacturers' written instructions.

E. Metal Protection: Where dissimilar metals will contact each other or corrosive substrates, protect against galvanic action by painting contact surfaces with bituminous coating, by applying rubberized-asphalt underlayment to each contact surface, or by other permanent separation as recommended by metal roof panel manufacturer.

1. Coat back side of roof panels with bituminous coating where roof panels will contact wood, ferrous metal, or cementitious construction.

F. Joint Sealers: Install gaskets, joint fillers, and sealants where indicated and where required for weatherproof performance of metal roof panel assemblies. Provide types of gaskets, fillers, and sealants indicated or, if not indicated, types recommended by metal roof panel manufacturer.

1. Seal metal roof panel end laps with double beads of tape or sealant, full width of panel. Seal side joints where recommended by metal roof panel manufacturer.
2. Prepare joints and apply sealants to comply with requirements in Division 7 Section "Joint Sealants."

3.5 METAL ROOF PANEL INSTALLATION

A. BattenLock Metal Roof Panels: Fasten metal roof panels to supports with fasteners at each lapped joint at location and spacing recommended by manufacturer.

1. Apply panels and associated items for neat and weathertight enclosure. Avoid "panel creep" or application not true to line.
2. Lap ribbed or fluted sheets one full rib corrugation.
3. Provide metal-backed neoprene or EPDM washers under heads of exposed fasteners bearing on weather side of metal roof panels.

4. Locate and space exposed fasteners in uniform vertical and horizontal alignment. Use proper tools to obtain controlled uniform compression for positive seal without rupture of washer.
5. Install screw fasteners with power tools having controlled torque adjusted to compress washer tightly without damage to washer, screw threads, or panels. Install screws in predrilled holes.
6. Provide sealant tape at lapped joints of metal roof panels and between panels and protruding equipment, vents, and accessories.
7. Apply a continuous ribbon of sealant tape to weather-side surface of fastenings on end laps, and on side laps of nesting-type panels; on side laps of corrugated nesting-type, ribbed, or fluted panels; and elsewhere as needed to make panels weatherproof to driving rains.
8. At panel end splices, nest panels with minimum 6-inch (150-mm) end lap, sealed with butyl-rubber sealant and fastened together by interlocking clamping plates.

3.6 VAPOR RETARDER INSTALLATION

A. Install retarder on entire roof surface. Seal all seams and penetrations to result in a continuous membrane.

B. Seal to all penetrations with pre-fabricated boots or other methods approved by mfg.

3.7 ACCESSORY INSTALLATION

A. General: Install accessories with positive anchorage to building and weathertight mounting and provide for thermal expansion. Coordinate installation with flashings and other components.

1. Install components required for a complete metal roof panel assembly including trim, copings, ridge closures, seam covers, flashings, sealants, gaskets, fillers, closure strips, and similar items.

B. Flashing and Trim: Comply with performance requirements, manufacturer's written installation instructions, and SMACNA's "Architectural Sheet Metal Manual." Provide concealed fasteners where possible, and set units true to line and level as indicated. Install work with laps, joints, and seams that will be permanently watertight and weather resistant.

1. Install exposed flashing and trim that is without excessive oil canning, buckling, and tool marks and that is true to line and levels indicated, with exposed edges folded back to form hems. Install sheet metal flashing and trim to fit substrates and to result in waterproof and weather-resistant performance.
2. Expansion Provisions: Provide for thermal expansion of exposed flashing and trim. Space movement joints at a maximum of 10 feet (3 m) with no joints allowed within 24 inches (600 mm) of corner or intersection. Where lapped expansion provisions cannot be used or would not be sufficiently weather resistant and waterproof, form expansion joints of intermeshing hooked flanges, not less than 1 inch (25 mm) deep, filled with mastic sealant (concealed within joints).

C. Gutters: Coordinate with requirements in separate specification.

D. Downspouts: Coordinate with requirements in separate specification.

E. Pipe Flashing: Form flashing around pipe penetration and metal roof panels. Fasten and seal to metal roof panels as recommended by manufacturer.

3.8 ERECTION TOLERANCES

A. Installation Tolerances: In accordance with MCA's Guide Specification for Residential Metal Roofing.

3.9 FIELD QUALITY CONTROL

A. Manufacturer's Field Service: Engage a factory-authorized service representative to inspect metal roof panel installation, including accessories. Report results in writing.

B. Remove and replace applications of metal roof panels where inspections indicate that they do not comply with specified requirements.

C. Additional inspections, at Contractor's expense, will be performed to determine compliance of replaced or additional work with specified requirements.

3.10 CLEANING

A. Remove temporary protective coverings and strippable films, if any, as metal roof panels are installed unless otherwise indicated in manufacturer's written installation instructions. On completion of metal roof panel installation, clean finished surfaces as recommended by metal roof panel manufacturer. Maintain in a clean condition during construction.

B. Replace metal roof panels that have been damaged or have deteriorated beyond successful repair by finish touchup or similar minor repair procedures.

END OF SECTION 074113.16

SECTION 081113 - HOLLOW METAL DOORS AND FRAMES GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

A. Section includes hollow-metal work.

B. Related Requirements:

1. Section 087100 "Door Hardware" for door hardware for hollow-metal doors.
2. Section 084113 “Aluminum-Framed Entrances and Storefronts” for exterior frames

1.3 DEFINITIONS

A. Minimum Thickness: Minimum thickness of base metal without coatings according to NAAMM-HMMA 803 or SDI A250.8.

1.4 COORDINATION

A. Coordinate anchorage installation for hollow-metal frames. Furnish setting drawings, templates, and directions for installing anchorages, including sleeves, concrete inserts, anchor bolts, and items with integral anchors. Deliver such items to Project site in time for installation.

1.5 PREINSTALLATION MEETINGS

A. Preinstallation Conference: Conduct conference at Project site.

1.6 ACTION SUBMITTALS

A. Product Data: For each type of product.

1. Include construction details, material descriptions, core descriptions, fire-resistance ratings, temperature-rise ratings, and finishes.

B. Shop Drawings: Include the following:

1. Elevations of each door type.
2. Details of doors, including vertical- and horizontal-edge details and metal thicknesses.
3. Frame details for each frame type, including dimensioned profiles and metal thicknesses.
4. Locations of reinforcement and preparations for hardware.
5. Details of each different wall opening condition.
6. Details of anchorages, joints, field splices, and connections.
7. Details of accessories.
8. Details of moldings, removable stops, and glazing.
9. Details of conduit and preparations for power, signal, and control systems.

C. Schedule: Provide a schedule of hollow-metal work prepared by or under the supervision of supplier, using same reference numbers for details and openings as those on Drawings. Coordinate with final Door Hardware Schedule.

1.7 DELIVERY, STORAGE, AND HANDLING

A. Deliver hollow-metal work palletized, packaged, or crated to provide protection during transit and Project-site storage. Do not use nonvented plastic.

1. Provide additional protection to prevent damage to factory-finished units.

B. Deliver welded frames with two removable spreader bars across bottom of frames, tack welded to jambs and mullions.

C. Store hollow-metal work vertically under cover at Project site with head up. Place on minimum 4-inch-(102-mm-)high wood blocking. Provide minimum 1/4-inch (6-mm) space between each stacked door to permit air circulation.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

A. Manufacturers: Subject to compliance with requirements, available manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following:
   1. Ceco Door Products; an Assa Abloy Group company.
   2. Curries Company; an Assa Abloy Group company.
   3. Megamet Industries, Inc.
   4. Steelcraft; an Ingersoll-Rand company.
   5. Republic / Allegion
   6. Special-Lite

B. Source Limitations: Obtain hollow-metal work from single source from single manufacturer.

2.2 REGULATORY REQUIREMENTS

A. Fire-Rated Assemblies: Complying with NFPA 80 and listed and labeled by a qualified testing agency acceptable to authorities having jurisdiction for fire-protection ratings and temperature-rise limits indicated, based on testing at positive pressure according to NFPA 252 or UL 10C.
   1. Smoke- and Draft-Control Assemblies: Provide an assembly with gaskets listed and labeled for smoke and draft control by a qualified testing agency acceptable to authorities having jurisdiction, based on testing according to UL 1784 and installed in compliance with NFPA 105.

B. Fire-Rated, Borrowed-Light Assemblies: Complying with NFPA 80 and listed and labeled by a testing and inspecting agency acceptable to authorities having jurisdiction for fire-protection ratings indicated, based on testing according to NFPA 257 or UL 9.

2.3 INTERIOR AND EXTERIOR DOORS AND FRAMES [ADD 1]

A. Construct interior doors and frames to comply with the standards indicated for materials, fabrication, hardware locations, hardware reinforcement, tolerances, and clearances, and as specified.

B. Heavy-Duty Doors and Frames: SDI A250.8, Level 3, Model 2.
   1. Physical Performance: Level C according to SDI A250.4.
   2. Doors:
      a. Type: As indicated in the Door and Frame Schedule.
      b. Thickness: 1-3/4 inches (44.5 mm)
      c. Face: Cold-rolled steel sheet, minimum thickness of 0.059 inch (1.4 mm).
      d. Edge Construction: Model 2, Seamless
      e. Core: Manufacturer's standard kraft-paper honeycomb, polystyrene, polyurethane, or vertical steel-stiffener core at manufacturer's discretion.
   3. Frames:
      a. Materials: Cold-rolled steel sheet, minimum thickness of 0.074 inch.
      b. Construction: Face welded

~~2.4 HURRICANE RESISITANT DOORS AND FRAMES~~ [ADD 1]

~~A. Construct exterior doors and frames to comply with the standards indicated for materials, fabrication, hardware locations, hardware reinforcement, tolerances, and clearances, and as specified.~~

~~B. Basis of design: Special Lite SL-17 Pebble Grain Hybrid FRP Door or approved equal.~~
   ~~1. Physical Performance: Must meet or exceed ASTM E1886 and ASTM E1996 Level D as known as "Large Missile Impact"~~
   ~~2. Door:~~
      ~~a. Type: As indicated in the Door and Frame Schedule.~~
      ~~b. Thickness: 1 3/4 inches (44.5 mm.)~~
      ~~c. Stiles & Rails:~~

1) Aluminum extrusions made from 6063 aluminum alloys with a minimum temper of T5.
2) Minimum 2-5/16" deep one-piece extrusion with have integral reglets to accept face sheet on both interior and exterior side of door which secure face sheet into place and permit flush appearance.
3) Screw or snap-in place applied caps are not acceptable.
4) Top rails must have integral legs for interlocking continuous extruded aluminum flush cap.
5) Bottom rails must have integral legs for interlocking continuous weather bar with single nylon brush weather stripping or manually adjustable SL-301 door bottom with two nylon brush weather stripping.
6) Meeting stiles to include integral pocket to accept pile brush weather seal.

d. Corners:
1) Mitered.
2) Secured with 3/8" diameter full width steel tie rod through extruded splines top and bottom which are integral to standard tubular shaped rails.
3) 1-1/4" x 1-1/4" x 3/16" 6061 aluminum angle reinforcement at corner to give strong, flat surface for locking hex nut to bear on.
4) Weld, glue, or other methods of corner joinery are not acceptable.

e. Face:
1) Exterior:
a) 0.120" thick, pebble texture, through color with SpecLite 3® integral surfaseal film FRP sheet.
b) Optional painted finish consult manufacturer.
c) Class C standard.
2) Interior:
a) 0.120" thick, pebble texture, through color with SpecLite 3® integral surfaseal film FRP sheet.
b) Optional painted finish consult manufacturer.
c) Class C standard optional Class A available consult manufacturer.
3) Attachment of face sheet.
a) Extruded stiles and rails to have integral reglets to accept face sheet on both interior and exterior side of door which secure face sheet into place and permit flush appearance.
b) Use of glue to bond face sheet to core or extrusions is not acceptable.

f. Core:
1) Poured in place polyurethane foam.
2) Laid in foam cores are not acceptable.
3) Foam Plastic Insulated Doors: IBC 2603.4.
a) Foam plastic shall be separated from the interior of a building by an approved thermal barrier.
b) Approved thermal barrier must meet the acceptance criteria of the Temperature Transmission Fire Test and Integrity Fire Test as stated in NFPA 275.
c) IBC 2603.4.1.7 foam plastic insulation, having a flame spread index less than 75 and a smoke developed index of not more than 450 shall be permitted as a door core when the face is metal minimum 0.032" aluminum or 0.016" steel.
d) Standard door assembly can be tested to show it meets these requirements without the use of thermal barrier. If no independent testing conducted all doors with foam plastic core must have a thermal barrier.

g. Cutouts:
1) Manufacture doors with cutouts for required vision lites, louvers, and panels.

h. Reinforcements.
1) Aluminum extrusions made from 6061 or 6063 aluminum alloys.
2) Sheet and plate to conform to ASTM-B209.
3) Alloy and temper to be selected by manufacturer for strength, corrosion resistance, and application of required finish, and control of color.
4) Bars and tubes to meet ASTM-B221.

3. Frames: Section 084113 "Aluminum-Framed Entrances and Storefronts" for exterior frames.

2.5 FRAME ANCHORS

A. Jamb Anchors:

1. Masonry Type: Adjustable strap-and-stirrup or T-shaped anchors to suit frame size, not less than 0.042 inch (1.0 mm) thick, with corrugated or perforated straps not less than 2 inches (51 mm) wide by 10 inches (254 mm) long; or wire anchors not less than 0.177 inch (4.5 mm) thick.
2. Stud-Wall Type: Designed to engage stud, welded to back of frames; not less than 0.042 inch (1.0 mm) thick.
3. Compression Type for Drywall Slip-on Frames: Adjustable compression anchors.
4. Postinstalled Expansion Type for In-Place Concrete or Masonry: Minimum 3/8-inch- (9.5-mm-) diameter bolts with expansion shields or inserts. Provide pipe spacer from frame to wall, with throat reinforcement plate, welded to frame at each anchor location.

B. Floor Anchors: Formed from same material as frames, minimum thickness of 0.042 inch (1.0 mm), and as follows:
1. Monolithic Concrete Slabs: Clip-type anchors, with two holes to receive fasteners.
2. Separate Topping Concrete Slabs: Adjustable-type anchors with extension clips, allowing not less than 2-inch (51-mm) height adjustment. Terminate bottom of frames at finish floor surface.

2.6 MATERIALS

A. Cold-Rolled Steel Sheet: ASTM A 1008/A 1008M, Commercial Steel (CS), Type B; suitable for exposed applications.

B. Hot-Rolled Steel Sheet: ASTM A 1011/A 1011M, Commercial Steel (CS), Type B; free of scale, pitting, or surface defects; pickled and oiled.

C. Metallic-Coated Steel Sheet: ASTM A 653/A 653M, Commercial Steel (CS), Type B.

D. Frame Anchors: ASTM A 879/A 879M, Commercial Steel (CS), 04Z (12G) coating designation; mill phosphatized.
1. For anchors built into exterior walls, steel sheet complying with ASTM A 1008/A 1008M or ASTM A 1011/A 1011M, hot-dip galvanized according to ASTM A 153/A 153M, Class B.

E. Inserts, Bolts, and Fasteners: Hot-dip galvanized according to ASTM A 153/A 153M.

F. Power-Actuated Fasteners in Concrete: Fastener system of type suitable for application indicated, fabricated from corrosion-resistant materials, with clips or other accessory devices for attaching hollow-metal frames of type indicated.

G. Grout: ASTM C 476, except with a maximum slump of 4 inches (102 mm), as measured according to ASTM C 143/C 143M.

H. Mineral-Fiber Insulation: ASTM C 665, Type I (blankets without membrane facing); consisting of fibers manufactured from slag or rock wool; with maximum flame-spread and smoke-developed indexes of 25 and 50, respectively; passing ASTM E 136 for combustion characteristics.

I. Glazing: Comply with requirements in Section 08800 "Glazing."

J. Bituminous Coating: Cold-applied asphalt mastic, compounded for 15-mil (0.4-mm) dry film thickness per coat. Provide inert-type noncorrosive compound free of asbestos fibers, sulfur components, and other deleterious impurities.

2.7 FABRICATION

A. Fabricate hollow-metal work to be rigid and free of defects, warp, or buckle. Accurately form metal to required sizes and profiles, with minimum radius for metal thickness. Where practical, fit and assemble units in manufacturer's plant. To ensure proper assembly at Project site, clearly identify work that cannot be permanently factory assembled before shipment.

B. Hollow-Metal Doors:
1. Steel-Stiffened Door Cores: Provide minimum thickness 0.026 inch (0.66 mm), steel vertical stiffeners of same material as face sheets extending full-door height, with vertical webs spaced not more than 6 inches (152 mm) apart. Spot weld to face sheets no more than 5 inches (127 mm) o.c. Fill spaces between stiffeners with glass- or mineral-fiber insulation.
2. Fire Door Cores: As required to provide fire-protection and temperature-rise ratings indicated.
3. Vertical Edges for Single-Acting Doors: Bevel edges 1/8 inch in 2 inches at latch stile.
4. Top Edge Closures: Close top edges of doors with inverted closures of same material as face sheets.
5. Bottom Edge Closures: Close bottom edges of doors where required for attachment of weather stripping with end closures or channels of same material as face sheets.
6. Exterior Doors: Provide weep-hole openings in bottoms of exterior doors to permit moisture to escape. Seal joints in top edges of doors against water penetration.

7. Astragals: Provide overlapping astragal on one leaf of pairs of doors where required by NFPA 80 for fire-performance rating or where indicated. Extend minimum 3/4 inch (19 mm) beyond edge of door on which astragal is mounted or as required to comply with published listing of qualified testing agency.

C. Hollow-Metal Frames: Where frames are fabricated in sections due to shipping or handling limitations, provide alignment plates or angles at each joint, fabricated of same thickness metal as frames.
   1. Sidelight and Transom Frames: Provide closed tubular members with no visible face seams or joints, fabricated from same material as door frame. Fasten members at crossings and to jambs by butt welding.
   2. Provide countersunk, flat- or oval-head exposed screws and bolts for exposed fasteners unless otherwise indicated.
   3. Grout Guards: Weld guards to frame at back of hardware mortises in frames to be grouted.
   4. Floor Anchors: Weld anchors to bottoms of jambs with at least four spot welds per anchor; however, for slip-on drywall frames, provide anchor clips or countersunk holes at bottoms of jambs.
   5. Jamb Anchors: Unless required differently per labeling, provide number and spacing of anchors as follows:
      a. Masonry Type: Locate anchors not more than 16 inches (406 mm) from top and bottom of frame. Space anchors not more than 32 inches (813 mm) o.c., to match coursing, and as follows:
         1) Three anchors per jamb from up to 90 inches (1524 to 2286 mm) high.
         2) Four anchors per jamb from 90 to 120 inches (2286 to 3048 mm) high.
         3) Four anchors per jamb plus one additional anchor per jamb for each 24 inches (610 mm) or fraction thereof above 120 inches (3048 mm) high.
      b. Stud-Wall Type: Locate anchors not more than 18 inches (457 mm) from top and bottom of frame. Space anchors not more than 32 inches (813 mm) o.c. and as follows:
         1) Three anchors per jamb up to 60 inches (1524 mm) high.
         2) Four anchors per jamb from 60 to 90 inches (1524 to 2286 mm) high.
         3) Five anchors per jamb from 90 to 96 inches (2286 to 2438 mm) high.
         4) Five anchors per jamb plus one additional anchor per jamb for each 24 inches (610 mm) or fraction thereof above 96 inches (2438 mm) high.
      c. Post installed Expansion Type: Locate anchors not more than 6 inches (152 mm) from top and bottom of frame. Space anchors not more than 26 inches (660 mm) o.c.
   6. Head Anchors: Two anchors per head for frames more than 42 inches (1067 mm) wide and mounted in metal-stud partitions.
   7. Door Silencers: Except on weather-stripped frames, drill stops to receive door silencers as follows. Keep holes clear during construction.
      a. Single-Door Frames: Drill stop in strike jamb to receive three door silencers.
      b. Double-Door Frames: Drill stop in head jamb to receive two door silencers.

D. Fabricate concealed stiffeners and edge channels from either cold- or hot-rolled steel sheet.

E. Hardware Preparation: Factory prepare hollow-metal work to receive templated mortised hardware; include cutouts, reinforcement, mortising, drilling, and tapping according to SDI A250.6, the Door Hardware Schedule, and templates.
   1. Reinforce doors and frames to receive nontemplated, mortised, and surface-mounted door hardware.
   2. Comply with applicable requirements in SDI A250.6 and BHMA A156.115 for preparation of hollow-metal work for hardware.

F. Stops and Moldings: Provide stops and moldings around glazed lites and louvers where indicated. Form corners of stops and moldings with [mitered] hairline joints.
   1. Single Glazed Lites: Provide fixed stops and moldings welded on secure side of hollow-metal work.
   2. Multiple Glazed Lites: Provide fixed and removable stops and moldings so that each glazed lite is capable of being removed independently.
   3. Provide fixed frame moldings on outside of exterior and on secure side of interior doors and frames.
   4. Provide loose stops and moldings on inside of hollow-metal work.
   5. Coordinate rabbet width between fixed and removable stops with glazing and installation types indicated.

2.8 STEEL FINISHES

A. Prime Finish: Clean, pretreat, and apply manufacturer's standard primer.
   1. Shop Primer: Manufacturer's standard, fast-curing, lead- and chromate-free primer complying with SDI A250.10; recommended by primer manufacturer for substrate; compatible with substrate and field-applied coatings despite prolonged exposure.

2.9 ACCESSORIES

A. Louvers: Provide louvers for interior doors, where indicated, which comply with SDI 111C, with blades or baffles formed of 0.020-inch- (0.5-mm-) thick, cold-rolled steel sheet set into 0.032-inch- (0.8-mm-) thick steel frame.
   1. Sightproof Louver: Stationary louvers constructed with inverted-V or inverted-Y blades.
   2. Lightproof Louver: Stationary louvers constructed with baffles to prevent light from passing from one side to the other.

B. Mullions and Transom Bars: Join to adjacent members by welding or rigid mechanical anchors.

C. Grout Guards: Formed from same material as frames, not less than 0.016 inch (0.4 mm) thick.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine substrates, areas, and conditions, with Installer present, for compliance with requirements for installation tolerances and other conditions affecting performance of the Work.

B. Examine roughing-in for embedded and built-in anchors to verify actual locations before frame 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.

3.2 PREPARATION

A. Remove welded-in shipping spreaders installed at factory. Restore exposed finish by grinding, filling, and dressing, as required to make repaired area smooth, flush, and invisible on exposed faces.

B. Drill and tap doors and frames to receive nontemplated, mortised, and surface-mounted door hardware.

3.3 INSTALLATION

A. General: Install hollow-metal work plumb, rigid, properly aligned, and securely fastened in place. Comply with Drawings and manufacturer's written instructions.

B. Hollow-Metal Frames: Install hollow-metal frames of size and profile indicated. Comply with SDI A250.11 or NAAMM-HMMA 840 as required by standards specified.

   1. Set frames accurately in position; plumbed, aligned, and braced securely until permanent anchors are set. After wall construction is complete, remove temporary braces, leaving surfaces smooth and undamaged.

      a. At fire-rated openings, install frames according to NFPA 80.
      b. Where frames are fabricated in sections because of shipping or handling limitations, field splice at approved locations by welding face joint continuously; grind, fill, dress, and make splice smooth, flush, and invisible on exposed faces.
      c. Install frames with removable stops located on secure side of opening.
      d. Remove temporary braces necessary for installation only after frames have been properly set and secured.
      e. Check plumb, square, and twist of frames as walls are constructed. Shim as necessary to comply with installation tolerances.
      f. Field apply bituminous coating to backs of frames that will be filled with grout containing antifreezing agents.

   2. Floor Anchors: Provide floor anchors for each jamb and mullion that extends to floor, and secure with postinstalled expansion anchors.

      a. Floor anchors may be set with power-actuated fasteners instead of postinstalled expansion anchors if so indicated and approved on Shop Drawings.

3. Metal-Stud Partitions: Solidly pack mineral-fiber insulation inside frames.
4. Masonry Walls: Coordinate installation of frames to allow for solidly filling space between frames and masonry with grout.
5. Installation Tolerances: Adjust hollow-metal door frames for squareness, alignment, twist, and plumb to the following tolerances:

    a. Squareness: Plus or minus 1/16 inch (1.6 mm), measured at door rabbet on a line 90 degrees from jamb perpendicular to frame head.
    b. Alignment: Plus or minus 1/16 inch (1.6 mm), measured at jambs on a horizontal line parallel to plane of wall.
    c. Twist: Plus or minus 1/16 inch (1.6 mm), measured at opposite face corners of jambs on parallel lines, and perpendicular to plane of wall.
    d. Plumbness: Plus or minus 1/16 inch (1.6 mm), measured at jambs at floor.

C. Hollow-Metal Doors: Fit hollow-metal doors accurately in frames, within clearances specified below. Shim as necessary.

1. Non-Fire-Rated Steel Doors:

    a. Between Door and Frame Jambs and Head: 1/8 inch (3.2 mm) plus or minus 1/32 inch (0.8 mm).
    b. Between Edges of Pairs of Doors: 1/8 inch (3.2 mm) to 1/4 inch (6.3 mm) plus or minus 1/32 inch (0.8 mm).
    c. At Bottom of Door: 5/8 inch (15.8 mm) plus or minus 1/32 inch (0.8 mm).
    d. Between Door Face and Stop: 1/16 inch (1.6 mm) to 1/8 inch (3.2 mm) plus or minus 1/32 inch (0.8 mm).

2. Fire-Rated Doors: Install doors with clearances according to NFPA 80.

3.4 ADJUSTING AND CLEANING

A. Final Adjustments: Check and readjust operating hardware items immediately before final inspection. Leave work in complete and proper operating condition. Remove and replace defective work, including hollow-metal work that is warped, bowed, or otherwise unacceptable.

B. Remove grout and other bonding material from hollow-metal work immediately after installation.

C. Prime-Coat Touchup: Immediately after erection, sand smooth rusted or damaged areas of prime coat and apply touchup of compatible air-drying, rust-inhibitive primer.

D. Metallic-Coated Surface Touchup: Clean abraded areas and repair with galvanizing repair paint according to manufacturer's written instructions.

END OF SECTION 081113

SECTION 085113 - ALUMINUM WINDOWS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

A. Section includes aluminum windows for exterior locations.
   1. Ticket Booth windows
   2. Press Box windows

1.3 PREINSTALLATION MEETINGS

A. Preinstallation Conference: Conduct conference at Project site.
   1. Review and finalize construction schedule and verify availability of materials, Installer's personnel, equipment, and facilities needed to make progress and avoid delays.
   2. Review and discuss the finishing of aluminum windows that is required to be coordinated with the finishing of other aluminum work for color and finish matching.
   3. Review, discuss, and coordinate the interrelationship of aluminum windows with other exterior wall components. Include provisions for anchoring, flashing, weeping, sealing perimeters, and protecting finishes.
   4. Review and discuss the sequence of work required to construct a watertight and weathertight exterior building envelope.
   5. Inspect and discuss the condition of substrate and other preparatory work performed by other trades.

1.4 ACTION SUBMITTALS

A. Product Data: For each type of product.
   1. Include construction details, material descriptions, glazing and fabrication methods, dimensions of individual components and profiles, hardware, and finishes for aluminum windows.

B. Shop Drawings: For aluminum windows.
   1. Include plans, elevations, sections, hardware, accessories, insect screens, operational clearances, and details of installation, including anchor, flashing, and sealant installation.

1.5 INFORMATIONAL SUBMITTALS

A. Qualification Data: For manufacturer and Installer.

B. Product Test Reports: For each type of aluminum window, for tests performed by a qualified testing agency.

C. Field quality-control reports.

D. Sample Warranties: For manufacturer's warranties.

1.6 QUALITY ASSURANCE

A. Manufacturer Qualifications: A manufacturer capable of fabricating aluminum windows that meet or exceed performance requirements indicated and of documenting this performance by test reports and calculations.

1.7 WARRANTY

A. Manufacturer's Warranty: Manufacturer agrees to repair or replace aluminum windows that fail in materials or workmanship within specified warranty period.
   1. Failures include, but are not limited to, the following:
      a. Failure to meet performance requirements.
      b. Structural failures including excessive deflection, water leakage, condensation, and air infiltration.
      c. Faulty operation of movable sash and hardware.
      d. Deterioration of materials and finishes beyond normal weathering.
      e. Failure of insulating glass.
   2. Warranty Period:
      a. Window: 10 years from date of Substantial Completion.
      b. Glazing Units: 10 years from date of Substantial Completion.

c. Aluminum Finish: 20 years from date of Substantial Completion.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

A. Source Limitations: Obtain aluminum windows from single source from single manufacturer.

2.2 WINDOW PERFORMANCE REQUIREMENTS

A. Product Standard: Comply with AAMA/WDMA/CSA 101/I.S.2/A440 for definitions and minimum standards of performance, materials, components, accessories, and fabrication unless more stringent requirements are indicated.
   1. Window Certification: AAMA certified with label attached to each window.

B. Performance Class and Grade: AAMA/WDMA/CSA 101/I.S.2/A440 as follows:
   1. Minimum Performance Class: AW.
   2. Minimum Performance Grade: 40.

C. Thermal Transmittance: NFRC 100 maximum whole-window U-factor of 0.29 Btu/sq. ft. x h x deg F (2.0 W/sq. m x K).

D. Solar Heat-Gain Coefficient (SHGC): NFRC 200 maximum whole-window SHGC of 0.40.

E. Visibility Transmittance: 0.47 Maximum

F. Condensation-Resistance Factor (CRF): Provide aluminum windows tested for thermal performance according to AAMA 1503, showing a CRF of 66.

G. Sound Transmission Class (STC): Rated for not less than 35 STC when tested for laboratory sound transmission loss according to ASTM E90 and determined by ASTM E413.

2.3 ALUMINUM WINDOWS

A. Basis-of-Design: EFCO Series HX32 Thermal AW-PG60-H Single Hung
   1. Other Manufacturers: Subject to compliance with requirements, provide products by one of the following:
      a. Boyd Aluminum Mfg. Co.
      b. Graham Architectural Products Corporation.
      c. Kawneer Company, Inc.; Arconic Corporation.
      d. Peerless Products Inc.
      e. TRACO.
      f. Wausau Window and Wall Systems; Apogee Wausau Group, Inc.
      g. Winco Window Company, Inc.
   2. Ticket Booth Window
      a. QuickServe SUI series, SUI 200-1, Manual Vertical Lift Window

B. Types: Provide the following types in locations indicated on Drawings:
   1. Single hung.

C. Frames and Sashes: Aluminum extrusions complying with AAMA/WDMA/CSA 101/I.S.2/A440.
   1. Thermally Improved Construction: Fabricate frames, sashes, and muntins with an integral, concealed, low-conductance thermal barrier located between exterior materials and window members exposed on interior side in a manner that eliminates direct metal-to-metal contact.

D. Windborne-Debris-Impact-Resistant Laminated Glass: ASTM C1172 with two plies of float glass.
   1. Float Glass: Fully tempered.
   2. Inner Ply: Clear.
   3. Interlayer: 0.090 inch (2.29 mm).
   4. Outer Ply: Gray.
   5. Low-E Coating: Pyrolytic on second surface.

E. Glazing System: Manufacturer's standard factory-glazing system that produces weathertight seal.

F. Hardware, General: Provide manufacturer's standard hardware fabricated from aluminum, stainless steel, carbon steel complying with AAMA 907, or other corrosion-resistant material compatible with adjacent materials; designed to smoothly operate, tightly close, and securely lock windows, and sized to accommodate sash weight and dimensions.
   1. Exposed Hardware Color and Finish:As selected by Architect from manufacturer's full range.

G. Hung Window Hardware:
   1. Counterbalancing Mechanism: Complying with AAMA 902, concealed, of size and capacity to hold sash stationary at any open position.

2. Locks and Latches: Allow unobstructed movement of the sash across adjacent sash in direction indicated and operated from the inside only.
3. Tilt Latch: Releasing latch allows sash to pivot about horizontal axis to facilitate cleaning exterior surfaces from the interior.

H. Weather Stripping: Provide full-perimeter weather stripping for each operable sash unless otherwise indicated.

I. Fasteners: Noncorrosive and compatible with window members, trim, hardware, anchors, and other components.
1. Exposed Fasteners: Do not use exposed fasteners to greatest extent possible. For application of hardware, use fasteners that match finish hardware being fastened.

2.4 ACCESSORIES

A. Subsills: Nonthermal, extruded-aluminum subsills in configurations indicated on Drawings. Provide “End Dams” as indicated on Drawings.

B. Sill Extensions: Manufacturer’s standard extruded aluminum extensions as indicated on Drawings.

C. Receptor System: Two-piece, snap-together, thermally broken, extruded-aluminum receptor system that anchors windows in place.

2.5 FABRICATION

A. Fabricate aluminum windows in sizes indicated. Include a complete system for assembling components and anchoring windows.

B. Glaze aluminum windows in the factory.

C. Weather strip each operable sash to provide weathertight installation.

D. Weep Holes: Provide weep holes and internal passages to conduct infiltrating water to exterior.

E. Provide water-shed members above side-hinged sashes and similar lines of natural water penetration.

F. Mullions: Provide mullions and cover plates, matching window units, complete with anchors for support to structure and installation of window units. Allow for erection tolerances and provide for movement of window units due to thermal expansion and building deflections. Provide mullions and cover plates capable of withstanding design wind loads of window units.

G. Complete fabrication, assembly, finishing, hardware application, and other work in the factory to greatest extent possible. Disassemble components only as necessary for shipment and installation.

2.6 GENERAL FINISH REQUIREMENTS

A. Comply with NAAMM's "Metal Finishes Manual" for recommendations for applying and designating finishes.

B. Protect mechanical finishes on exposed surfaces from damage by applying a strippable, temporary protective covering before shipping.

C. Appearance of Finished Work: Noticeable variations in same piece are not acceptable. Variations in appearance of adjoining components are acceptable if they are within the range of approved Samples and are assembled or installed to minimize contrast.

2.7 ALUMINUM FINISHES

A. Finish designations prefixed by AA comply with the system established by the Aluminum Association for designating aluminum finishes.

B. Class II, Clear Anodic Finish: AA-M12C22A31 (Mechanical Finish: nonspecular as fabricated; Chemical Finish: etched, medium matte; Anodic Coating: Architectural Class II, clear coating 0.010 mm or thicker) complying with AAMA 611.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine openings, substrates, structural support, anchorage, and conditions, with Installer present, for compliance with requirements for installation tolerances and other conditions affecting performance of the Work.

B. Verify rough opening dimensions, levelness of sill plate, and operational clearances.

C. Examine wall flashings, vapor retarders, water and weather barriers, and other built-in components to ensure weathertight window installation.

D. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 INSTALLATION

A. Comply with manufacturer's written instructions for installing windows, hardware, accessories, and other components. For installation procedures and requirements not addressed in manufacturer's written instructions, comply with installation requirements in ASTM E2112.

B. Install windows level, plumb, square, true to line, without distortion or impeding thermal movement, anchored securely in place to structural support, and in proper relation to wall flashing and other adjacent construction to produce weathertight construction.

C. Install windows and components to drain condensation, water penetrating joints, and moisture migrating within windows to the exterior.

D. Separate aluminum and other corrodible surfaces from sources of corrosion or electrolytic action at points of contact with other materials.

3.3 ADJUSTING, CLEANING, AND PROTECTION

A. Adjust operating sashes and hardware for a tight fit at contact points and weather stripping for smooth operation and weathertight closure.

B. Clean exposed surfaces immediately after installing windows. Avoid damaging protective coatings and finishes. Remove excess sealants, glazing materials, dirt, and other substances.

1. Keep protective films and coverings in place until final cleaning.

C. Remove and replace glass that has been broken, chipped, cracked, abraded, or damaged during construction period.

D. Protect window surfaces from contact with contaminating substances resulting from construction operations. If contaminating substances do contact window surfaces, remove contaminants immediately according to manufacturer's written instructions.

END OF SECTION 085113

SECTION 08 71 00
DOOR HARDWARE

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

A. This Section includes commercial door hardware for the following:
1. Swinging doors.
2. Other doors to the extent indicated.

B. Door hardware includes, but is not necessarily limited to, the following:
1. Mechanical door hardware.
2. Electronic door hardware
3. Cylinders specified for doors in other sections.
4. Electronic access control components and cabling.

C. Related Sections:
1. Division 06 Section “Rough Carpentry”.
2. Division 06 Section “Finish Carpentry”.
3. Division 08 Section “Operations and Maintenance”.
4. Division 08 Section “Door Schedule”.
5. Division 08 Section “Door Hardware Schedule”.
6. Division 08 Section “Hollow Metal Doors and Frames”.
7. Division 08 Section “Flush Wood Doors”.
8. Division 08 Section “Aluminum-Framed Entrances and Storefronts”.

D. Codes and References: Comply with the version year adopted by the Authority Having Jurisdiction.
1. ANSI A117.1 - Accessible and Usable Buildings and Facilities.
2. ICC/IBC - International Building Code.
3. NFPA 70 - National Electrical Code.
4. NFPA 80 - Fire Doors and Windows.
5. NFPA 101 - Life Safety Code.
6. NFPA 105 - Installation of Smoke Door Assemblies.
7. State Building Codes, Local Amendments.

E. Standards: All hardware specified herein shall comply with the following industry standards:
1. ANSI/BHMA Certified Product Standards - A156 Series
2. UL10C – Positive Pressure Fire Tests of Door Assemblies

1.3 SUBMITTALS

A. Product Data: Manufacturer's product data sheets including installation details, material descriptions, dimensions of individual components and profiles, operational descriptions and finishes.

B. Door Hardware Schedule: Prepared by or under the supervision of supplier, detailing fabrication and assembly of door hardware, as well as procedures and diagrams. Coordinate the final Door Hardware Schedule with doors, frames, and related work to ensure proper size, thickness, hand, function, and finish of door hardware.
1. Format: Comply with scheduling sequence and vertical format in DHI's "Sequence and Format for the Hardware Schedule."
2. Organization: Organize the Door Hardware Schedule into door hardware sets indicating complete designations of every item required for each door or opening. Organize door hardware sets in same order as in the Door Hardware Sets at the end of Part 3. Submittals that do not follow the same format and order as the Door Hardware Sets will be rejected and subject to resubmission.
3. Content: Include the following information:
    a. Type, style, function, size, label, hand, and finish of each door hardware item.
    b. Manufacturer of each item.

c. Fastenings and other pertinent information.
d. Location of door hardware set, cross-referenced to Drawings, both on floor plans and in door and frame schedule.
e. Door and frame sizes and materials.

4. Submittal Sequence: Submit the final Door Hardware Schedule at earliest possible date, particularly where approval of the Door Hardware Schedule must precede fabrication of other work that is critical in the Project construction schedule. Include Product Data, Samples, Shop Drawings of other work affected by door hardware, and other information essential to the coordinated review of the Door Hardware Schedule.

C. Keying Schedule: After a keying meeting with the owner has taken place prepare a separate keying schedule detailing final instructions. Submit the keying schedule in electronic format. Include keying system explanation, door numbers, key set symbols, hardware set numbers and special instructions. Owner must approve submitted keying schedule prior to the ordering of permanent cylinders/cores.

1.4 QUALITY ASSURANCE

A. Manufacturers Qualifications: Engage qualified manufacturers with a minimum 5 years of documented experience in producing hardware and equipment similar to that indicated for this Project and that have a proven record of successful in-service performance.

B. Installer Qualifications: A minimum 3 years documented experience installing both standard and electrified door hardware similar in material, design, and extent to that indicated for this Project and whose work has resulted in construction with a record of successful in-service performance.

C. Door Hardware Supplier Qualifications: Experienced commercial door hardware distributors with a minimum 5 years documented experience supplying both mechanical and electromechanical hardware installations comparable in material, design, and extent to that indicated for this Project. Supplier recognized as a factory direct distributor by the manufacturers of the primary materials with a warehousing facility in Project's vicinity. Supplier to have on staff a certified Architectural Hardware Consultant (AHC) available during the course of the Work to consult with Contractor, Architect, and Owner concerning both standard and electromechanical door hardware and keying.

D. Source Limitations: Obtain each type and variety of door hardware specified in this section from a single source unless otherwise indicated.

E. Keying Conference: Conduct conference to comply with requirements in Division 01 Section "Project Meetings." Keying conference to incorporate the following criteria into the final keying schedule document:
1. Plans for existing key system expansion.
2. Requirements for key control storage.
3. Installation of permanent keys, and software.
4. Address and requirements for delivery of keys.

F. Pre-installation Conference: Conduct coordination conference in compliance with requirements in Division 01 Section "Project Meetings" with attendance by representatives of Supplier(s), Installer(s), and Contractor(s) to review proper methods and the procedures for receiving, handling, and installing door hardware.
1. Prior to installation of door hardware, conduct a project specific training meeting to instruct the installing contractors' personnel on the proper installation and adjustment of their respective products. Product training to be attended by installers of door hardware (including electromechanical hardware) for aluminum, hollow metal and wood doors. Training will include the use of installation manuals, hardware schedules, templates and physical product samples as required.
2. Inspect and discuss electrical roughing-in, power supply connections, and other preparatory work performed by other trades.
3. Review sequence of operation narratives for each unique access controlled opening.
4. Review and finalize construction schedule and verify availability of materials.
5. Review the required inspecting, testing, commissioning, and demonstration procedures

1.5 DELIVERY, STORAGE, AND HANDLING

A. Inventory door hardware on receipt and provide secure lock-up and shelving for door hardware delivered to Project site. Do not store electronic access control hardware, software or accessories at Project site without prior authorization.

B. Tag each item or package separately with identification related to the final Door Hardware Schedule, and include basic installation instructions with each item or package.

C. Deliver, as applicable, permanent keys, cylinders, cores, access control credentials, software and related accessories directly to Owner via registered mail or overnight package service. Instructions for delivery to the Owner shall be established at the "Keying Conference".

1.6 COORDINATION

A. Templates: Obtain and distribute to the parties involved templates for doors, frames, and other work specified to be factory prepared for installing standard and electrified hardware. Check Shop Drawings of other work to confirm that adequate provisions are made for locating and installing hardware to comply with indicated requirements.

B. Door and Frame Preparation: Doors and corresponding frames are to be prepared, reinforced and pre-wired (if applicable) to receive the installation of the specified electrified, monitoring, signaling and access control system hardware without additional in-field modifications.

1.7 WARRANTY

A. General Warranty: Reference Division 01, General Requirements. Special warranties specified in this Article shall not deprive Owner of other rights Owner may have under other provisions of the Contract Documents and shall be in addition to, and run concurrent with, other warranties made by Contractor under requirements of the Contract Documents.

B. Warranty Period: Written warranty, executed by manufacturer(s), agreeing to repair or replace components of standard and electrified door hardware that fails in materials or workmanship within specified warranty period after final acceptance by the Owner. Failures include, but are not limited to, the following:
1. Structural failures including excessive deflection, cracking, or breakage.
2. Faulty operation of the hardware.
3. Deterioration of metals, metal finishes, and other materials beyond normal weathering.
4. Electrical component defects and failures within the systems operation.

C. Standard Warranty Period: One year from date of Substantial Completion, unless otherwise indicated.

D. Special Warranty Periods:
1. Ten years for mortise locks and latches.
2. Five years for exit hardware.
3. Twenty five years for manual surface door closer bodies.

PART 2 - PRODUCTS

2.1 SCHEDULED DOOR HARDWARE

A. General: Provide door hardware for each door to comply with requirements in Door Hardware Sets and each referenced section that products are to be supplied under.

B. Designations: Requirements for quantity, item, size, finish or color, grade, function, and other distinctive qualities of each type of door hardware are indicated in the Door Hardware Sets at the end of Part 3. Products are identified by using door hardware designations, as follows:

C. Named Manufacturer's Products: Product designation and manufacturer are listed for each door hardware type required for the purpose of establishing requirements. Manufacturers' names are abbreviated in the Door Hardware Schedule.

D. Substitutions: Requests for substitution and product approval for inclusive mechanical and electromechanical door hardware in compliance with the specifications must be submitted in writing and in accordance with the procedures and time frames outlined in Division 01, Substitution Procedures. Approval of requests is at the discretion of the architect, owner, and their designated consultants.

2.2 HANGING DEVICES

A. Hinges: ANSI/BHMA A156.1 certified butt hinges with number of hinge knuckles as specified in the Door Hardware Sets.
1. Quantity: Provide the following hinge quantity, unless otherwise indicated:
    a. Two Hinges: For doors with heights up to 60 inches.
    b. Three Hinges: For doors with heights 61 to 90 inches.

c. Four Hinges: For doors with heights 91 to 120 inches.
d. For doors with heights more than 120 inches, provide 4 hinges, plus 1 hinge for every 30 inches of door height greater than 120 inches.

2. Hinge Size: Provide the following, unless otherwise indicated, with hinge widths sized for door thickness and clearances required:
   a. Widths up to 3'0": 4-1/2" standard or heavy weight as specified.
   b. Sizes from 3'1" to 4'0": 5" standard or heavy weight as specified.
3. Hinge Weight and Base Material: Unless otherwise indicated, provide the following:
   a. Exterior Doors: Heavy weight, non-ferrous, ball bearing or oil impregnated bearing hinges unless Hardware Sets indicate standard weight.
   b. Interior Doors: Standard weight, steel, ball bearing or oil impregnated bearing hinges unless Hardware Sets indicate heavy weight.
4. Hinge Options: Comply with the following where indicated in the Hardware Sets or on Drawings:
   a. Non-removable Pins: Provide set screw in hinge barrel that, when tightened into a groove in hinge pin, prevents removal of pin while door is closed; for the all out-swinging lockable doors.
5. Acceptable Manufacturers:
   a. Hager Companies (HA).
   b. McKinney Products (MK).

2.3 DOOR OPERATING TRIM

A. Flush Bolts and Surface Bolts: ANSI/BHMA A156.3 and A156.16, Grade 1, certified.
1. Flush bolts to be furnished with top rod of sufficient length to allow bolt retraction device location approximately six feet from the floor.
2. Furnish dust proof strikes for bottom bolts.
3. Surface bolts to be minimum 8" in length and U.L. listed for labeled fire doors and U.L. listed for windstorm components where applicable.
4. Provide related accessories (mounting brackets, strikes, coordinators, etc.) as required for appropriate installation and operation.
5. Acceptable Manufacturers:
   a. Ives (IV).
   b. Rockwood Manufacturing (RO).
   c. Trimco (TC).

2.4 CYLINDERS AND KEYING

A. General: Cylinder manufacturer to have minimum (10) years experience designing secured master key systems and have on record a published security keying system policy.

B. Cylinders: Original manufacturer cylinders complying with the following:
1. Mortise Type: Threaded cylinders with rings and cams to suit hardware application.
2. Rim Type: Cylinders with back plate, flat-type vertical or horizontal tailpiece, and raised trim ring.
3. Bored-Lock Type: Cylinders with tailpieces to suit locks.
4. Mortise and rim cylinder collars to be solid and recessed to allow the cylinder face to be flush and be free spinning with matching finishes.
5. Keyway: Match existing building key system.

C. Keying System: Each type of lock and cylinders to be factory keyed.
1. Conduct specified "Keying Conference" to define and document keying system instructions and requirements.
2. Furnish factory cut, nickel-silver large bow permanently inscribed with a visual key control number as directed by Owner.
3. Existing System: Key locks to Owner's existing system.

D. Key Quantity: Provide the following minimum number of keys:
1. Change Keys per Cylinder: Two (2)
2. Master Keys (per Master Key Level/Group): Five (5).
3. Construction Keys (where required): Ten (10).

E. Construction Keying: Provide temporary construction cylinders for exterior openings.

F. Key Registration List (Bitting List):
1. Provide keying transcript list to Owner's representative in the proper format for importing into key control software.
2. Provide transcript list in writing or electronic file as directed by the Owner.

2.5 MECHANICAL LOCKS AND LATCHING DEVICES

A. Mortise Locksets, Grade 1 (Heavy Duty): ANSI/BHMA A156.13, Series 1000, Operational Grade 1 certified. Locksets are to be manufactured with a corrosion resistant steel case and be field-reversible for handing without disassembly of the lock body.
   1. Acceptable Manufacturers:
      a. Sargent Manufacturing (SA) – 8200 Series.
      b. Corbin Russwin (CR) – ML2000 Series.

2.6 LOCK AND LATCH STRIKES

A. Strikes: Provide manufacturer's standard strike with strike box for each latch or lock bolt, with curved lip extended to protect frame, finished to match door hardware set, unless otherwise indicated, and as follows:
   1. Flat-Lip Strikes: For locks with three-piece antifriction latchbolts, as recommended by manufacturer.
   2. Extra-Long-Lip Strikes: For locks used on frames with applied wood casing trim.
   3. Aluminum-Frame Strike Box: Provide manufacturer's special strike box fabricated for aluminum framing.
   4. Double-lipped strikes: For locks at double acting doors. Furnish with retractable stop for rescue hardware applications.

B. Standards: Comply with the following:
   1. Strikes for Mortise Locks and Latches: BHMA A156.13.
   2. Strikes for Bored Locks and Latches: BHMA A156.2.
   3. Strikes for Auxiliary Deadlocks: BHMA A156.36.
   4. Dustproof Strikes: BHMA A156.16.

2.7 CONVENTIONAL EXIT DEVICES

A. General Requirements: All exit devices specified herein shall meet or exceed the following criteria:
   1. At doors not requiring a fire rating, provide devices complying with NFPA 101 and listed and labeled for "Panic Hardware" according to UL305. Provide proper fasteners as required by manufacturer including sex nuts and bolts at openings specified in the Hardware Sets.
   2. Where exit devices are required on fire rated doors, provide devices complying with NFPA 80 and with UL labeling indicating "Fire Exit Hardware". Provide devices with the proper fasteners for installation as tested and listed by UL. Consult manufacturer’s catalog and template book for specific requirements.
   3. Except on fire rated doors, provide exit devices with hex key dogging device to hold the pushbar and latch in a retracted position. Provide optional keyed cylinder dogging on devices where specified in Hardware Sets.
   4. Devices must fit flat against the door face with no gap that permits unauthorized dogging of the push bar. The addition of filler strips is required in any case where the door light extends behind the device as in a full glass configuration.
   5. Lever Operating Trim: Where exit devices require lever trim, furnish manufacturer's heavy duty escutcheon trim with threaded studs for thru-bolts.
      a. Lock Trim Design: As indicated in Hardware Sets, provide finishes and designs to match that of the specified locksets.
      b. Where function of exit device requires a cylinder, provide a cylinder (Rim or Mortise) as specified in Hardware Sets.
   6. Vertical Rod Exit Devices: Where surface or concealed vertical rod exit devices are used at interior openings, provide as less bottom rod (LBR) unless otherwise indicated. Provide dust proof strikes where thermal pins are required to project into the floor.
   7. Narrow Stile Applications: At doors constructed with narrow stiles, or as specified in Hardware Sets, provide devices designed for maximum 2” wide stiles.
   8. Dummy Push Bar: Nonfunctioning push bar matching functional push bar.
   9. Rail Sizing: Provide exit device rails factory sized for proper door width application.
   10. Through Bolt Installation: For exit devices and trim as indicated in Door Hardware Sets.

B. Conventional Push Rail Exit Devices (Heavy Duty): ANSI/BHMA A156.3, Grade 1 certified panic and fire exit hardware devices furnished in the functions specified in the Hardware Sets. Exit device latch to be stainless steel, pullman type, with deadlock feature.
   1. Acceptable Manufacturers:
      a. Sargent Manufacturing (SA) - PE80 Series.
      b. Corbin Russwin (CR) – PED5000 Series.

C. Tube Steel Removable Mullions: ANSI/BHMA A156.3 removable steel mullions with malleable-iron top and bottom retainers and a primed paint finish.
   1. Provide keyed removable feature where specified in the Hardware Sets.
   2. Provide stabilizers and mounting brackets as required.
   3. Provide electrical quick connection wiring options as specified in the hardware sets.

2.8 DOOR CLOSERS

A. All door closers specified herein shall meet or exceed the following criteria:
   1. General: Door closers to be from one manufacturer, matching in design and style, with the same type door preparations and templates regardless of application or spring size. Closers to be non-handed with full sized covers including installation and adjusting information on inside of cover.
   2. Standards: Closers to comply with UL-10C for Positive Pressure Fire Test and be U.L. listed for use of fire rated doors.
   3. Cycle Testing: Provide closers which have surpassed 15 million cycles in a test witnessed and verified by UL.
   4. Size of Units: Comply with manufacturer's written recommendations for sizing of door closers depending on size of door, exposure to weather, and anticipated frequency of use. Where closers are indicated for doors required to be accessible to the physically handicapped, provide units complying with ANSI ICC/A117.1.
   5. Closer Arms: Provide heavy duty, forged steel closer arms unless otherwise indicated in Hardware Sets.
   6. Closers shall not be installed on exterior or corridor side of doors; where possible install closers on door for optimum aesthetics.
   7. Closer Accessories: Provide door closer accessories including custom templates, special mounting brackets, spacers and drop plates as required for proper installation. Provide through-bolt and security type fasteners as specified in the hardware sets.

B. Door Closers, Surface Mounted (Large Body Cast Iron): ANSI/BHMA A156.4, Grade 1 surface mounted, heavy duty door closers with complete spring power adjustment, sizes 1 thru 6; and fully operational adjustable according to door size, frequency of use, and opening force. Closers to be rack and pinion type, one piece cast iron body construction, with adjustable backcheck and separate non-critical valves for closing sweep and latch speed control.
   1. Acceptable Manufacturers:
      a. Sargent Manufacturing (SA) - 1431 Series.
      b. LCN – 1460 Series
      c. Norton Rixson – 8000 Series.

2.9 ARCHITECTURAL TRIM

A. Door Protective Trim
   1. General: Door protective trim units to be of type and design as specified below or in the Hardware Sets.
   2. Size: Fabricate protection plates (kick, armor, or mop) not more than 2" less than door width (LDW) on stop side of single doors and 1” LDW on stop side of pairs of doors, and not more than 1" less than door width on pull side. Coordinate and provide proper width and height as required where conflicting hardware dictates. Height to be as specified in the Hardware Sets.
   3. Protection Plates: ANSI/BHMA A156.6 certified protection plates (kick, armor, or mop), fabricated from the following:
      a. Stainless Steel: 300 grade, 050-inch thick.
   4. Options and fasteners: Provide manufacturer's designated fastener type as specified in the Hardware Sets. Provide countersunk screw holes.
   5. Acceptable Manufacturers:
      a. Ives (IV).
      b. Rockwood Manufacturing (RO).
      c. Trimco (TC)

2.10 DOOR STOPS AND HOLDERS

A. General: Door stops and holders to be of type and design as specified below or in the Hardware Sets.
B. Door Stops and Bumpers: ANSI/BHMA A156.16, Grade 1 certified door stops and wall bumpers. Provide wall bumpers, either convex or concave types with anchorage as indicated, unless floor or other types of door stops are specified in Hardware Sets. Do not mount floor stops where they will impede traffic. Where floor or wall bumpers are not appropriate, provide overhead type stops and holders.
   1. Acceptable Manufacturers:
      a. Ives (IV).

b. Rockwood Manufacturing (RO).
c. Trimco (TC).

C. Overhead Door Stops and Holders: ANSI/BHMA A156.6, Grade 1 certified overhead stops and holders to be surface or concealed types as indicated in Hardware Sets. Track, slide, arm and jamb bracket to be constructed of extruded bronze and shock absorber spring of heavy tempered steel. Provide non-handed design with mounting brackets as required for proper operation and function.
1. Acceptable Manufacturers:
a. Rixson Door Controls (RF).
b. Rockwood Manufacturing (RO).
c. Sargent Manufacturing (SA).

2.11 ARCHITECTURAL SEALS

A. General: Thresholds, weatherstripping, and gasket seals to be of type and design as specified below or in the Hardware Sets. Provide continuous weatherstrip gasketing on exterior doors and provide smoke, light, or sound gasketing on interior doors where indicated. At exterior applications provide non-corrosive fasteners and elsewhere where indicated.

B. Smoke Labeled Gasketing: Assemblies complying with NFPA 105 that are listed and labeled by a testing and inspecting agency acceptable to authorities having jurisdiction, for smoke control ratings indicated, based on testing according to UL 1784.
1. Provide smoke labeled perimeter gasketing at all smoke labeled openings.

C. Fire Labeled Gasketing: Assemblies complying with NFPA 80 that are listed and labeled by a testing and inspecting agency acceptable to authorities having jurisdiction, for fire ratings indicated, based on testing according to UL-10C.
1. Provide intumescent seals as indicated to meet UL10C Standard for Positive Pressure Fire Tests of Door Assemblies, and NPFA 252, Standard Methods of Fire Tests of Door Assemblies.

D. Sound-Rated Gasketing: Assemblies that are listed and labeled by a testing and inspecting agency, for sound ratings indicated.

E. Replaceable Seal Strips: Provide only those units where resilient or flexible seal strips are easily replaceable and readily available from stocks maintained by manufacturer.

F. Acceptable Manufacturers:
1. National Guard Products (NG).
2. Pemko Manufacturing (PE).
3. Reese Enterprises, Inc. (RE).

2.12 FABRICATION

A. Fasteners: Provide door hardware manufactured to comply with published templates generally prepared for machine, wood, and sheet metal screws. Provide screws according to manufacturers recognized installation standards for application intended.

2.13 FINISHES

A. Standard: Designations used in the Hardware Sets and elsewhere indicate hardware finishes complying with ANSI/BHMA A156.18, including coordination with traditional U.S. finishes indicated by certain manufacturers for their products.

B. Provide quality of finish, including thickness of plating or coating (if any), composition, hardness, and other qualities complying with manufacturer's standards, but in no case less than specified by referenced standards for the applicable units of hardware

C. Protect mechanical finishes on exposed surfaces from damage by applying a strippable, temporary protective covering before shipping.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine scheduled openings, with Installer present, for compliance with requirements for installation tolerances, labeled fire door assembly construction, wall and floor construction, and other conditions affecting performance.

B. Notify architect of any discrepancies or conflicts between the door schedule, door types, drawings and scheduled hardware. Proceed only after such discrepancies or conflicts have been resolved in writing.

3.2 PREPARATION

A. Hollow Metal Doors and Frames: Comply with ANSI/DHI A115 series.

B. Wood Doors: Comply with ANSI/DHI A115-W series.

3.3 INSTALLATION

A. Install each item of mechanical and electromechanical hardware and access control equipment to comply with manufacturer's written instructions and according to specifications.
   1. Installers are to be trained and certified by the manufacturer on the proper installation and adjustment of fire, life safety, and security products including: hanging devices; locking devices; closing devices; and seals.

B. Mounting Heights: Mount door hardware units at heights indicated in following applicable publications, unless specifically indicated or required to comply with governing regulations:
   1. Standard Steel Doors and Frames: DHI's "Recommended Locations for Architectural Hardware for Standard Steel Doors and Frames."
   2. Wood Doors: DHI WDHS.3, "Recommended Locations for Architectural Hardware for Wood Flush Doors."
   3. Where indicated to comply with accessibility requirements, comply with ANSI A117.1 "Accessibility Guidelines for Buildings and Facilities."
   4. Provide blocking in drywall partitions where wall stops or other wall mounted hardware is located.

C. Retrofitting: Install door hardware to comply with manufacturer's published templates and written instructions. Where cutting and fitting are required to install door hardware onto or into surfaces that are later to be painted or finished in another way, coordinate removal, storage, and reinstallation of surface protective trim units with finishing work specified in Division 9 Sections. Do not install surface-mounted items until finishes have been completed on substrates involved.

D. Thresholds: Set thresholds for exterior and acoustical doors in full bed of sealant complying with requirements specified in Division 7 Section "Joint Sealants."

E. Storage: Provide a secure lock up for hardware delivered to the project but not yet installed. Control the handling and installation of hardware items so that the completion of the work will not be delayed by hardware losses before and after installation.

3.4 FIELD QUALITY CONTROL

A. Field Inspection: Supplier will perform a final inspection of installed door hardware and state in report whether work complies with or deviates from requirements, including whether door hardware is properly installed, operating and adjusted.

3.5 ADJUSTING

A. Initial Adjustment: Adjust and check each operating item of door hardware and each door to ensure proper operation or function of every unit. Replace units that cannot be adjusted to operate as intended. Adjust door control devices to compensate for final operation of heating and ventilating equipment and to comply with referenced accessibility requirements.

3.6 CLEANING AND PROTECTION

A. Protect all hardware stored on construction site in a covered and dry place. Protect exposed hardware installed on doors during the construction phase. Install any and all hardware at the latest possible time frame.

B. Clean adjacent surfaces soiled by door hardware installation.

C. Clean operating items as necessary to restore proper finish. Provide final protection and maintain conditions that ensure door hardware is without damage or deterioration at time of owner occupancy.

3.7 DEMONSTRATION

A. Instruct Owner's maintenance personnel to adjust, operate, and maintain mechanical and electromechanical door hardware.

3.8 DOOR HARDWARE SETS

A. The hardware sets represent the design intent and direction of the owner and architect. They are a guideline only and should not be considered a detailed hardware schedule. Discrepancies, conflicting hardware and missing items should be brought to the attention of the architect with corrections made prior to the bidding process. Omitted items not included in a hardware set should be scheduled with the appropriate additional hardware required for proper application and functionality.

Hardware Schedule

Set: 1.0
Doors: 1101A
Each to receive:

2	Continuous Hinges	CFM95HD1 SLF SER8	CLR	PE
1	Removable Mullion	L980A x 651	US28	SA
1	Exit Device with ELR	72 16 55 56 43 PE8504 ETL 24V RHR	US32D	SA
1	Exit Device	72 16 43 55 PE8510 ETL	US32D	SA
1	Mullion Cylinder	70 980C1	US32D	SA
4	Cylinder Core	As required		
2	Door Closer	1431 P10 x 1431-D	EN	SA
2	Overhead Stop	1ADJ-X26	US32D	RF
2	Astragal	S772D [mount on mullion]		PE
1	Threshold	1715A MSES25SS		PE
2	Wiring Harness	QC-C012P		MK
1	Keypad/Reader	By security contractor		
2	Door Position Switch	DPS	Black	SU
1	Power Supply	AQ Series (By Others)		SU

Gasketing and door sweeps by door manufacturer.

Set: 2.0
Doors: 1101B, 1101C

2	Continuous Hinges	CFM95HD1 SLF	CLR	PE
1	Removable Mullion	L980A x 651	US28	SA
1	Exit Device	72 16 43 PE8804 ETL RHR	US32D	SA
1	Exit Device	72 16 43 PE8810 ETL	US32D	SA
1	Mullion Cylinder	70 980C1	US32D	SA
4	Cylinder Core	As required		
2	Door Closer	1431 P10	EN	SA
2	Overhead Stop	1ADJ-X26	US32D	RF
2	Astragal	S772D [mount on mullion]		PE
1	Threshold	1715A MSES25SS		PE
2	Sweep	3452CNB TEKS		PE
1	Gasketing	303AS TEKS		PE

Set: 3.0
Doors: 1106E
Each to receive:

2	Continuous Hinges	CFM83HD1 SLF SER8	CLR	PE
1	Removable Mullion	L980A x 651	US28	SA
1	Exit Device with ELR	72 16 55 56 43 PE8504 ETL 24V RHR	US32D	SA
1	Exit Device	72 16 43 55 PE8510 ETL	US32D	SA
1	Mullion Cylinder	70 980C1	US32D	SA
4	Cylinder Core	As required		
2	Door Closer	1431 P10 x 1431-D	EN	SA
2	Overhead Stop	1ADJ-X26	US32D	RF
2	Astragal	S772D [mount on mullion]		PE
1	Threshold	1715A MSES25SS		PE
2	Wiring Harness	QC-C012P		MK
1	Keypad/Reader	By security contractor		
2	Door Position Switch	DPS	Black	SU
1	Power Supply	AQ Series (By Others)		SU

Gasketing and door sweeps by door manufacturer.

Set: 4.0
Doors: 1106F, 1106G, 1106H

2	Continuous Hinges	CFM83HD1 SLF	CLR PE
1	Removable Mullion	L980A x 651	US28 SA
1	Exit Device	72 16 43 PE8804 ETL RHR	US32D SA
1	Exit Device	72 16 43 PE8810 ETL	US32D SA
1	Mullion Cylinder	70 980C1	US32D SA
4	Cylinder Core	As required	
2	Door Closer	1431 P10	EN SA
2	Overhead Stop	1ADJ-X26	US32D RF
2	Astragal	S772D [mount on mullion]	PE
1	Threshold	1715A MSES25SS	PE
2	Sweep	3452CNB TEKS	PE
1	Gasketing	303AS TEKS	PE

Set: 5.0
Doors: 1126A

3	Hinges	TA2314 4.5 x 4.5 NRP	US32D MK
1	Exit Device	72 16 43 PE8804 ETL	US32D SA
1	Cylinder Core	As required	
1	Door Closer	1431 PSH	EN SA
1	Threshold	171A MSES25SS	PE
1	Sweep	315CN TEKS	PE
1	Gasketing	303AS TEKS	PE

Set: 6.0
Doors: 1109A

3	Hinges	TA2314 4.5 x 4.5 NRP	US32D MK
1	Storeroom Lock	72 8204 LNL	US32D SA
1	Cylinder Core	As required	
1	Door Closer	1431 PSH	EN SA
1	Threshold	171A MSES25SS	PE
1	Sweep	315CN TEKS	PE
1	Gasketing	303AS TEKS	PE

Set: 7.0
Doors: 1106B, 1106C
Each to receive:

6	Hinges	TA2714 4.5 x 4.5	US26D MK
1	Removable Mullion	L980 x 651	USP SA
2	Exit Device	70 16 43 PE8813 ETL	US32D SA
1	Mullion Cylinder	70 980C1	US32D SA
5	Cylinder Core	As required	
2	Door Closer	1431 P10	EN SA
2	Overhead Stop	1ADJ-X26	US32D RF
2	Kick Plate	K1050 10" x 2" LDW x 4BE CSK	US32D RO
2	Mop Plate	K1050 6" X 1" LDW 4BE CSK	US32D RO
2	Silencers	608	RO

Set: 8.0
Doors: 1106B, 1106C
Each to receive:

3	Hinges	TA2714 4.5 x 4.5	US26D MK
1	Exit Device	70 16 43 PE8813 ETL	US32D SA
4	Cylinder Core	As required	
1	Door Closer	1431 P10	EN SA
1	Overhead Stop	1ADJ-X26	US32D RF
1	Kick Plate	K1050 10" x 2" LDW x 4BE CSK	US32D RO
1	Mop Plate	K1050 6" X 1" LDW 4BE CSK	US32D RO
3	Silencers	608	RO

Set: 9.0 [ADD 1]
Doors: 1104A
Each to receive:

3	Hinges	TA2714 4.5 x 4.5	US26D	MK
1	Exit Device	72 12 43 PE8804 ETL	US32D	SA
2	Cylinder Core	As required		
1	Door Closer	1431 PS	EN	SA
1	Mop Plate	K1050 6" X 1" LDW 4BE CSK	US32D	RO
3	Silencers	608		RO

Set: 10.0
Doors: 1102A, 1103A, 1116A, 1117A
Each to receive:

3	Hinges	TA2714 4.5 x 4.5	US26D	MK
1	Office Lock	70 8225 LNL	US32D	SA
1	Cylinder Core	As required		
1	Door Closer	1431 PSH	EN	SA
1	Kick Plate	K1050 10" x 2" LDW x 4BE CSK	US32D	RO
1	Mop Plate	K1050 6" X 1" LDW 4BE CSK	US32D	RO
3	Silencers	608		RO

Set: 11.0
Doors: 1130A
Each to receive:

3	Hinges	TA2714 4.5 x 4.5	US26D	MK
1	Storeroom Lock	70 8204 LNL	US32D	SA
1	Cylinder Core	As required		
1	Door Closer	1431 PSH	EN	SA
1	Kick Plate	K1050 10" x 2" LDW x 4BE CSK	US32D	RO
1	Mop Plate	K1050 6" X 1" LDW 4BE CSK	US32D	RO
3	Silencers	608		RO

Set: 12.0
Doors: 1112A, 1121A
Each to receive:

3	Hinges	TA2714 4.5 x 4.5	US26D	MK
1	Office Lock	70 8205 LNL	US32D	SA
1	Cylinder Core	As required		
1	Door Closer	1431 O10	EN	SA
1	Kick Plate	K1050 10" x 2" LDW x 4BE CSK	US32D	RO
1	Wall Stop	401	US32D	RO
3	Silencers	608		RO

Set: 13.0
Doors: 1118A
Each to receive:

3	Hinges	TA2714 4.5 x 4.5	US26D	MK
1	Classroom Lock	70 8237 LNL	US32D	SA
1	Cylinder Core	As required		
1	Door Closer	1431 O10	EN	SA
1	Kick Plate	K1050 10" x 2" LDW x 4BE CSK	US32D	RO
1	Wall Stop	401	US32D	RO
3	Silencers	608		RO

Set: 14.0
Doors: 1111A, 1123A, 1128A, 1131A
Each to receive:

3	Hinges	TA2714 4.5 x 4.5	US26D	MK
1	Dead Lock	70 4877	US26D	SA
1	Cylinder Core	As required		
1	Pull Plate	111 x 70E x CFC	US32D	RO
1	Push Plate	70F x CFTT	US32D	RO
1	Door Closer	1431 PSH	EN	SA
1	Kick Plate	K1050 10" x 2" LDW x 4BE CSK	US32D	RO
1	Mop Plate	K1050 6" X 1" LDW 4BE CSK	US32D	RO
3	Silencers	608		RO

Set: 15.0
Doors: 1107A, 1110A, 1122A, 1124A
Each to receive:

3	Hinges	TA2714 4.5 x 4.5	US26D	MK
1	Dead Lock	70 4877	US26D	SA
1	Cylinder Core	As required		
1	Pull Plate	111 x 70E x CFC	US32D	RO
1	Push Plate	70F x CFTT	US32D	RO
1	Door Closer	1431 P10	EN	SA
1	Kick Plate	K1050 10" x 2" LDW x 4BE CSK	US32D	RO
1	Mop Plate	K1050 6" X 1" LDW 4BE CSK	US32D	RO
1	Wall Stop	401	US32D	RO
3	Silencers	608		RO

Set: 16.0
Doors: 1112B, 1121B
Each to receive:

3	Hinges	TA2714 4.5 x 4.5	US26D	MK
1	Office Lock	70 8205 LNL	US32D	SA
1	Cylinder Core	As required		
1	Wall Stop	401	US32D	RO
3	Silencers	608		RO

Note: Verify lock function during keying conference.

Set: 17.0
Doors: 1127A
Each to receive:

3	Hinges	TA2714 4.5 x 4.5	US26D	MK
1	Classroom Lock	70 8237 LNL	US32D	SA
1	Cylinder Core	As required		
1	Overhead Stop	9ADJ-X26	US26D	RF
3	Silencers	608		RO

Note: Verify lock function during keying conference.

Set: 18.0
Doors: 1108A, 1114A, 1115A, 1119A, 1125A
Each to receive:

3	Hinges	TA2714 4.5 x 4.5	US26D	MK
1	Privacy Set	V20 8265 LNL	US32D	SA
1	Kick Plate	K1050 10" x 2" LDW x 4BE CSK	US32D	RO
1	Mop Plate	K1050 6" X 1" LDW 4BE CSK	US32D	RO
1	Wall Stop	401	US32D	RO
3	Silencers	608		RO

Set: 20.0
Doors: 1201A

3 Hinges	TA2314 4.5 x 4.5 NRP	US32D	MK
1 Dormitory Lock	72 8225 LNL	US32D	SA
1 Cylinder Core	As required		
1 Door Closer	1431 O10	EN	SA
1 Wall Stop	401	US32D	RO
1 Threshold	171A MSES25SS		PE
1 Sweep	315CN TEKS		PE
1 Gasketing	303AS TEKS		PE

Set: 21.0
Doors: 1304A

3 Hinges	TA2314 4.5 x 4.5 NRP	US32D	MK
1 Dormitory Lock	72 8225 LNL	US32D	SA
1 Cylinder Core	As required		
1 Door Closer	1431 CPSH	EN	SA
1 Threshold	171A MSES25SS		PE
1 Sweep	315CN TEKS		PE
1 Gasketing	303AS TEKS		PE

Set: 22.0
Doors: 1301A, 1302A

3 Hinges	TA2314 4.5 x 4.5 NRP	US32D	MK
1 Dead Lock	70 4877	US26D	SA
1 Cylinder Core	As required		
1 Pull Plate	111 x 70E x CFC	US32D	RO
1 Push Plate	70F x CFTT	US32D	RO
1 Door Closer	1431 CPSH	EN	SA
1 Kick Plate	K1050 10” x 2” LDW x 4BE CSK	US32D	RO
1 Mop Plate	K1050 6" X 1" LDW 4BE CSK	US32D	RO
1 Threshold	171A MSES25SS		PE
1 Sweep	315CN TEKS		PE
1 Gasketing	303AS TEKS		PE

Set: 23.0
Doors: 1303A
Each to receive:

3 Hinges	TA2714 4.5 x 4.5	US26D	MK
1 Classroom Lock	70 8237 LNL	US32D	SA
1 Cylinder Core	As required		
1 Wall Stop	401	US32D	RO
3 Silencers	608		RO

SECTION 101419 - DIMENSIONAL LETTER SIGNAGE

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

A. Section Includes:
   1. Cast dimensional characters for park entry sign.

1.3 ACTION SUBMITTALS

A. Product Data: For each type of product.
B. Shop Drawings: For dimensional letter signs.
   1. Include fabrication and installation details and attachments to other work.
   2. Show sign mounting heights, locations of supplementary supports to be provided by others, and accessories.
   3. Show message list, typestyles, graphic elements, and layout for each sign at least half size.
C. Samples for Initial Selection: For each type of sign assembly, exposed component, and exposed finish.
   1. Include representative Samples of available typestyles and graphic symbols.
D. Sign Schedule: Use same designations specified or indicated on Drawings or in a sign schedule.

1.4 INFORMATIONAL SUBMITTALS

A. Qualification Data: For manufacturer.
B. Sample Warranty: For special warranty.

1.5 CLOSEOUT SUBMITTALS

A. Maintenance Data: For signs to include in maintenance manuals.

1.6 QUALITY ASSURANCE

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

1.7 FIELD CONDITIONS

A. Field Measurements: Verify locations of electrical service embedded in permanent construction by other installers by field measurements before fabrication, and indicate measurements on Shop Drawings.

1.8 WARRANTY

A. Special Warranty: Manufacturer agrees to repair or replace components of signs that fail in materials or workmanship within specified warranty period.
   1. Failures include, but are not limited to, the following:
      a. Deterioration of finishes beyond normal weathering.
   2. Warranty Period: Five (5) years from date of Substantial Completion.

PART 2 - PRODUCTS

2.1 PERFORMANCE REQUIREMENTS

A. Structural Performance: Signs and supporting elements shall withstand the effects of gravity and other loads within limits and under conditions indicated.
   1. Uniform Wind Load: See Structural for project UWL value.
B. Temperature Change: 120 deg F (67 deg C), ambient; 180 deg F (100 deg C), material surfaces.

2.2 DIMENSIONAL CHARACTERS

A. Cast Characters: Characters with uniform faces, sharp corners, and precisely formed lines and profiles, and as follows:

1. Manufacturers: Subject to compliance with requirements, available manufacturers offering products that may be incorporated into the Work include, but are not limited to the following:
   a. A.R.K. Ramos.
   b. ACE Sign Systems, Inc.
   c. ASI Sign Systems, Inc.
   d. Cosco.
   e. Gemini Incorporated.
   f. Matthews International Corporation; Bronze Division.
   g. Metal Arts.
   h. Metallic Arts.
   i. Southwell Company (The).
2. Character Material:
   a. Cast aluminum.
   b. Reverse Channel
3. Character Height:
   a. 18” high
   b. 2” depth
   c. Width per approved font
4. Finishes:
   a. Integral Aluminum Finish:
      1) Black
5. Mounting:
   a. Concealed studs.
   b. Mounting Panel:
      1) 1” Deep x W x H per drawing dimensions
      2) Attached to steel truss w/ welded clips
      3) Color: anodized

2.3 DIMENSIONAL CHARACTER MATERIALS

A. Aluminum Castings: ASTM B 26/B 26M, alloy and temper recommended by sign manufacturer for casting process used and for type of use and finish indicated.

B. Paints and Coatings for Sheet Materials: Inks, dyes, and paints that are recommended by manufacturer for optimum adherence to surface and are UV and water resistant for colors and exposure indicated.

2.4 ACCESSORIES

A. Fasteners and Anchors: Manufacturer's standard as required for secure anchorage of signage, noncorrosive and compatible with each material joined, and complying with the following:
   1. Use concealed fasteners and anchors unless indicated to be exposed.
   2. For exterior exposure, furnish nonferrous-metal or hot-dip galvanized devices unless otherwise indicated.
   3. Sign Mounting Fasteners:
      a. Concealed Studs: Concealed (blind), threaded studs welded or brazed to back of sign material, screwed into back of sign assembly, or screwed into tapped lugs cast integrally into back of cast sign material, unless otherwise indicated.

2.5 FABRICATION

A. General: Provide manufacturer's standard sign assemblies according to requirements indicated.
   1. Preassemble signs and assemblies in the shop to greatest extent possible. Disassemble signs and assemblies only as necessary for shipping and handling limitations. Clearly mark units for reassembly and installation; apply markings in locations concealed from view after final assembly.
   2. Mill joints to a tight, hairline fit. Form assemblies and joints exposed to weather to resist water penetration and retention.
   3. Comply with AWS for recommended practices in welding and brazing. Provide welds and brazes behind finished surfaces without distorting or discoloring exposed side. Clean exposed welded and brazed connections of flux, and dress exposed and contact surfaces.
   4. Conceal connections if possible; otherwise, locate connections where they are inconspicuous.
   5. Internally brace signs for stability and for securing fasteners.

6. Provide rebates, lugs, and brackets necessary to assemble components and to attach to existing work. Drill and tap for required fasteners. Use concealed fasteners where possible; use exposed fasteners that match sign finish.
7. Castings: Fabricate castings free of warp, cracks, blowholes, pits, scale, sand holes, and other defects that impair appearance or strength. Grind, wire brush, sandblast, and buff castings to remove seams, gate marks, casting flash, and other casting marks before finishing.

2.6 GENERAL FINISH REQUIREMENTS

A. Protect mechanical finishes on exposed surfaces from damage by applying a strippable, temporary protective covering before shipping.

B. Appearance of Finished Work: Noticeable variations in same piece are not acceptable. Variations in appearance of adjoining components are acceptable if they are within the range of approved Samples and are assembled or installed to minimize contrast.

2.7 ALUMINUM FINISHES

A. Clear Anodic Finish: AAMA 611, Class I, 0.018 mm or thicker or Color Anodic Finish: AAMA 611, Class I, 0.018 mm or thicker.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine substrates, areas, and conditions, with Installer present, for compliance with requirements for installation tolerances and other conditions affecting performance of signage work.

B. Verify that sign-support surfaces are within tolerances to accommodate signs without gaps or irregularities between backs of signs and support surfaces unless otherwise indicated.

C. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 INSTALLATION

A. General: Install signs using mounting methods indicated and according to manufacturer's written instructions.
   1. Install signs level, plumb, true to line, and at locations and heights indicated, with sign surfaces free of distortion and other defects in appearance.
   2. Before installation, verify that sign surfaces are clean and free of materials or debris that would impair installation.
   3. Corrosion Protection: Coat concealed surfaces of exterior aluminum in contact with grout, concrete, masonry, wood, or dissimilar metals, with a heavy coat of bituminous paint.

B. Mounting Methods:
   1. Concealed Studs: Using a template, drill holes in substrate aligning with studs on back of sign. Remove loose debris from hole and substrate surface.
      a. Thin or Hollow Surfaces: Place sign in position and flush to surface, install washers and nuts on studs projecting through opposite side of surface, and tighten.

3.3 ADJUSTING AND CLEANING

A. Remove and replace damaged or deformed characters and signs that do not comply with specified requirements. Replace characters with damaged or deteriorated finishes or components that cannot be successfully repaired by finish touchup or similar minor repair procedures.

B. Remove temporary protective coverings and strippable films as signs are installed.

C. On completion of installation, clean exposed surfaces of signs according to manufacturer's written instructions, and touch up minor nicks and abrasions in finish. Maintain signs in a clean condition during construction and protect from damage until acceptance by Owner.

END OF SECTION 101419

SECTION 107516 - GROUND-SET FLAGPOLES

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

A. Section includes ground-set flagpoles made from aluminum.

1.3 ACTION SUBMITTALS

A. Product Data: For each type of product.
   1. Include construction details, material descriptions, dimensions of individual components and profiles, operating characteristics, fittings, accessories, and finishes for flagpoles.

B. Shop Drawings: For flagpoles.
   1. Include plans, elevations, and attachment details. Show general arrangement, jointing, fittings, accessories, grounding, anchoring, and support.
   2. Include section, and details of foundation system.

C. Samples for Verification: For each type of exposed finish, in manufacturer's standard sizes.

1.4 CLOSEOUT SUBMITTALS

A. Operation and Maintenance Data: For flagpoles to include in operation and maintenance manuals.

1.5 DELIVERY, STORAGE, AND HANDLING

A. Spiral wrap flagpoles with heavy paper and enclose in a hard fiber tube or other protective container.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

A. Source Limitations: Obtain flagpoles as complete units, including fittings, accessories, bases, and anchorage devices, from single source from single manufacturer.

2.2 PERFORMANCE REQUIREMENTS

A. Structural Performance: Flagpole assemblies, including anchorages and supports, shall withstand design loads indicated within limits and under conditions indicated.
   1. Wind Loads: Determine according to NAAMM FP 1001. Basic wind speed for Project location is 70 mph.
   2. Base flagpole design on nylon or cotton flags of maximum standard size suitable for use with flagpole or flag size indicated, whichever is more stringent.

2.3 ALUMINUM FLAGPOLES

A. Aluminum Flagpoles: Entasis-tapered flagpoles fabricated from seamless extruded tubing complying with ASTM B 241/B 241M, Alloy 6063, with a minimum wall thickness of 3/16 inch (4.8 mm).

   1. Manufacturers: Subject to compliance with requirements, available manufacturers offering products that may be incorporated into the Work include, but are not limited to the following:

      a. Baartol Company.
      b. Concord Industries, Inc.
      c. Eder Flag Manufacturing Company, Inc.
      d. Ewing Flagpoles.
      e. Pole-Tech Company Inc.

B. Exposed Height: 35 feet (11 m).

C. Construct flagpoles in one piece if possible. If more than one piece is necessary, comply with the following:
   1. Fabricate shop and field joints without using fasteners, screw collars, or lead calking.

2. Provide flush hairline joints using self-aligning, snug-fitting, internal sleeves.

D. Metal Foundation Tube: Manufacturer's standard corrugated-steel foundation tube, 0.060-inch (1.52-mm) wall thickness with 3/16-inch (4.8-mm) steel bottom plate and support plate; 3/4-inch- (19-mm-) diameter, steel ground spike; and steel centering wedges welded together. Galvanize foundation tube after assembly. Furnish loose hardwood wedges at top of foundation tube for plumbing pole.
   1. Flashing Collar: Same material and finish as flagpole.

E. Sleeve for Aluminum Flagpole: Fiberglass or PVC pipe foundation sleeve, made to fit flagpole, for casting into concrete foundation.
   1. Flashing Collar: Same material and finish as flagpole.

F. Cast-Metal Shoe Base: Made from aluminum with same finish and color as flagpoles for anchor-bolt mounting; furnish with anchor bolts.
   1. Furnish ground spike.

2.4 FITTINGS

A. Finial Ball: Flush-seam ball, sized as indicated or, if not indicated, to match flagpole-butt diameter.
   1. 0.063-inch (1.6-mm) spun aluminum, finished to match flagpole.

B. External Halyard: Ball-bearing, nonfouling, revolving truck assembly of cast metal with continuous 5/16-inch- (8-mm-) diameter, braided polypropylene halyard and 9-inch (228-mm) cast-metal cleats with fasteners. Finish exposed metal surfaces to match flagpole.
   1. Halyards and Cleats: One at each flagpole.
   2. Cleat Covers: Cast metal, finished to match flagpole, secured with cylinder locks.
   3. Halyard Covers: 2-inch (50-mm) channel, 60 inches (1500 mm) long, finished to match flagpole.
   4. Halyard Flag Snaps: Bronze swivel snap hooks with neoprene or vinyl covers. Furnish two per halyard.

2.5 FLAGS

A. Flag Design: United States flag complying with government regulations.

B. Flag Construction: Embroidered stars and sewn stripes.
   1. Fabric: Deluxe nylon.
   2. Size: 6 feet by 10 feet.

2.6 MISCELLANEOUS MATERIALS

A. Nonshrink, Nonmetallic Grout: Factory-packaged, nonstaining, noncorrosive, nongaseous grout complying with ASTM C 1107/C 1107M.

B. Drainage Material: Crushed stone, or crushed or uncrushed gravel; coarse aggregate.

C. Sand: ASTM C 33/C 33M, fine aggregate.

D. Elastomeric Joint Sealant: joint sealant complying with requirements in Section 079200 "Joint Sealants."

E. Bituminous Paint: Cold-applied asphalt emulsion complying with ASTM D 1187/D 1187M.

2.7 ALUMINUM FINISHES

A. Natural Satin Finish: AA-M32, fine, directional, medium satin polish; buff complying with AA-M20; seal aluminum surfaces with clear, hard-coat wax.

B. Clear Anodic Finish: AAMA 611, AA-M12C22A41.

PART 3 - EXECUTION

3.1 PREPARATION

A. Prepare uncoated metal flagpoles that are set in foundation tubes by painting below-grade portions with a heavy coat of bituminous paint.

B. Foundation Excavation: Excavate to neat clean lines in undisturbed soil. Remove loose soil and foreign matter from excavation and moisten earth before placing concrete. Place and compact drainage material at excavation bottom.

C. Provide forms where required due to unstable soil conditions and for perimeter of flagpole base at grade. Secure and brace forms to prevent displacement during concreting.

D. Foundation Tube: Place foundation tube, center, and brace to prevent displacement during concreting. Place concrete. Plumb and level foundation tube and allow concrete to cure.

E. Sleeves: Locate and secure sleeves in forms by bracing to reinforcement and forms.

F. Anchor Bolts: Locate and secure anchor bolts in forms with templates and by tying to reinforcement.

G. Place concrete, as specified in Section 033000 "Cast-in-Place Concrete." Compact concrete in place by using vibrators. Moist-cure exposed concrete for no fewer than seven days or use nonstaining curing compound.

H. Trowel exposed concrete surfaces to a smooth, dense finish, free of trowel marks, and uniform in texture and appearance. Provide positive slope for water runoff to perimeter of concrete base.

3.2 FLAGPOLE INSTALLATION

A. General: Install flagpoles where indicated and according to Shop Drawings and manufacturer's written instructions.

B. Foundation Tube: Place flagpole in tube, seated on bottom plate between steel centering wedges, and install hardwood wedges to secure flagpole in place. Place and compact sand in foundation tube and remove hardwood wedges. Seal top of foundation tube with a 2-inch (50-mm) layer of elastomeric joint sealant and cover with flashing collar.

C. Baseplate: Cast anchor bolts in concrete foundation. Install baseplate on washers placed over leveling nuts on anchor bolts and adjust until flagpole is plumb. After flagpole is plumb, tighten retaining nuts and fill space under baseplate solidly with nonshrink, nonmetallic grout. Finish exposed grout surfaces smooth and slope 45 degrees away from edges of baseplate.

END OF SECTION 107516

SECTION 116623 - GYMNASIUM EQUIPMENT

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

A. Section Includes:
   1. Basketball equipment.
   2. Volleyball equipment.
   3. Safety pads.

B. Related Requirements:
   1. Section 033000 "Cast-in-Place Concrete" for installation of floor insert sleeves to be cast in concrete slabs and footings.
   2. Section 096466 "Wood Athletic Flooring" for game lines and markers.
   3. Section 116653 "Gymnasium Dividers."

1.3 DEFINITIONS

A. NCAA: The National Collegiate Athletic Association.

B. NFHS: National Federation of State High School Associations.

C. USAV: USA Volleyball.

1.4 ACTION SUBMITTALS

A. Product Data: For each type of product.
   1. If applicable, include assembly, disassembly, and storage instructions for removable equipment.
   2. Motors: Show nameplate data, ratings, characteristics, and mounting arrangements.

B. Shop Drawings: For gymnasium equipment.
   1. Include plans, elevations, sections, details, and attachments to other work.
   2. Include details of field assembly for removable equipment, connections, installation, mountings, floor inserts, attachments to other work, and operational clearances.
   3. Include transport and storage accessories for removable equipment.

C. Samples: For each exposed product and for each item and color specified.

D. Samples for Initial Selection: For each type of gymnasium equipment.

E. Samples for Verification: For the following products:
   1. Pad Fabric: Wall padding not less than 3 inches (76 mm) square, and corner and column Samples not less than 3 inches (76 mm) long, with specified treatments applied. Mark face of material.

1.5 INFORMATIONAL SUBMITTALS

A. Coordination Drawings: Court layout plans, drawn to scale, and coordinated with floor inserts, game lines, and markers applied to finished flooring.

B. Qualification Data: For Installer.

C. Product Certificates: For each type of gymnasium equipment.

D. Sample Warranty: For special warranty.

1.6 CLOSEOUT SUBMITTALS

A. Operation and Maintenance Data: For gymnasium equipment to include in emergency, operation, and maintenance manuals.

1.7 QUALITY ASSURANCE

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

1.8 FIELD CONDITIONS

A. Environmental Limitations: Do not install gymnasium equipment until spaces are enclosed and weatherproof, wet work in spaces is complete and dry, and ambient temperature and humidity conditions are maintained at the levels indicated for Project when occupied for its intended use.

B. Field Measurements: Verify position and elevation of floor inserts and layout for gymnasium equipment.

1.9 COORDINATION

A. Coordinate installation of floor inserts with structural floors and finish flooring installation and with court layout and game lines and markers on finish flooring.

B. Coordinate layout and installation of overhead-supported gymnasium equipment and suspension-system components with other construction including light fixtures, HVAC equipment, fire-suppression-system components, and partition assemblies.

1.10 WARRANTY

A. Special Warranty: Manufacturer agrees to repair or replace components of gymnasium equipment that fail in materials or workmanship within specified warranty period.

1. Failures include, but are not limited to, the following:
   a. Basketball backboard failures including glass breakage.
   b. Faulty operation of basketball backstops.
2. Warranty Period: Five years from date of Substantial Completion.

PART 2 - PRODUCTS

2.1 MANUFACTURERS, GENERAL

A. Source Limitations: Obtain gymnasium equipment from single source from single manufacturer.

2.2 PERFORMANCE REQUIREMENTS

A. Seismic Performance: Basketball backstops and anchors shall withstand the effects of earthquake motions determined according to ASCE/SEI 7.

2.3 BASKETBALL EQUIPMENT

A. General: Provide equipment complying with requirements in NFHS's "NFHS Basketball Rules Book."

B. Protruding fasteners or exposed bolt heads on front face of backboards are not permitted.

C. Provide manufacturer's recommended connections complying with Section 055000 "Metal Fabrications" of size and type required to transfer loads to building structure.

D. Overhead-Supported Backstops:

1. Folding Type: Provide manufacturer's standard assembly for forward-folding, front-braced backstop, with hardware and fittings to permit folding.
2. Framing: Steel pipe, tubing, and shapes. Design framing to minimize vibration during play.
   a. Center-Mast Frame: Welded with side sway bracing.
   b. Finish: Manufacturer's standard polyester powder-coat finish.
3. Folding Control System: Electric hoist that folds backstop with 115 volt actuator, integral limit switches that provide automatic shut-off in both positions, and safety catch with automatic reset.

E. Main Court Basketball Backboards (2 each):

1. Shape and Size:
   a. Rectangular.
2. Backboard Material: With predrilled holes or preset inserts for mounting goals, and as follows:
   a. Glass: Not less than 1/2-inch- (13-mm-) thick, transparent tempered glass complying with ASTM C 1048 Kind FT (fully tempered) and with impact testing requirements in 16 CFR 1201 Category II or ANSI Z97.1 Class A for safety glazing. Provide glass with impact-absorbing resilient rubber or PVC gasket around perimeter in a fully welded, brushed-natural-finish, extruded-aluminum frame, with steel subframe, reinforcement, bracing, and mounting slots for mounting backboard frame to backboard support framing.
      1) Standard Mount: Provide steel corner reinforcement with mounting slots for mounting backboard frame to backstop at standard mounting centers. Provide center-strut frame reinforcement.
      2) Rim-Restraining Device: Complying with NCAA and NFHS rules and designed to ensure that basket remains attached if glass backboard breaks.

F. Goal Mounting Assembly: Compatible with goal, backboard, and support framing; with hole pattern 5 inches (127 mm) o.c. horizontally and vertically that is manufacturer's standard for goal attachment.

1. Glass Backboard Goal Mounting Assembly: Goal support framing and reinforcement designed to transmit load from goal to backboard frame and to minimize stresses on glass backboard.
2. Direct Mount: Designed for mounting goal directly and independently to center mast of backboard support framing so no force, transmitted by ring, is directly applied to backboard, and rigidity and stability of goal are maximized.

G. Basketball Goals: Complete with flanges, braces, attachment plate, and evenly spaced loops welded around underside of ring.
1. Single-Rim Basket Ring Competition Goal: Materials, dimensions, and fabrication complying with referenced rules.
2. Type: Movable, breakaway design with manufacturer's standard breakaway mechanism and rebound characteristics identical to those of fixed, nonmovable ring.
3. Breakaway Characteristics: Positive-lock movable breakaway design, with manufacturer's standard breakaway mechanism including preset pressure release, set to release at 230-lb (105-kg) load, and automatic reset. Provide movable ring with rebound characteristics identical to those of fixed, nonmovable ring.
4. Field Adjustment: Provide rim that is field-adjustable for rebound elasticity without being removed from the backboard.
5. Net Attachment: No-tie loops for attaching net to rim without tying.
6. Finish: Manufacturer's standard finish.

H. Basketball Nets: 12-loop-mesh net, between 15 and 18 inches (380 to 460 mm) long, sized to fit rim diameter, and as follows:
1. Competition Cord: Antiwhip, made from white nylon cord not less than 120-gm thread and not more than 144-gm thread.

I. Backboard Safety Pads: Designed for backboard thickness indicated and extending continuously along bottom and up sides of backboard and over goal mounting and backboard supports as required by referenced rules.
1. Attachment: Manufacturer's standard.
2. Color: As selected by Architect from manufacturer's full range.

2.4 VOLLEYBALL EQUIPMENT

A. General: Provide equipment complying with requirements in NFHS's "NFHS Volleyball Rules Book."

B. Floor Insert: Solid-brass floor plate; and steel pipe sleeve, concealed by floor plate, with capped bottom end, sized with ID to fit post standards, not less than 9 inches (228 mm) long to securely anchor pipe sleeve in structural floor below finished floor in concrete footing as indicated; with anchors designed for securing floor insert to floor substrate indicated; one per post standard quantity as indicated.
1. Floor Plate: Self-locking, hinged access cover, designed to be flush with adjacent flooring. Provide two tool(s) for unlocking access covers.

C. Post Standards: Removable, paired volleyball post standards as indicated. Fixed height. Designed for easy removal from permanently placed floor insert supports. Fabricated from manufacturer's standard metal pipe or tubing, with nonmarking plastic or rubber end cap or floor bumper to protect permanent flooring. Finished with manufacturer's standard factory-applied, polyester powder-coat finish complying with finish manufacturer's written instructions for surface preparation, including pretreatment, application, baking, and minimum dry film thickness or plated metal finish.
1. Nominal Pipe or Tubing Diameter: 3-inch (76-mm) OD at base.
2. Net Height Adjuster: Manufacturer's standard mechanism for height adjustment, complete with fittings; designed for positioning net at heights indicated.
a. Net Heights: Between sitting volleyball net height and boys'/men's volleyball net height, 36 and 95-5/8 inches (910 and 2430 mm) or more.

D. Net: 32 feet (9.75 m) long; one per pair of paired post standards; and as follows:
1. Width and Mesh: Competition volleyball net, 36 inches (910 mm) with 4-inch- (102-mm-) square knotless mesh made of black nylon string.
a. Hem Band Edges: White, not less than 2-inch- (50-mm-) wide top, bottom, and side bindings; tie offs at top, bottom, and midpoint of each side end of net; end sleeves for dowels; and lines with linkage fittings threaded through top and bottom hems of binding. Provide lengths of lines and linkage fittings as required to properly connect to and set up net for post standard spacing indicated on Drawings.
1) Top Line: Not less than 1/4-inch- (6-mm-) diameter rope.
2) Bottom Line: Not less than 1/4-inch- (6-mm-) diameter rope.
2. Dowels: Not less than 1/2-inch- (13-mm-) diameter fiberglass or 1-inch- (25-mm-) diameter wood. Provide two dowels per net threaded through each side hem sleeve for straightening net side edges.
3. Boundary Tape Markers: 2-inch- (50-mm-) wide white strip, secured to net top and bottom with hook-and-loop attachment. Provide two tape markers per net for marking court boundaries.

E. Net-Tensioning System: Designed to adjust and hold tension of net. Fully enclosed, nonslip worm-gear manufacturer's standard-type winch with cable length and fittings for connecting to net lines, positive-release mechanism, and manufacturer's standard handle. Mount net tensioner on post standard at side away from court. Provide end post with post top pulley. Provide opposing post with welded-steel loops, hooks, pins, or other devices for net attachment and post top grooved line guide.

F. Bottom Net Lock Tightener: Provide manufacturer's standard quick-release-type tension strap; a spring-loaded, self-locking tensioner; a turnbuckle; a pulley; or other device and linkage fittings designed to quickly and easily tighten bottom line or net.

G. Storage Cart: Manufacturer's standard wheeled unit designed for transporting and storing volleyball equipment and passing through 36-inch- (910-mm-) wide door openings. Fabricate welded-steel tubing units with heavy-duty casters, including no fewer than two swivel casters. Fabricate wheels from materials that do not damage or mark floors; number of units as required to provide transport and storage for specified equipment.

2.5 SAFETY PADS

A. Safety Pad Surface-Burning Characteristics: ASTM E 84 by UL or another testing and inspecting agency acceptable to authorities having jurisdiction:
   1. Flame-Spread Index: 25 or less.
   2. Smoke-Developed Index: 450 or less.

B. Pad Coverings: Provide safety pad fabric covering that is fabricated from puncture- and tear-resistant, PVC-coated polyester or nylon-reinforced PVC fabric, not less than 14-oz./sq. yd (475-g/sq. m) and treated with fungicide for mildew resistance; with surface-burning characteristics indicated, and lined with fire-retardant liner.

C. Wall and Column Safety Pads: Padded wall wainscot panels designed to be attached in a continuous row; each panel section consisting of fill laminated to backer board with visible surfaces fully covered by seamless fabric covering, free of sag and wrinkles and firmly attached to back of backer board.
   1. Backer Board: Not less than 3/8-inch- (9.5-mm-) thick fire-retardant-treated plywood according to AWPA U1, UCFA Fire Retardant Interior.
   2. Fill: Multiple-impact-resistant foam not less than 1-1/2-inch- (38-mm-) thick polyurethane, 3.5-lb/cu. ft. (56-kg/cu. m) density.
   3. Size: Each panel section, as indicated.
   4. Number of Modular Panel Sections: As indicated.
   5. Installation Method: Concealed mounting Z-clips.
   6. Fabric Covering Color(s): As selected by Architect from manufacturer's full range for one color(s).
   7. Graphics: Provide custom graphics in location indicated on Drawings.

D. Corner Wall Safety Pads: Wall corner pad with top return (minimum 6”) consisting of minimum 1-1/4-inch- (32-mm-) thick, multiple-impact-resistant, closed-cell, polyethylene-foam filler, covered on both sides and all edges by fabric covering with backer board and manufacturer's standard anchorage to wall.
   1. Length: Each pad as indicated on Drawings.
   2. Fabric Covering Color(s): As selected by Architect from manufacturer's full range for one color.
   3. Location: At stage as indicated on Drawings.

2.6 MATERIALS

A. Aluminum: Alloy and temper recommended by manufacturer for use and finish type indicated.
   1. Extruded Bars, Profiles, and Tubes: ASTM B 221 (ASTM B 221M).
   2. Cast Aluminum: ASTM B 179.
   3. Flat Sheet: ASTM B 209 (ASTM B 209M).

B. Steel: Comply with the following:
   1. Steel Plates, Shapes, and Bars: ASTM A 36/A 36M.
   2. Steel Tubing: ASTM A 500/A 500M or ASTM A 513, cold formed.
   3. Steel Sheet: ASTM A 1011/A 1011M.

C. Support Cable: Manufacturer's standard galvanized-stranded-steel wire rope with a breaking strength of 7000 lb (3175 kg). Provide fittings complying with wire rope manufacturer's written instructions for size, number, and installation method.

D. Support Chain and Fittings: For chains used for overhead lifting, provide Grade 80 heat-treated alloy steel chains, complying with ASTM A 391/A 391M, with commercial-quality, hot-dip galvanized or zinc-plated steel connectors and hangars.

E. General-Purpose Chain: For chains not used for overhead lifting, provide carbon steel chain, complying with ASTM A 413/A 413M, Grade 30 proof coil chain or other grade recommended by gymnasium equipment manu-

facturer. Provide coating type, chain size, number, and installation method complying with manufacturer's written instructions.

F. Castings and Hangers: Malleable iron, complying with ASTM A 47/A 47M; grade required for structural loading.

G. Softwood Plywood: DOC PS 1, exterior.

H. Particleboard: ANSI A208.1.

I. Equipment Wall-Mounted Board: Wood, transparent finish, size, and quantity as required to mount gymnasium equipment according to manufacturer's written instructions.

J. Anchors, Fasteners, Fittings, and Hardware: Manufacturer's standard corrosion-resistant or noncorrodible units; concealed; tamperproof, vandal- and theft-resistant design.

K. Grout: Nonshrink, nonmetallic, premixed, factory-packaged, nonstaining, noncorrosive, nongaseous grout, complying with ASTM C 1107/C 1107 with minimum strength recommended in writing by gymnasium equipment manufacturer.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine substrates, areas, and conditions, with Installer present, for compliance with requirements for play court layout, alignment of mounting substrates, installation tolerances, operational clearances, accurate locations of connections to building electrical system, and other conditions affecting performance of the Work.

1. Verify critical dimensions.
2. Examine supporting structure, subgrades, subfloors, and footings below finished floor.
3. Examine wall assemblies, where reinforced to receive anchors and fasteners, to verify that locations of concealed reinforcements are clearly marked. Locate reinforcements and mark locations.

B. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 INSTALLATION, GENERAL

A. General: Comply with manufacturer's written installation instructions and competition rules indicated for each type of gymnasium equipment. Complete equipment field assembly where required.

B. Unless otherwise indicated, install gymnasium equipment after other finishing operations, including painting, are completed.

C. Permanently Placed Gymnasium Equipment and Components: Install rigid, level, plumb, square, and true; anchored securely to supporting structure; positioned at locations and elevations indicated; in proper relation to adjacent construction; and aligned with court layout.

1. Floor Insert Location: Coordinate location with application of game lines and markers, and core drill floor for inserts after game lines are applied.
2. Floor Insert Elevation: Coordinate installed heights of floor insert with installation and field finishing of finish flooring and floor-plate type.
3. Operating Gymnasium Equipment: Verify clearances for movable components of gymnasium equipment throughout entire range of operation and for access to operating components.

D. Floor Insert Setting: Position sleeve in oversized, recessed voids in concrete slabs and footings. Clean voids of debris. Fill void around sleeves with grout, mixed and placed to comply with grout manufacturer's written instructions. Protect portion of sleeve above subfloor and footing from splatter. Verify that sleeves are set plumb, aligned, and at correct height and spacing; hold in position during placement and finishing operations until grout is sufficiently cured. Set insert so top surface of completed unit is flush with finished flooring surface.

E. Wall Safety Pads: Mount with bottom edge at dimension indicated on Drawings above finished floor.

F. Safety Pads Cut-out Trim: Limit cuts in face of padding from trim unit's corner-to-corner outside dimensions. Install with ends of cuts concealed behind trim flange.

G. Anchoring to In-Place Construction: Use anchors and fasteners where necessary to secure built-in and permanently placed gymnasium equipment to structural support and to properly transfer load to in-place construction.

H. Connections: Connect electric operators to building electrical system.

I. Removable Gymnasium Equipment and Components: Assemble in place to verify that equipment and components are complete and in proper working order. Instruct Owner's designated personnel in properly handling, assembling, adjusting, disassembling, transporting, storing, and maintaining units. Disassemble removable gymnasium equipment after assembled configuration is approved by Architect, and store units in location indicated on Drawings.

3.3 ADJUSTING

A. Adjust movable components of gymnasium equipment to operate safely, smoothly, easily, and quietly, free from binding, warp, distortion, nonalignment, misplacement, disruption, or malfunction, throughout entire operational range. Lubricate hardware and moving parts.

3.4 CLEANING

A. After completing gymnasium equipment installation, inspect components. Remove spots, dirt, and debris and touch up damaged shop-applied finishes according to manufacturer's written instructions.

B. Replace gymnasium equipment and finishes that cannot be cleaned and repaired, in a manner approved by Architect, before time of Substantial Completion.

3.5 DEMONSTRATION

A. Engage a factory-authorized service representative to train Owner's maintenance personnel to adjust, operate, and maintain gymnasium equipment.

END OF SECTION 116623

SECTION 126600 - TELESCOPING STANDS

PART 1 - PART 1 - GENERAL

1.1 WORK INCLUDED

A. Manufacture, deliver and install Telescopic Seating Systems in accordance with applicable codes, the following specifications, and approved drawings.

1.2 RELATED WORK BY OTHERS

B. Adequate floor levelness and strength for operation of telescopic seating.

C. Adequate wall strength for attachment and operation of wall attached telescopic seating.

D. Electrical wiring within the building as required for power operated telescopic seating.

1.3 SYSTEM DESCRIPTION

A. Telescopic seating system shall be multiple tiered seating rows comprised of seat and deck components, risers, and supportive understructure.

B. Telescopic seating shall be operable on the telescopic principle, stacking vertically in minimum floor area when not in use.

C. The first moving row, on manual sections, shall be secured with release lever. All other rows shall be mechanically locked, operable only upon unlocking and cycling of first row. Power sections shall be secured with mechanical locks as well as the power system, operable upon activating the pendant control.

1.4 QUALITY ASSURANCE

A. DESIGN LOAD CRITERIA (STRUCTURAL):

1. International Building Code Standard: Comply with requirements of IBC / ICC 300, Chapter 4 "Standard for Bleachers, Folding and Telescopic Seating and Grandstands Assembly Seating," except where other requirements are indicated by the architect/owner.

B. Partial Loading Requirements: Telescopic seating governed by IBC 2018, ICC-300 2017, NFPA 102 2016 or NFPA 5000 2018 shall all comply with ASCE 2016, Section 4.3.3 Partial Loading.

C. Manufacturer: Company specializing in telescopic seating with a minimum of 25 years' experience in manufacturing telescopic seating.

D. Engineer Qualifications: Manufacturer to employ a registered, licensed Professional Engineer to certify that the equipment to be supplied meets or exceeds the design criteria of this specification.

E. Installation: Shall be handled directly by the manufacturer or by a factory certified installation subcontractor.

F. Product Liability: Certification of insurance coverage of not less than $5,000,000.

G. Welding Processes: To be performed by certified professional welding operators in accordance with American Welding Society – Certified Welding Fabricator, (AWS-CWF), D1,1 "Structural Welding Code-Steel."

H. Product Improvements: Equipment provided shall incorporate manufacturer's design improvements and materials current at time of shipment, provided that such improvements and materials are consistent with the intent of these specifications.

1.5 SUBMITTALS

A. BID SUBMITTALS

1. Manufacturer's descriptive literature and specifications.
2. List of deviations from these specifications, if any.
3. Certification of Insurance.

B. JOB SUBMITTALS

1. Shop Drawings showing all equipment to be furnished with details of accessories to be supplied including necessary electrical service to be provided by others. All electrical submittals must include U.L. listing number.
2. Samples of material and color finish as requested by Architect.
3. Warranty, operation and maintenance instructions to the owner upon completion.

1.6 DESIGN CRITERIA

A. Telescopic seating shall be designed to support, in addition to its own weight, and the weight of added accessories, a uniformly distributed live load of not less than 100 lbs. per sq. ft. (4.8 kN per sq. m.) of gross horizontal projection. Seat boards and footrest shall be designed for a live load of not less than 120 lbs. per linear foot (1.751 kN per linear m).

B. Sway force applied to seats shall be 24 lbs. per linear ft. (350 N per linear m.) parallel to the seats and 10 lbs. per linear ft. (146 N per linear m.) perpendicular to the seats. Sway forces shall not be considered simultaneously applied.

C. Railings, posts and sockets designed to withstand the following forces applied separately.

D. Handrails shall be designed and constructed for:

1. A concentrated load of 200 lbs. (890 N) applied at any point and in any direction.
2. A uniform load of 50 lbs. per ft. (730 N/m) applied in any direction.
3. The concentrated and uniform loading conditions shall not be required to be applied simultaneously.

E. Guards shall be designed and constructed for:

1. A concentrated load of 200 lbs. (890 N/m) applied at any point and in any direction along the top railing member and; a uniform load of 50 lbs. per ft. (730 N/m) applied horizontally at the required guardrail height and simultaneous uniform load of 100 lbs. per ft. (1460 N/m) applied vertically downward at the top of the guardrail. The concentrated and uniform loading conditions shall not be required to be applied simultaneously.

F. American Institute of Steel Construction (AISC), American Iron and Steel Institute (AISI) and Aluminum Association (AA) design criteria shall be the basis for calculation of member sizes and connections.

G. Wood members shall be designed in accordance with National Forest Products Association, (NFOPA), and National Design Specification for Wood Construction.

1.7 WARRANTY

A. The manufacturer shall warrant all work performed under these specifications to be free of defects for a period of one year.

B. All understructure components shall be warranted for a period of ten years.

C. Any materials found to be defective within this period will be replaced at no cost to the owner. This warranty shall not include replacements required by Acts of God, war, vandalism, flood, fire, calamity or deliberate abuse or misuse of the equipment.

PART 2 - PART 2 - PRODUCTS

2.1 ACCEPTABLE MANUFACTURERS

A. All seating shall be VersaTract Telescopic Seating System as manufactured by Irwin Seating Company - Telescopic Division, Altamont, IL 62411 or equal, subject to prior approval and strict compliance with these specifications.

a. Substitution Limitations:

b. Where approved manufacturers and specific products are listed, submit data on such manufacturer's product which is equal to or better than in quality to the Basis of Design product for approval by Architect. Comply with requirements listed in individual specifications.

c. Additional manufacturers may submit substitution requests in accordance with procurement substitution and/or substitution procedures, and provide comparable products with the following support information detailed below.

a. Written documentation stating specification compliance regarding construction, materials, and standard of quality and manufacturing techniques.

b. Note all deviations to the drawings and/or specifications in writing.

c. Provide the Architect with full scale seat sample not less than 20 days prior to the bid date. The sample shall represent the exact seat proposed and shall meet the standards set forth in the specification.

d. The Owner, or its designated representative, reserves the right to reject any proposal that in their opinion fails to meet the criteria established by this specification. Such decision shall be final.

2.2 MATERIALS

A. Seating Area: 1 Groups 90 Feet 4 Inches Long Including End Rails, 6 Rows High Wall Attached, Electrically Operated.

B. Dimensions:

1. Overall height: 5 Feet 0 Inches
2. Open depth: 15 Feet 3 5/8 Inches
3. Closed depth: 4 Feet 11 5/8 Inches
4. Row Spacing: 31 Inches
5. Rise per row: 10 Inches

C. Seating Area: 2 Groups 90 Feet 1 Inches Long Including End Rails, 7 Rows High Wall Attached, Electrically Operated.

D. Dimensions:

1. Overall height: 5 Feet 10 Inches
2. Open depth: 14 Feet 5 1/8 Inches
3. Closed depth: 5 Feet 9 1/8 Inches
4. Row Spacing: 26 Inches
5. Rise per row: 10 Inches

2.3 FABRICATION

A. Understructure System:

1. Steel supports and rolling frames shall be constructed from formed steel of the size and shape necessary to support the design loads. All support bracing shall begin at Row 2 and be of diagonal or "knee" type for rigidity. Diagonal bracing to be minimum 1 1/2” x 1 1/2" 14-gauge square tubing. Bracing fabricated from open-sided channel, angle iron or flat strap "X" type bracing is unacceptable.

2. Wheels shall not be less than 5" diameter x 1 3/8" non-marring soft rubber face to protect wood or synthetic floor surfaces. Each operating row shall have a minimum of 6 wheels.

3. Each fully skirted wheel channel shall be formed 12-gauge steel and continuously in contact with adjacent channels by means of an Integral Alignment System (IAS) and include nylon glides to eliminate any metal to metal contact. The IAS maintains proper alignment between adjacent wheel channels for smooth and consistent operation while eliminating the potential for accidental row separation. Wheel channel alignment systems with metal to metal contact requiring periodic lubrication or that utilizes a guide rod system that can be bent or damaged will not be acceptable.

4. Each cantilever arm shall be triple-formed 10-gauge steel, securely welded to the post assembly and include a nylon cantilever pad to ensure smooth operation. The cantilever pad shall also provide a firm base when in the occupied position and provide a solid feel when walked on.

5. Vertical columns shall be high tensile steel structural tube to meet design criteria. Minimum column size to be 2” x 3” 14-gauge structural tube, welded to a 2’ wide wheel channel using 360 degrees of weldment.

6. Deck support members shall be double formed 14-gauge steel and connect the front nosing and rear riser members. Each deck support shall include a unique dual-purpose roller that provides smooth support during operation. The deck support roller shall also include a 3/4” wide shoulder that’s encapsulated by the deck support on the row above in order to maintain proper upper alignment while delivering consistent, repeatable operation.

B. Seat Systems:

1. Infinity Seat: Supply plastic modular 18” individual seats in either 10” or 12” deep models. Seating to be scuff resistant injection molded high density polyethylene plastic. 10” Infinity Seat to be supplied

   a. Seat modules supplied shall be of a high aesthetic design using multiple textures, style lines and a waterfall front. The rear of the seat shall be slightly curved to eliminate the straight line appearance and include a moderate seat contour and texture to enhance spectator comfort.

   b. Seating design shall be molded to achieve a finished end appearance without the use of end caps. The rear of the seat shall include a smooth wall allowing for the deck to be easily swept clean without obstruction.

   c. Seat heights shall be maintained at a minimum of 16 3/4". Lower seat heights which detour from spectator comfort will not be accepted.

   c. Foot space shall be maximized for spectator comfort and provide a minimum of 22” when measured with a 10” module and 21” with a 12” module.

d. Each seat to be designed with the capability of using seat numbers and row letters at the aisle locations. Seat numbers to be stylishly designed using a radius corner to enhance the aesthetic value of the seat. Seat numbers and row letters shall be recessed into the seat to protect against any vandalism.

e. Select seating colors from manufacturer's 15 standard colors. Custom colors available as an option.

f. Securely fasten each seat to the nose beam using a 10-gauge formed steel bracket and locking hardware. Adjacent seating shall be interlocked together along the full perimeter eliminating any fore or aft movement or the potential of any pinching hazard.

g. Seat modules shall be designed to support a uniform load of 600 lbs per seat and a concentrated load of 150 lbs over 4 square inches.

2. Integra Chair: Supply fold-down chairs on telescoping platforms with seats, backs, and a full complement of standards, fold-down mechanism and all support structure required for a fully functional seating system.

a. Platform chairs shall have a modern look with complementary style lines, comfortable contours and subtle texture to achieve maximum spectator comfort.

b. Each chair to be constructed from durable, scuff resistant injection molded high density polypropylene plastic, designed to support over 700 pounds per chair.

c. Seat heights shall be maintained at a minimum of 17 ½ inches. Lower seat heights which detour from spectator comfort will not be accepted.

d. Actual seat width shall not be less than 17 ¼ inches.

e. Back heights to be a minimum of 31 ½" and designed to fold within the depth of the deck when in the stored position. Chairs extending beyond the face of the unit when closed will not be acceptable.

f. Chairs shall be rail mounted and allow for complete flexibility in chair layout. Seat spacing to be available from 18" to 24", and field adjustable.

g. Each chair shall have the capability of using seat numbers and row letters at the aisle locations. Seat numbers and row letters to have a stylish round design to enhance the aesthetic value of the seat, and be recessed to protect against vandalism.

h. Select seating colors from manufacturer's 15 standard colors. Custom colors available as an option.

i. Securely fasten each chair and arm assembly to a heavy-duty, clear anodized aluminum rail using locking hardware.

3. Chair Fold-Down System:

a. Semi-Automatic Operation with Foot Release: The raising and lowering of up to 12 chairs per operation shall be accomplished with an internal spring assist system. Locking of chairs in the use position shall be totally independent of platform operation. Lowering of each row of chairs shall be done by simply depressing a foot release lever allowing the chairs to fold flat on the deck surface.

4. Chair Type:

a. Plastic Seats and Backs: Seats and backs shall be of high impact resistant injection molded polypropylene plastic, with a textured surface. The face of the seat and back shall be compound-contour molded to promote comfort, uninterrupted by surface grooves with no exposed hardware. For proper comfort, seats and backs shall be a minimum of 17 ¼" wide. Narrower seats which sacrifice spectator comfort will not be acceptable.

5. Armrest Type:

a. Armrest: Armrests shall be injection molded plastic and shall be securely attached to the support structure by concealed fastener, capable of rotating to a vertical position for storage. Armrest rotation mechanism shall be completely shrouded to prevent any pinching or snagging hazard. Armrest support shall be designed to allow for adjustments in chair width to facilitate row alignment. Armrests to be supplied in a satin black finish.

6. Dust/Debris Covers:

a. Dust/debris covers shall be supplied to prevent debris from interfering with the latching mechanism and to simplify cleaning. Dust/debris covers to be located between the 2 primary fold-down mechanisms on manual chair operation, and the entire chair length with semi-automatic operation. Systems that do not include dust/debris covers will not be accepted.

C. Deck System:

1. Panelam decking shall have a 0.030 (30 thousandths) high density polyethylene overlay, permanently bonded over a structural deck panel meeting all flooring load requirements. Deck panels shall be supported along the front and back edge for maximum rigidity and connected using a tongue and groove splice leaving the deck clean and free of any tripping or cleaning obstructions. Decking shall be secured in place by the encapsulation of the rear riser and mechanical fasteners along the front edge. Panelam to be selected from manufacturer's standard colors. Finish thickness to be 5/8".

D. Nosing:

1. Nosing shall be one piece, formed, 14-gauge steel with a minimum G-60 pre-galvanized finish. Recommended with Infinity seat modules

d. Nosing shall be one piece, formed, 14-gauge steel with a black powder coated epoxy finish. Recommended with Integra chairs

E. Rear Risers:

1. Rear riser shall be one piece, formed, 14-gauge steel with a minimum G-60 pre-galvanized finish. Recommended with Infinity seat modules

e. Rear riser shall be one piece, formed, 14-gauge steel with a black powder coated epoxy finish. Recommended with Integra chairs

F. Finish: For rust resistance in standard conditions all painted surfaces shall be finished in textured Epoxy Powder Coated Semi-Gloss Black.

PART 3 - PART 3 - EXECUTION

3.1 ACCESSORIES (Select as applicable)

A. Aisles shall be footrest level 52 inches wide to provide 4 aisles. Aisles at the footrest level shall include non-slip treads on the top front edge.

B. Intermediate aisle steps shall be provided. Steps are permanently attached closed design. Steps shall be constructed from 14 ga. steel, finished in a Black powder coated epoxy, and designed to eliminate any possible toe catch between the top of the intermediate step and the bottom of the nose beam per ADA or other applicable codes. Front step shall be removable and interlock to the front row eliminating any possibility of accidental disengagement, and store on the front row when not in use.

C. Aisle handrails.

1. Smart Rail aisle handrails shall be provided for 22” to 26” row spacing. Aisle railings shall quickly and easily rotate 90 degrees to the locked position and store parallel to the front of the aisle. Railings that require removal from the pocket or the use of tools for storage will not be acceptable. Aisle railings shall be an individual rail design, located on every other row starting at row two (2). Railing to be constructed of 1 1/2” 11 ga. round steel tubing, finished in a textured powder coated epoxy. For safety, railings designed without a full return of the handrail will not be acceptable.

a. Wheel Chair Seating Areas.

b. Recoverable wheel chair spaces shall be provided at the section joint location or section length as shown on plans. An integral support on row two shall be provided to eliminate structural damage to the understructure during the operation and use of the system. Recoverable seating areas do not require front railings for support.

D. End rails.

1. End rails of the self-storing type, finished with textured epoxy powder-coated black enamel, shall be provided at the open ends of the group. End rails shall start at row three and be constructed from 1” square tubing to meet all national building codes. Railings with flexible uprights that can be expanded beyond the 4” sphere are not acceptable.

E. Vinyl end curtains shall be provided to limit unauthorized access to the underside of the telescopic system. Curtain to be one piece design shaped to follow the angle of the telescopic unit in the open position and constructed of a sturdy vinyl material with sewn-in grommets for attachment. Color to be selected from manufacturer’s standard selection.

F. Scorer’s table shall be 8’ long x 18” wide and feature a speckled grey blow molded top. Table to include cantilevered folding legs designed to fit within the seating row without the need for mounting sockets, or for use on the floor in front of the stand.

~~G. Video Platform. Supply 4’x8’ video platform permanent or semi-permanently attached to the telescopic stand. The video platforms shall be modular in design and constructed of 4’x4’ sections, each with a locking system allowing adjacent sections to be securely connected, including all necessary support braces. Deck material to be a minimum of 3/4” plywood core to provide maximum support in a concentrated area and to minimize vibration. Decking surface to be finished in a Black polyethylene finish~~. **[ADD 1]**

1. Guardrails along the front side of each video platform section shall not be less than 47” wide and 36” high. Guardrails at the ends of the video platform shall not be less than 23” wide and 36” high. All railings to be constructed from steel tubing with a black powder coated finish. The design of each guardrail must comply with IBC/ICC codes.

H. Seat numbers and row letters shall be supplied in a contrasting, but complementary color for easy seat identification. Layout of numbering to be coordinated with the architect/owner.

I. Transport systems for portable units. (Select 1 or 2)

3.2 PROPULSION SYSTEM

A. FRICTION POWER: Integra Drive System (IDS) shall be furnished on each seating group to open and close the telescopic units. Each individual section shall include 2 IDS friction drive systems integrated into the first moving row of understructure to achieve smooth and efficient operation. Operation of the seating shall be accomplished with the use of a walk along pendant control.

1. Each IDS power system shall include large 6 1/2" diameter friction rollers to develop tractive force adequate to open and close the system. Each roller to include non-marring 1/2" thick rubber covering.

a. Electrical motors for each section shall be heavy-duty and high efficiency gear reduction motors. The shaft diameter for the gear motor and rollers shall be a minimum of 1” and be connected by a 1” schedule 40 drive shaft.

b. All roller chain and sprockets used throughout the drive system shall be a minimum of #40 in size. Each drive unit shall be designed to include a safety shroud around the chain and sprocket for overall safety.

c. The power units shall develop tractive forces adequate to operate the seating units under normal conditions but inadequate to operate should significant obstacles be encountered.

B. Manufacturer shall provide all wiring from power source within bleacher seating including pendant control. Removable pendant control shall be handheld with forward and reverse button, plugging into a single receptacle. Electrical contractor shall provide a 60 HZ power source (as specified below) behind each group of seating. Amperage to be as specified by seating manufacturer depending on the number of power units required. For wall-attached installations, power source to terminate in a surface mounted junction box above floor. For reverse units, power source to terminate in a junction box, flush mounted under first seating row in center of group. Electrical contractor shall perform the connections to the seating equipment at the junction box. All electrical parts and wiring shall be installed in complete accord with the National Electric Code. U.L. Listing FHJU.E479554.

Select: Supply power system with 208/230V, 5 wire 3-phase system.

Select: Supply power system with 120V single phase system.

3.3 REVIEWS AND APPROVALS

A. Shop drawings shall be approved and job site field measurements taken prior to installation and telescopic gym seating shall be installed in conformance therewith.

3.4 INSTALLATION

A. The installation of the telescopic gym seating will be handled directly by the manufacturer or by a factory authorized installation subcontractor qualified to perform the installation function.

3.5 PROTECTION

A. The manufacturer’s representative shall transmit instructions in both operation and maintenance to the owner.

B. Maintenance and operation of the telescopic gym seating shall be the responsibility of the owner or his duly authorized representative, and shall include the following:

1. During operation of the telescopic gym seating, the opening and closing shall be supervised by responsible personnel who will assure that the operation is in accordance with the manufacturer's instructions.

a. Only attachments specifically approved by the manufacturer for the specific installation shall be attached to the telescopic gym seating.

b. An annual inspection and required maintenance of all telescopic gym seating shall be performed to assure safe conditions. At least bi-annually, the inspection shall be performed by a Professional Engineer or factory service personnel.

C. Irwin Telescopic Seating Company constantly strives to improve its product and manufacturing methods; therefore, it reserves the right to make changes without notice which, in the opinion of Irwin Seating Company, shall improve the product.

SECTION 133419 - METAL BUILDING SYSTEMS [ADD 1]

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

A. Section Includes:
   1. Structural-steel framing.
   2. Metal roof panels.
   3. Metal soffit panels.
   4. Metal Liner Panels: interior, perforated
   5. Thermal insulation.
   6. Accessories.
      a. Roof Drainage System

B. Related Requirements:
   1. Division 3 Section "Cast-in-Place Concrete" for concrete foundations, slabs, and anchor-bolt installation.
   2. Division 4 Section "Unit Masonry Assemblies" for exterior and load-bearing walls fabricated from concrete masonry units.
   3. Division 5 Section “Cold-formed Metal Framing”
   4. Division 7 Section “Formed Metal Wall Panels”
   5. Division 7 Section “Joint Sealants”
   6. Division 8 Section “Hollow Metal Doors & Frames”

1.3 DEFINITIONS

A. Terminology Standard: See MBMA's "Metal Building Systems Manual" for definitions of terms for metal building system construction not otherwise defined in this Section or in standards referenced by this Section.

1.4 COORDINATION

A. Coordinate sizes and locations of concrete foundations and casting of anchor-rod inserts into foundation walls and footings. Anchor rod installation, concrete, reinforcement, and formwork requirements are specified in Section 033000 "Cast-in-Place Concrete."

B. Coordinate metal panel assemblies with rain drainage work, flashing, trim, and construction of supports and other adjoining work to provide a leakproof, secure, and noncorrosive installation.

1.5 PREINSTALLATION MEETINGS

A. Preinstallation Conference: Conduct conference at Project site.
   1. Review methods and procedures related to metal building systems including, but not limited to, the following:
      a. Condition of foundations and other preparatory work performed by other trades.
      b. Structural load limitations.
      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.
   2. Review methods and procedures related to metal roof panel assemblies including, but not limited to, the following:
      a. Compliance with requirements for purlin and rafter conditions, including flatness and attachment to structural members.
      b. Structural limitations of purlins and rafters during and after roofing.
      c. Flashings, special roof details, roof drainage, roof penetrations, equipment curbs, and condition of other construction that will affect metal roof panels.
      d. Temporary protection requirements for metal roof panel assembly during and after installation.

e. Roof observation and repair after metal roof panel installation.

3. Review methods and procedures related to metal wall panel assemblies including, but not limited to, the following:
   a. Compliance with requirements for support conditions, including alignment between and attachment to structural members.
   b. Structural limitations of girts and columns during and after wall panel installation.
   c. Flashings, special siding details, wall penetrations, openings, and condition of other construction that will affect metal wall panels.
   d. Temporary protection requirements for metal wall panel assembly during and after installation.
   e. Wall observation and repair after metal wall panel installation.

1.6 ACTION SUBMITTALS

A. Product Data: For each type of metal building system component.
   1. Include construction details, material descriptions, dimensions of individual components and profiles, and finishes for the following:
      a. Metal roof panels.
      b. Thermal insulation and vapor-retarder facings.

B. Shop Drawings: Indicate components by others. Include full building plan, elevations, sections, details and the following:
   1. Anchor-Rod Plans: Submit anchor-rod plans and templates before foundation work begins. Include location, diameter, and minimum required projection of anchor rods required to attach metal building to foundation. Indicate column reactions at each location.
   2. Structural-Framing Drawings: Show complete fabrication of primary and secondary framing; include provisions for openings. Indicate welds and bolted connections, distinguishing between shop and field applications. Include transverse cross-sections.
   3. Metal Roof Panel Layout Drawings: Show layouts of panels including methods of support. Include details of edge conditions, joints, panel profiles, corners, anchorages, clip spacing, trim, flashings, closures, and special details. Distinguish between factory- and field-assembled work; show locations of exposed fasteners.
      a. Show roof-mounted items including roof hatches, equipment supports, pipe supports and penetrations, lighting fixtures, and items mounted on roof curbs.
   4. Accessory Drawings: Include details of the following items, at a scale of not less than 1-1/2 inches per 12 inches (1:8):
      a. Flashing and trim.
      b. Gutters.
      c. Downspouts.

C. Samples for Initial Selection: For units with factory-applied finishes.

D. Samples for Verification: For the following products:
   1. Panels: Nominal 12 inches (300 mm) long by actual panel width. Include fasteners, closures, and other exposed panel accessories.
   2. Flashing and Trim: Nominal 12 inches (300 mm) long. Include fasteners and other exposed accessories.
   3. Vapor-Retarder Facings: Nominal 6-inch- (150-mm-) square Samples.
   4. Accessories: Nominal 12-inch- (300-mm-) long Samples for each type of accessory.

1.7 INFORMATIONAL SUBMITTALS

A. Qualification Data: For erector manufacturer.

B. Welding certificates.

C. 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 AISC standards for hot-rolled steel and AISI standards for cold-rolled steel, including edition dates of each standard.
   7. Governing building code and year of edition.

8. Design Loads: Include dead load, roof live load, collateral loads, roof snow load, deflection, wind loads/speeds and exposure, seismic design category or effective peak velocity-related acceleration/peak acceleration, and auxiliary loads (cranes).
9. Load Combinations: Indicate that loads were applied acting simultaneously with concentrated loads, according to governing building code.
10. Building-Use Category: Indicate category of building use and its effect on load importance factors.

D. Erector Certificates: For qualified erector, from manufacturer.

E. Material Test Reports: For each of the following products:
1. Structural steel including chemical and physical properties.
2. Bolts, nuts, and washers including mechanical properties and chemical analysis.
3. Tension-control, high-strength, bolt-nut-washer assemblies.
4. Shop primers.
5. Nonshrink grout.

F. Source quality-control reports.

G. Field quality-control reports.

H. Surveys: Show final elevations and locations of major members. Indicate discrepancies between actual installation and the Contract Documents. Have surveyor who performed surveys certify their accuracy.

I. Sample Warranties: For special warranties.

1.8 CLOSEOUT SUBMITTALS

A. Maintenance Data: For metal panel finishes to include in maintenance manuals.

1.9 QUALITY ASSURANCE

A. Manufacturer Qualifications: A qualified manufacturer.
1. Accreditation: Manufacturer's facility accredited according to the International Accreditation Service's AC472, "Accreditation Criteria for Inspection Programs for Manufacturers of Metal Building Systems."
2. Engineering Responsibility: Preparation of comprehensive engineering analysis and Shop Drawings by a professional engineer who is legally qualified to practice in jurisdiction where Project is located.

B. Erector Qualifications: An experienced erector who specializes in erecting and installing work similar in material, design, and extent to that indicated for this Project and who is acceptable to manufacturer.

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

D. Land Surveyor Qualifications: A professional land surveyor who practices in jurisdiction where Project is located and who is experienced in providing surveying services of the kind indicated.

1.10 DELIVERY, STORAGE, AND HANDLING

A. Deliver components, sheets, panels, and other manufactured items so as not to be damaged or deformed. Package metal panels for protection during transportation and handling.

B. Unload, store, and erect metal panels in a manner to prevent bending, warping, twisting, and surface damage.

C. Stack metal panels horizontally on platforms or pallets, covered with suitable weathertight and ventilated covering. Store metal panels to ensure dryness, with positive slope for drainage of water. Do not store metal panels in contact with other materials that might cause staining, denting, or other surface damage.

D. Protect foam-plastic insulation as follows:
1. Do not expose to sunlight, except to extent necessary for period of installation and concealment.
2. Protect against ignition at all times. Do not deliver foam-plastic insulation materials to Project site before installation time.
3. Complete installation and concealment of foam-plastic materials as rapidly as possible in each area of construction.

1.11 FIELD CONDITIONS

A. Weather Limitations: Proceed with panel installation only when weather conditions permit metal panels to be installed according to manufacturers' written instructions and warranty requirements.

1.12 WARRANTY

A. Standard manufacturer’s roofing guarantees which contain language regarding the governing of the guarantee by any state other than the State of Alabama, must be amended to exclude such language, and substituting the requirement that the Laws of the State of Alabama shall govern all such guarantees.

1. Special Warranty on Metal Panel Finishes: Manufacturer agrees to repair finish or replace metal panels that show evidence of deterioration of factory-applied finishes within specified warranty period.
   a. Exposed Panel Finish: Deterioration includes, but is not limited to, the following:
      1) Color fading more than 5 Hunter units when tested according to ASTM D 2244.
      2) Chalking in excess of a No. 8 rating when tested according to ASTM D 4214.
      3) Cracking, checking, peeling, or failure of paint to adhere to bare metal.
   b. Finish Warranty Period: 25 years from date of Substantial Completion.
2. Special Weathertightness Warranty for Standing-Seam Metal Roof Panels: Manufacturer agrees to repair or replace standing-seam metal roof panel assemblies that leak or otherwise fail to remain weathertight within specified warranty period.
   a. Warranty Period: 20 years from date of Substantial Completion.
3. Special Project Warranty: Roofing Installer's warranty, on Division of Construction Management warranty form “C-9”, signed by roofing Installer, covering Work of this Section, in which roofing Installer agrees to repair or replace components of metal roofing system that fail in materials or workmanship within the following warranty period:
   a. Warranty Period: Five years from date of Substantial Completion.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

A. Manufacturers: Subject to compliance with requirements, available manufacturers offering products that may be incorporated into the Work include, but are not limited to the following:
   1. American Buildings, a Nucor Company
   2. Butler Manufacturing Company; a division of BlueScope Buildings North America, Inc.
   3. Ceco Building Systems; an NCI company.
   4. Gulf States Manufacturers; Nucor Company.
   5. Varco-Pruden Buildings; a division of BlueScope Buildings North America, Inc.

B. Source Limitations: Obtain metal building system components, including primary and secondary framing and metal panel assemblies, from single source from single manufacturer.

2.2 SYSTEM DESCRIPTION

A. Provide a complete, integrated set of mutually dependent components and assemblies that form a metal building system capable of withstanding structural and other loads, thermally induced movement, and exposure to weather without failure or infiltration of water into building interior.

B. Primary-Frame Type:
   1. Rigid Clear Span: Solid-member, structural-framing system without interior columns.

C. End-Wall Framing: Manufacturer's standard, for buildings not required to be expandable, consisting of primary frame, capable of supporting one-half of a bay design load, and end-wall columns.

D. Secondary-Frame Type: As indicated on drawings.

E. Eave Height: As indicated on Drawings.

F. Bay Spacing: As indicated on Drawings.

G. Roof Slope: 1 inch per 12 inches (1:12).

H. Roof System: Manufacturer's standard standing-seam, vertical-rib, metal roof panels.

I. Exterior Wall System: as detailed on drawings.

J. Interior Liner Panels: perforated, horizontal with pencil rib striations.

K. Prefabricated Metal Awning Support
   1. Provide gusset plates flush with exterior finish material for anchorage of prefabricated awning.
   2. Locations as indicated on drawings.

2.3 PERFORMANCE REQUIREMENTS

A. Delegated Design: Engage a qualified professional engineer, as defined in Section 014000 "Quality Requirements," to design metal building system.

B. Structural Performance: Metal building systems shall withstand the effects of gravity loads and the following loads and stresses within limits and under conditions indicated according to procedures in MBMA's "Metal Building Systems Manual."
   1. Design Loads: As indicated on Drawings.

2. Deflection and Drift Limits: Design metal building system assemblies to withstand serviceability design loads without exceeding deflections and drift limits recommended in AISC Steel Design Guide No. 3 "Serviceability Design Considerations for Steel Buildings."
3. Deflection and Drift Limits: as indicated on drawings

C. Thermal Movements: Allow for thermal movements from ambient and surface temperature changes by preventing buckling, opening of joints, overstressing of components, failure of joint sealants, failure of connections, and other detrimental effects. Base calculations on surface temperatures of materials due to both solar heat gain and nighttime-sky heat loss.
1. Temperature Change: 120 deg F (67 deg C), ambient; 180 deg F (100 deg C), material surfaces.

D. Structural Performance for Metal Roof Panels: Provide metal panel systems capable of withstanding the effects of the following loads, based on testing according to ASTM E 1592 or FM 4474.
1. Wind Loads: As indicated on Drawings.

E. Air Infiltration for Metal Roof Panels: Air leakage of not more than 0.06 cfm/sq. ft. (0.3 L/s per sq. m) when tested according to ASTM E 1680 or ASTM E 283 at the following test-pressure difference:
1. Test-Pressure Difference: 1.57 lbf/sq. ft. (75 Pa).

F. Water Penetration for Metal Roof Panels: No water penetration when tested according to ASTM E 1646 or ASTM E 331 at the following test-pressure difference:
1. Test-Pressure Difference: 6.24 lbf/sq. ft. (300 Pa).

G. Wind-Uplift Resistance: Provide metal roof panel assemblies that comply with required wind-uplift-resistance.
1. Uplift Rating: As indicated on drawings.

H. FM Global Listing: Provide metal roof panels and component materials that comply with requirements in FM Global 4471 as part of a panel roofing system and that are listed in FM Global's "Approval Guide" for Class 1 or noncombustible construction, as applicable. Identify materials with FM Global markings.
1. Hail Resistance: MH.

I. Energy Performance: Provide roof panels according to the following when tested according to CRRC-1:
1. Initial solar reflectance of 77 and emissivity of not less than 0.08.
2. Solar Reflectance Index of 72 and emissivity of not less than 0.08.

2.4 STRUCTURAL-STEEL FRAMING

A. Structural Steel: Comply with AISC 360, "Specification for Structural Steel Buildings."

B. Bolted Connections: Comply with RCSC's "Specification for Structural Joints Using High-Strength Bolts."

C. Cold-Formed Steel: Comply with AISI's "North American Specification for the Design of Cold-Formed Steel Structural Members" for design requirements and allowable stresses.

D. Primary Framing: Manufacturer's standard primary-framing system, designed to withstand required loads and specified requirements. Primary framing includes transverse and lean-to frames; rafters, rake, and canopy beams; sidewall, intermediate, end-wall, and corner columns; and wind bracing.
1. General: Provide frames with attachment plates, bearing plates, and splice members. Factory drill for field-bolted assembly. Provide frame span and spacing indicated.
2. Rigid Clear-Span Frames: I-shaped frame sections fabricated from shop-welded, built-up steel plates or structural-steel shapes. Interior columns are not permitted.
3. Frame Configuration: as indicated on drawings.
4. Exterior Column: as indicated on drawings.
5. Rafter: as indicated on drawings.

E. End-Wall Framing: Manufacturer's standard primary end-wall framing fabricated for field-bolted assembly to comply with the following:
1. End-Wall and Corner Columns: I-shaped sections fabricated from structural-steel shapes; shop-welded, built-up steel plates; or C-shaped, cold-formed, structural-steel sheet.
2. End-Wall Rafters: C-shaped, cold-formed, structural-steel sheet; or I-shaped sections fabricated from shop-welded, built-up steel plates or structural-steel shapes.

F. Secondary Framing: Manufacturer's standard secondary framing, including purlins, girts, eave struts, flange bracing, base members, gable angles, clips, headers, jambs, and other miscellaneous structural members. Unless otherwise indicated, fabricate framing from either cold-formed, structural-steel sheet or roll-formed, metallic-coated steel sheet, prepainted with coil coating, to comply with the following:
1. Purlins: C- or Z-shaped sections; fabricated from built-up steel plates, steel sheet, or structural-steel shapes; minimum 2-1/2-inch- (64-mm-) wide flanges.
a. Depth: As indicated on Drawings.
2. Purlins: Steel joists of depths indicated on Drawings.

3. Girts: C- or Z-shaped sections; fabricated from built-up steel plates, steel sheet, or structural-steel shapes. Form ends of Z-sections with stiffening lips angled 40 to 50 degrees from flange, with minimum 2-1/2-inch- (64-mm-) wide flanges.
   a. Depth: As indicated on Drawings.
4. Eave Struts: Unequal-flange, C-shaped sections; fabricated from built-up steel plates, steel sheet, or structural-steel shapes; to provide adequate backup for metal panels.
5. Flange Bracing: Minimum 2-by-2-by-1/8-inch (51-by-51-by-3-mm) structural-steel angles or 1-inch- (25-mm-) diameter, cold-formed structural tubing to stiffen primary-frame flanges.
6. Sag Bracing: Minimum 1-by-1-by-1/8-inch (25-by-25-by-3-mm) structural-steel angles.
7. Base or Sill Angles: Manufacturer's standard base angle, minimum 3-by-2-inch (76-by-51-mm), fabricated from zinc-coated (galvanized) steel sheet.
8. Purlin and Girt Clips: Manufacturer's standard clips fabricated from steel sheet. Provide galvanized clips where clips are connected to galvanized framing members.
9. Framing for Openings: Channel shapes; fabricated from cold-formed, structural-steel sheet or structural-steel shapes. Frame head and jamb of door openings and head, jamb, and sill of other openings.
10. Miscellaneous Structural Members: Manufacturer's standard sections fabricated from cold-formed, structural-steel sheet; built-up steel plates; or zinc-coated (galvanized) steel sheet; designed to withstand required loads.

G. Bracing: Provide adjustable wind bracing using any method as follows:
   1. Rods: ASTM A 36/A 36M; ASTM A 572/A 572M, Grade 50 (345); or ASTM A 529/A 529M, Grade 50 (345); minimum 1/2-inch- (13-mm-) diameter steel; threaded full length or threaded a minimum of 6 inches (152 mm) at each end.
   2. Cable: ASTM A 475, minimum 1/4-inch- (6-mm-) diameter, extra-high-strength grade, Class B, zinc-coated, seven-strand steel; with threaded end anchors.
   3. Angles: Fabricated from structural-steel shapes to match primary framing, of size required to withstand design loads.
   4. Rigid Portal Frames: Fabricated from shop-welded, built-up steel plates or structural-steel shapes to match primary framing; of size required to withstand design loads.
   5. Fixed-Base Columns: Fabricated from shop-welded, built-up steel plates or structural-steel shapes to match primary framing; of size required to withstand design loads.
   6. Diaphragm Action of Metal Panels: Design metal building to resist wind forces through diaphragm action of metal panels.

H. Anchor Rods: Headed anchor rods as indicated in Anchor Rod Plan for attachment of metal building to foundation.

I. Materials:
   1. W-Shapes: ASTM A 992/A 992M; ASTM A 572/A 572M, Grade 50 or 55 (345 or 380); or ASTM A 529/A 529M, Grade 50 or 55 (345 or 380).
   2. Channels, Angles, M-Shapes, and S-Shapes: ASTM A 36/A 36M; ASTM A 572/A 572M, Grade 50 or 55 (345 or 380); or ASTM A 529/A 529M, Grade 50 or 55 (345 or 380).
   3. Plate and Bar: ASTM A 36/A 36M; ASTM A 572/A 572M, Grade 50 or 55 (345 or 380); or ASTM A 529/A 529M, Grade 50 or 55 (345 or 380).
   4. Steel Pipe: ASTM A 53/A 53M, Type E or S, Grade B.
   5. Cold-Formed Hollow Structural Sections: ASTM A 500, Grade B or C, structural tubing.
   6. Structural-Steel Sheet: Hot-rolled, ASTM A 1011/A 1011M, Structural Steel (SS), Grades 30 through 55 (205 through 380), or High-Strength Low-Alloy Steel (HSLAS) or High-Strength Low-Alloy Steel with Improved Formability (HSLAS-F), Grades 45 through 70 (310 through 480); or cold-rolled, ASTM A 1008/A 1008M, Structural Steel (SS), Grades 25 through 80 (170 through 550), or HSLAS, Grades 45 through 70 (310 through 480).
   7. Metallic-Coated Steel Sheet: ASTM A 653/A 653M, SS, Grades 33 through 80 (230 through 550), or HSLAS or HSLAS-F, Grades 50 through 80 (340 through 550); with G60 (Z180) coating designation; mill phosphatized.
   8. Metallic-Coated Steel Sheet Prepainted with Coil Coating: Steel sheet, metallic coated by the hot-dip process and prepainted by the coil-coating process to comply with ASTM A 755/A 755M.
      a. Zinc-Coated (Galvanized) Steel Sheet: ASTM A 653/A 653M, SS, Grades 33 through 80 (230 through 550), or HSLAS or HSLAS-F, Grades 50 through 80 (340 through 550); with G90 (Z275) coating designation.
      b. Aluminum-Zinc Alloy-Coated Steel Sheet: ASTM A 792/A 792M, SS, Grade 50 or 80 (340 or 550); with Class AZ50 (AZM150) coating.
   9. Joist Girders: Manufactured according to "Standard Specifications for Joist Girders," in SJI's "Standard Specifications and Load Tables for Steel Joists and Joist Girders"; with steel-angle, top- and bottom-chord members, and end- and top-chord arrangements as indicated on Drawings and required for primary framing.

10. Steel Joists: Manufactured according to "Standard Specifications for Open Web Steel Joists, K-Series," in SJI's "Standard Specifications and Load Tables for Steel Joists and Joist Girders"; with steel-angle, top- and bottom-chord members, and end- and top-chord arrangements as indicated on Drawings and required for secondary framing.
11. Non-High-Strength Bolts, Nuts, and Washers: ASTM A 307, Grade A, carbon-steel, hex-head bolts; ASTM A 563 (ASTM A 563M) carbon-steel hex nuts; and ASTM F 844 plain (flat) steel washers.
    a. Finish: Hot-dip zinc coating, ASTM F 2329, Class C.
12. Structural 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.
    a. Finish: Hot-dip zinc coating, ASTM F 2329, Class C.
13. High-Strength Bolts, Nuts, and Washers: ASTM A 490 (ASTM A 490M), 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, plain.
14. Tension-Control, High-Strength Bolt-Nut-Washer Assemblies: ASTM F 1852, Type 1, heavy-hex-head steel structural bolts with spline ends.
    a. Finish: Mechanically deposited zinc coating, ASTM B 695, Class 50.
15. Unheaded Anchor Rods: ASTM F 1554, Grade 36.
    a. Configuration: Straight.
    b. Nuts: ASTM A 563 (ASTM A 563M) heavy-hex carbon steel.
    c. Plate Washers: ASTM A 36/A 36M carbon steel.
    d. Washers: ASTM F 436 (ASTM F 436M) hardened carbon steel.
    e. Finish: Hot-dip zinc coating, ASTM F 2329, Class C.
16. Headed Anchor Rods: ASTM F 1554, Grade 36.
    a. Configuration: Straight.
    b. Nuts: ASTM A 563 (ASTM A 563M) heavy-hex carbon steel.
    c. Plate Washers: ASTM A 36/A 36M carbon steel.
    d. Washers: ASTM F 436 (ASTM F 436M) hardened carbon steel.
    e. Finish: Hot-dip zinc coating, ASTM F 2329, Class C.
17. Threaded Rods: ASTM A 193/A 193M.
    a. Nuts: ASTM A 563 (ASTM A 563M) heavy-hex carbon steel.
    b. Washers: ASTM F 436 (ASTM F 436M) hardened carbon steel.
    c. Finish: Hot-dip zinc coating, ASTM F 2329, Class C.

J. Finish: Factory primed. Apply specified primer immediately after cleaning and pretreating.
    1. Clean and prepare in accordance with SSPC-SP2.
    2. Coat with manufacturer's standard primer. Apply primer to primary and secondary framing to a minimum dry film thickness of 1 mil (0.025 mm).
        a. Prime secondary framing formed from uncoated steel sheet to a minimum dry film thickness of 0.5 mil (0.013 mm) on each side.

2.5 METAL ROOF PANELS

A. Standing-Seam, Double Lok, Metal Roof Panels: Formed panel edges and flat pan between ~~ribs~~; designed for sequential installation by mechanically attaching panels to supports using concealed clips located under one side of panels and engaging opposite edge of adjacent panels.
    1. Material: Zinc-coated (galvanized) or aluminum-zinc alloy-coated steel sheet, 24-gauge nominal uncoated steel thickness. Prepainted by the coil-coating process to comply with ASTM A 755/A 755M.
        a. Exterior Finish: Selected from manufacturer’s standard finishes. [ADD 1]
    2. Clips: One-piece fixed to accommodate thermal movement.
    3. Joint Type: Mechanically seamed.
    4. Panel Coverage: 16 **inches. [ADD 1]**
    5. Panel Height: 2 inches (51 mm).
    6. Concealed Finish: Apply pretreatment and manufacturer's standard white or light-colored acrylic or polyester backer finish, consisting of prime coat and wash coat with a minimum total dry film thickness of 0.5 mil (0.013 mm).

2.6 METAL WALL PANELS

A. Exposed-Fastener, Tapered-Rib, Metal Wall Panels: Formed with raised, trapezoidal major ribs and intermediate stiffening ribs symmetrically spaced flat pan between major ribs; designed to be installed by lapping side edges of adjacent panels and mechanically attaching panels to supports using exposed fasteners in side laps.
   1. Material: Zinc-coated (galvanized) or aluminum-zinc alloy-coated steel sheet, 0.024-inch (0.61-mm) nominal uncoated steel thickness. Prepainted by the coil-coating process to comply with ASTM A755/A755M.
      a. Exterior Finish: Siliconized polyester.
      b. Color: As selected by Architect from manufacturer's full range.
   2. Major-Rib Spacing: 12 inches (305 mm) o.c.
   3. Panel Coverage: 36 inches (914 mm).
   4. Panel Height: 1.25 inches (32 mm).

B. Perforated Metal Liner Panels: Perforated panels formed with vertical panel edges and intermediate stiffening ribs symmetrically spaced between panel edges; with pencil rib striations; designed for interior side of metal wall panel assemblies and installed by lapping and interconnecting side edges of adjacent panels and mechanically attaching through panel to supports using concealed fasteners in side laps.
   1. Material: Zinc-coated (galvanized) or aluminum-zinc alloy-coated steel sheet, 0.024-inch (0.61-mm) nominal uncoated steel thickness. Prepainted by the coil-coating process to comply with ASTM A755/A755M.
      a. Interior Finish: Siliconized Polyester
      b. Color: As selected by Architect from manufacturer's full range.
      c. Perforated, acoustic design
   2. Retain "Sound Absorption" Subparagraph below if required.
   3. Sound Absorption: Provide SAB/Sound Attenuating Batts for NRC not less than 0.65 when tested according to ASTM C423.
   4. Panel Coverage: 12 inches (305 mm).
   5. Panel Height: 1.5 inches (38 mm).
   6. Finishes:
      a. Exposed Coil-Coated Finish:
         1) Siliconized Polyester: Epoxy primer and silicone-modified, polyester-enamel topcoat; with a minimum dry film thickness of 0.2 mil (0.005 mm) for primer and 0.8 mil (0.02 mm) for topcoat
      b. Concealed Finish: Apply pretreatment and manufacturer's standard white or light-colored acrylic or polyester backer finish, consisting of prime coat and wash coat with a minimum total dry film thickness of 0.5 mil (0.013 mm).

2.7 THERMAL INSULATION FOR FIELD-ASSEMBLED METAL PANELS

A. Roof Liner Insulation System:
   1. Basis-of-Design system: Simple Saver System – New Roof and Insulation System by Thermal Design, Inc., 800-255-0776, www.thermaldesign.com
      a. Or Equal
   2. Provide system **R30+R11** with thermal blocks.

B. Wall Liner Insulation System.
   1. Wall Liner Insulation System. Wall insulation to be as detailed w/ interior batt insulation min. ~~R-21~~ R-25 and continuous exterior insulation min. R-10. Note that interior perforated acoustic metal liner panels are insulated for NRC rating.

2.8 ACCESSORIES

A. General: Provide accessories as standard with metal building system manufacturer and as specified. Fabricate and finish accessories at the factory to greatest extent possible, by manufacturer's standard procedures and processes. Comply with indicated profiles and with dimensional and structural requirements.
   1. Form exposed sheet metal accessories that are without excessive oil-canning, buckling, and tool marks and that are true to line and levels indicated, with exposed edges folded back to form hems.

B. Roof Panel Accessories: Provide components required for a complete metal roof panel assembly including copings, fasciae, corner units, ridge closures, clips, sealants, gaskets, fillers, closure strips, and similar items. Match material and finish of metal roof panels unless otherwise indicated.
   1. Closures: Provide closures at eaves and ridges, fabricated of same material as metal roof panels.
   2. Clips: Manufacturer's standard, formed from steel sheet, designed to withstand negative-load requirements.
   3. Cleats: Manufacturer's standard, mechanically seamed cleats formed from steel sheet.
   4. Backing Plates: Provide metal backing plates at panel end splices, fabricated from material recommended by manufacturer.

5. Closure Strips: Closed-cell, expanded, cellular, rubber or crosslinked, polyolefin-foam or closed-cell laminated polyethylene; minimum 1-inch- (25-mm-) thick, flexible closure strips; cut or premolded to match metal roof panel profile. Provide closure strips where indicated or necessary to ensure weathertight construction.
6. Thermal Spacer Blocks: Where metal panels attach directly to purlins, provide thermal spacer blocks of thickness required to provide 1-inch (25-mm) standoff; fabricated from extruded polystyrene.

C. Flashing and Trim: Zinc-coated (galvanized) or aluminum-zinc alloy-coated steel sheet, 0.018-inch (0.46-mm) nominal uncoated steel thickness, prepainted with coil coating; finished to match adjacent metal panels.
1. Provide flashing and trim as required to seal against weather and to provide finished appearance. Locations include, but are not limited to, eaves, rakes, corners, bases, framed openings, ridges, fasciae, and fillers.
2. Opening Trim: Zinc-coated (galvanized) or aluminum-zinc alloy-coated steel sheet, 0.018-inch (0.46-mm) nominal uncoated steel thickness, prepainted with coil coating. Trim head and jamb of door openings, and head, jamb, and sill of other openings.

D. Gutters: Zinc-coated (galvanized) or aluminum-zinc alloy-coated steel sheet, 0.018-inch (0.46-mm) nominal uncoated steel thickness, prepainted with coil coating; finished to match roof fascia and rake trim. Match profile of gable trim, complete with end pieces, outlet tubes, and other special pieces as required. Fabricate in minimum 96-inch- (2438-mm-) long sections, sized according to SMACNA's "Architectural Sheet Metal Manual."
1. Gutter Supports: Fabricated from same material and finish as gutters.
2. Strainers: Bronze, copper, or aluminum wire ball type at outlets.

E. Downspouts: Zinc-coated (galvanized) or aluminum-zinc alloy-coated steel sheet, 0.018-inch (0.46-mm) nominal uncoated steel thickness, prepainted with coil coating; finished to match metal wall panels. Fabricate in minimum 10-foot- (3-m-) long sections, complete with formed elbows and offsets.
1. Mounting Straps: Fabricated from same material and finish as gutters.

2.9 FABRICATION

A. General: Design components and field connections required for erection to permit easy assembly.
1. Mark each piece and part of the assembly to correspond with previously prepared erection drawings, diagrams, and instruction manuals.
2. Fabricate structural framing to produce clean, smooth cuts and bends. Punch holes of proper size, shape, and location. Members shall be free of cracks, tears, and ruptures.

B. Tolerances: Comply with MBMA's "Metal Building Systems Manual" for fabrication and erection tolerances.

C. Primary Framing: Shop fabricate framing components to indicated size and section, with baseplates, bearing plates, stiffeners, and other items required for erection welded into place. Cut, form, punch, drill, and weld framing for bolted field assembly.
1. Make shop connections by welding or by using high-strength bolts.
2. Join flanges to webs of built-up members by a continuous, submerged arc-welding process.
3. Brace compression flange of primary framing with steel angles or cold-formed structural tubing between frame web and purlin web or girt web, so flange compressive strength is within allowable limits for any combination of loadings.
4. Weld clips to frames for attaching secondary framing if applicable, or punch for bolts.
5. Shop Priming: Prepare surfaces for shop priming according to SSPC-SP 2. Shop prime primary framing with specified primer after fabrication.

D. Secondary Framing: Shop fabricate framing components to indicated size and section by roll forming or break forming, with baseplates, bearing plates, stiffeners, and other plates required for erection welded into place. Cut, form, punch, drill, and weld secondary framing for bolted field connections to primary framing.
1. Make shop connections by welding or by using non-high-strength bolts.
2. Shop Priming: Prepare uncoated surfaces for shop priming according to SSPC-SP 2. Shop prime uncoated secondary framing with specified primer after fabrication.

E. Metal Panels: Fabricate and finish metal panels at the factory to greatest extent possible, by manufacturer's standard procedures and processes, as necessary to fulfill indicated performance requirements. Comply with indicated profiles and with dimensional and structural requirements.
1. Provide panel profile, including major ribs and intermediate stiffening ribs, if any, for full length of metal panel.

2.10 SOURCE QUALITY CONTROL

A. Special Inspection: Owner will engage a qualified special inspector to perform source quality control inspections and to submit reports.
1. Accredited Manufacturers: Special inspections will not be required if fabrication is performed by an IAS AC472-accredited manufacturer approved by authorities having jurisdiction to perform such Work without special inspection.
a. After fabrication, submit copy of certificate of compliance to authorities having jurisdiction, certifying that Work was performed according to Contract requirements.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine substrates, areas, and conditions, with erector present, for compliance with requirements for installation tolerances and other conditions affecting performance of the Work.

B. Before erection proceeds, survey elevations and locations of concrete- and masonry-bearing surfaces and locations of anchor rods, bearing plates, and other embedments to receive structural framing, with erector present, for compliance with requirements and metal building system manufacturer's tolerances.

1. Engage land surveyor to perform surveying.

C. Proceed with erection only after unsatisfactory conditions have been corrected.

3.2 PREPARATION

A. Clean and prepare surfaces to be painted according to manufacturer's written instructions for each particular substrate condition.

B. Provide temporary shores, guys, braces, and other supports during erection to keep structural framing secure, plumb, and in alignment against temporary construction loads and loads equal in intensity to design loads. Remove temporary supports when permanent structural framing, connections, and bracing are in place unless otherwise indicated.

3.3 ERECTION OF STRUCTURAL FRAMING

A. Erect metal building system according to manufacturer's written instructions and drawings.

B. Do not field cut, drill, or alter structural members without written approval from metal building system manufacturer's professional engineer.

C. Set structural framing accurately in locations and to elevations indicated, according to AISC specifications referenced in this Section. Maintain structural stability of frame during erection.

D. Base and Bearing Plates: Clean concrete- and masonry-bearing surfaces of bond-reducing materials, and roughen surfaces prior to setting plates. Clean bottom surface of plates.

1. Set plates for structural members on wedges, shims, or setting nuts as required.
2. 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 plate before packing with grout.
3. Promptly pack grout solidly between bearing surfaces and plates so no voids remain. Neatly finish exposed surfaces; protect grout and allow to cure. Comply with manufacturer's written installation instructions for shrinkage-resistant grouts.

E. Align and adjust structural framing before permanently fastening. Before assembly, clean bearing surfaces and other surfaces that will be in permanent contact with framing. 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 will be completed and in service.

F. Primary Framing and End Walls: Erect framing level, plumb, rigid, secure, and true to line. Level baseplates to a true even plane with full bearing to supporting structures, set with double-nutted anchor bolts. Use grout to obtain uniform bearing and to maintain a level base-line elevation. Moist-cure grout for not less than seven days after placement.

1. Make field connections using high-strength bolts installed according to RCSC's "Specification for Structural Joints Using High-Strength Bolts" for bolt type and joint type specified.
    a. Joint Type: Snug tightened or pretensioned as required by manufacturer.

G. Secondary Framing: Erect framing level, plumb, rigid, secure, and true to line. Field bolt secondary framing to clips attached to primary framing.

1. Provide rake or gable purlins with tight-fitting closure channels and fasciae.
2. Locate and space wall girts to suit openings such as doors and windows.
3. Provide supplemental framing at entire perimeter of openings, including doors, windows, louvers, ventilators, and other penetrations of roof and walls.

H. Steel Joists and Joist Girders: Install joists, girders, and accessories plumb, square, and true to line; securely fasten to supporting construction according to SJI's "Standard Specifications and Load Tables for Steel Joists and Joist Girders," joist manufacturer's written instructions, and requirements in this Section.

1. Before installation, splice joists delivered to Project site in more than one piece.
2. Space, adjust, and align joists accurately in location before permanently fastening.
3. Install temporary bracing and erection bridging, connections, and anchors to ensure that joists are stabilized during construction.

4. Joist Installation: Bolt joists to supporting steel framework using carbon-steel bolts unless otherwise indicated.
5. Joist Installation: Bolt joists to supporting steel framework using high-strength structural bolts unless otherwise indicated. Comply with RCSC's "Specification for Structural Joints Using High-Strength Bolts" for high-strength structural bolt installation and tightening requirements.
6. Joist Installation: Weld joist seats to supporting steel framework.
7. Install and connect bridging concurrently with joist erection, before construction loads are applied. Anchor ends of bridging lines at top and bottom chords if terminating at walls or beams.

I. Bracing: Install bracing in roof and sidewalls where indicated on erection drawings.
1. Tighten rod and cable bracing to avoid sag.
2. Locate interior end-bay bracing only where indicated.

J. Framing for Openings: Provide shapes of proper design and size to reinforce openings and to carry loads and vibrations imposed, including equipment furnished under mechanical and electrical work. Securely attach to structural framing.

K. Erection Tolerances: Maintain erection tolerances of structural framing within AISC 303.

3.4 METAL PANEL INSTALLATION, GENERAL

A. Fabricate and finish metal panels and accessories at the factory, by manufacturer's standard procedures and processes, as necessary to fulfill indicated performance requirements demonstrated by laboratory testing. Comply with indicated profiles and with dimensional and structural requirements.

B. On-Site Fabrication: Subject to compliance with requirements of this Section, metal panels may be fabricated on-site using UL-certified, portable roll-forming equipment if panels are of same profile and warranted by manufacturer to be equal to factory-formed panels. Fabricate according to equipment manufacturer's written instructions and to comply with details shown.

C. Examination: Examine primary and secondary framing to verify that structural-panel support members and anchorages have been installed within alignment tolerances required by manufacturer.
1. Examine roughing-in for components and systems penetrating metal panels, to verify actual locations of penetrations relative to seams before metal panel installation.

D. General: Anchor metal panels and other components of the Work securely in place, with provisions for thermal and structural movement.
1. Field cut metal panels as required for doors, windows, and other openings. Cut openings as small as possible, neatly to size required, and without damage to adjacent metal panel finishes.
   a. Field cutting of metal panels by torch is not permitted unless approved in writing by manufacturer.
2. Install metal panels perpendicular to structural supports unless otherwise indicated.
3. Flash and seal metal panels with weather closures at perimeter of openings and similar elements. Fasten with self-tapping screws.
4. Locate and space fastenings in uniform vertical and horizontal alignment.
5. Locate metal panel splices over structural supports with end laps in alignment.
6. Lap metal flashing over metal panels to allow moisture to run over and off the material.

E. Lap-Seam Metal Panels: Install screw fasteners using power tools with controlled torque adjusted to compress EPDM washers tightly without damage to washers, screw threads, or metal panels. Install screws in predrilled holes.
1. Arrange and nest side-lap joints so prevailing winds blow over, not into, lapped joints. Lap ribbed or fluted sheets one full rib corrugation. Apply metal panels and associated items for neat and weathertight enclosure. Avoid "panel creep" or application not true to line.

F. Metal Protection: Where dissimilar metals contact each other or corrosive substrates, protect against galvanic action by painting contact surfaces with corrosion-resistant coating, by applying rubberized-asphalt underlayment to each contact surface, or by other permanent separation as recommended by metal roof panel manufacturer.

G. Joint Sealers: Install gaskets, joint fillers, and sealants where indicated and where required for weatherproof performance of metal panel assemblies. Provide types of gaskets, fillers, and sealants indicated; or, if not indicated, provide types recommended by metal panel manufacturer.
1. Seal metal panel end laps with double beads of tape or sealant the full width of panel. Seal side joints where recommended by metal panel manufacturer.
2. Prepare joints and apply sealants to comply with requirements in Section 079200 "Joint Sealants."

3.5 METAL ROOF PANEL INSTALLATION

A. General: Provide metal roof panels of full length from eave to ridge unless otherwise indicated or restricted by shipping limitations.
1. Install ridge and hip caps as metal roof panel work proceeds.
2. Flash and seal metal roof panels with weather closures at eaves and rakes. Fasten with self-tapping screws.

B. Standing-Seam Metal Roof Panels: Fasten metal roof panels to supports with concealed clips at each standing-seam joint, at location and spacing and with fasteners recommended by manufacturer.
   1. Install clips to supports with self-drilling or self-tapping fasteners.
   2. Install pressure plates at locations indicated in manufacturer's written installation instructions.
   3. Snap Joint: Nest standing seams and fasten together by interlocking and completely engaging factory-applied sealant.
   4. Seamed Joint: Crimp standing seams with manufacturer-approved motorized seamer tool so that clip, metal roof panel, and factory-applied sealant are completely engaged.
   5. Rigidly fasten eave end of metal roof panels and allow ridge end free movement for thermal expansion and contraction. Predrill panels for fasteners.
   6. Provide metal closures at peaks rake edges rake walls and each side of ridge caps.

C. Metal Fascia Panels: Align bottom of metal panels and fasten with blind rivets, bolts, or self-drilling or self-tapping screws. Flash and seal metal panels with weather closures where fasciae meet soffits, along lower panel edges, and at perimeter of all openings.

D. Metal Roof Panel Installation Tolerances: Shim and align metal roof panels within installed tolerance of 1/4 inch in 20 feet (6 mm in 6 m) on slope and location lines and within 1/8-inch (3-mm) offset of adjoining faces and of alignment of matching profiles.

3.6 THERMAL INSULATION INSTALLATION

A. General: Install insulation concurrently with metal panel installation, in thickness indicated to cover entire surface, according to manufacturer's written instructions.
   1. Set vapor-retarder-faced units with vapor retarder toward warm side of construction unless otherwise indicated. Do not obstruct ventilation spaces except for firestopping.
   2. Tape joints and ruptures in vapor retarder, and seal each continuous area of insulation to the surrounding construction to ensure airtight installation.
   3. Install factory-laminated, vapor-retarder-faced blankets straight and true in one-piece lengths, with both sets of facing tabs sealed, to provide a complete vapor retarder.
   4. Install blankets straight and true in one-piece lengths. Install vapor retarder over insulation, with both sets of facing tabs sealed, to provide a complete vapor retarder.

B. Blanket Roof Insulation: Comply with the following installation method:
   1. Over-Framing Installation: Extend insulation and vapor retarder over and perpendicular to top flange of secondary framing. Hold in place by metal roof panels fastened to secondary framing.
   2. Over-Purlin-with-Spacer-Block Installation: Extend insulation and vapor retarder over and perpendicular to top flange of secondary framing. Install layer of filler insulation over first layer to fill space formed by metal roof panel standoffs. Hold in place by panels fastened to standoffs.
      a. Thermal Spacer Blocks: Where metal roof panels attach directly to purlins, install thermal spacer blocks.
   3. Retainer Strips: Install retainer strips at each longitudinal insulation joint, straight and taut, nesting with secondary framing to hold insulation in place.

C. Roof Liner Insulation: Comply with manufactures installation instructions.

3.7 ACCESSORY INSTALLATION

A. General: Install accessories with positive anchorage to building and weathertight mounting, and provide for thermal expansion. Coordinate installation with flashings and other components.
   1. Install components required for a complete metal roof panel assembly, including trim, copings, ridge closures, seam covers, flashings, sealants, gaskets, fillers, closure strips, and similar items.
   2. Install components for a complete metal wall panel assembly, including trim, copings, corners, seam covers, flashings, sealants, gaskets, fillers, closure strips, and similar items.
   3. Where dissimilar metals contact each other or corrosive substrates, protect against galvanic action by painting contact surfaces with corrosion-resistant coating, by applying rubberized-asphalt underlayment to each contact surface, or by other permanent separation as recommended by manufacturer.

B. Flashing and Trim: Comply with performance requirements, manufacturer's written installation instructions, and SMACNA's "Architectural Sheet Metal Manual." Provide concealed fasteners where possible, and set units true to line and level. Install work with laps, joints, and seams that will be permanently watertight and weather resistant.
   1. Install exposed flashing and trim that is without excessive oil-canning, buckling, and tool marks and that is true to line and levels indicated, with exposed edges folded back to form hems. Install sheet metal flashing and trim to fit substrates and to result in waterproof and weather-resistant performance.
   2. Expansion Provisions: Provide for thermal expansion of exposed flashing and trim. Space movement joints at a maximum of 10 feet (3 m) with no joints allowed within 24 inches (600 mm) of corner or intersection. Where lapped or bayonet-type expansion provisions cannot be used or would not be sufficiently weather resistant

and waterproof, form expansion joints of intermeshing hooked flanges, not less than 1 inch (25 mm) deep, filled with mastic sealant (concealed within joints).

C. Gutters: Join sections with riveted-and-soldered or lapped-and-sealed joints. Attach gutters to eave with gutter hangers spaced as required for gutter size, but not more than 36 inches (914 mm) o.c. using manufacturer's standard fasteners. Provide end closures and seal watertight with sealant. Provide for thermal expansion.

D. Downspouts: Join sections with 1-1/2-inch (38-mm) telescoping joints. Provide fasteners designed to hold downspouts securely 1 inch (25 mm) away from walls; locate fasteners at top and bottom and at approximately 60 inches (1524 mm) o.c. in between.

1. Provide elbows at base of downspouts to direct water away from building.
2. Tie downspouts to underground drainage system indicated.

E. Pipe Flashing: Form flashing around pipe penetration and metal roof panels. Fasten and seal to panel as recommended by manufacturer.

3.8 FIELD QUALITY CONTROL

A. Special Inspections: Owner will engage a qualified special inspector to perform field quality control special inspections and to submit reports.

B. Product will be considered defective if it does not pass tests and inspections.

C. Prepare test and inspection reports.

3.9 CLEANING AND PROTECTION

A. Repair damaged galvanized coatings on galvanized items with galvanized repair paint according to ASTM A 780/A 780M and manufacturer's written instructions.

B. Remove and replace glass that has been broken, chipped, cracked, abraded, or damaged during construction period.

C. Touchup Painting: After erection, promptly clean, prepare, and prime or reprime field connections, rust spots, and abraded surfaces of prime-painted structural framing, bearing plates, and accessories.

1. Clean and prepare surfaces by SSPC-SP 2, "Hand Tool Cleaning," or by SSPC-SP 3, "Power Tool Cleaning."
2. Apply a compatible primer of same type as shop primer used on adjacent surfaces.

D. Touchup Painting: Cleaning and touchup painting are specified in Section 099113 "Exterior Painting" and Section 099123 "Interior Painting."

E. Metal Panels: Remove temporary protective coverings and strippable films, if any, as metal panels are installed. On completion of metal panel installation, clean finished surfaces as recommended by metal panel manufacturer. Maintain in a clean condition during construction.

1. Replace metal panels that have been damaged or have deteriorated beyond successful repair by finish touchup or similar minor repair procedures.

END OF SECTION 133419

SECTION 323119 - DECORATIVE METAL FENCES AND GATES

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

A. Section Includes:
   1. Decorative steel fences.
   2. Swing gates.

B. Related Requirements:
   1. Section 033000 “Cast-in-Place Concrete" for concrete post concrete fill.
   2. Section 042000 “Unit Masonry”

1.3 PREINSTALLATION MEETINGS

A. Preinstallation Conference: Conduct conference at Project site.

1.4 ACTION SUBMITTALS

A. Product Data: For each type of product.

B. Shop Drawings: For fencing and gates.
   1. Include plans, elevations, sections, gate locations, post spacing, and attachment details.

C. Samples: For each fence material and for each color specified.
   1. Provide Samples 12 inches (300 mm) in length for linear materials.
   2. Provide Samples 12 inches (300 mm) square for bar grating and sheet or plate materials.

1.5 INFORMATIONAL SUBMITTALS

A. Field quality-control reports.

B. Product Test Reports: For decorative metallic-coated-steel tubular picket fences, including finish, indicating compliance with referenced standard.

1.6 CLOSEOUT SUBMITTALS

A. Maintenance Data: For gate operators to include in maintenance manuals.

1.7 QUALITY ASSURANCE

A. Installer Qualifications: Fabricator of products.

B. Mockups: Build mockups to verify selections made under Sample submittals, to demonstrate aesthetic effects, and to set quality standards for fabrication and installation.
   1. Include 10-foot (3-m) length of fence complying with requirements.
   2. Subject to compliance with requirements, approved mockups may become part of the completed Work if undisturbed at time of Substantial Completion.

PART 2 - PRODUCTS

2.1 DECORATIVE METALLIC-COATED-STEEL TUBULAR PICKET FENCES

A. Decorative Metallic-Coated-Steel Tubular Picket Fences: Comply with ASTM F2408 for light-industrial (commercial) application (class) unless otherwise indicated.

B. Basis-of-Design: Ameristar Perimeter Security “Aegis II”, Height and Configuration as indicated on drawings.
   1. Other Manufacturers: Subject to compliance with requirements, provide products by one of the following:
      a. Iron Eagle Industries, Inc.
      b. Master-Halco, Inc.
      c. Merchants Metals, LLC.
      d. Virginia Railing and Gates, LLC.

e. XCEL Fence Inc.

C. Posts:

1. End and Corner Posts: Square tubes 2-1/2 by 2-1/2 inches (64 by 64 mm) formed from 0.108-inch (2.74-mm) (12 GA) nominal-thickness, metallic-coated steel sheet or formed from 0.105-inch (2.66-mm) nominal-thickness steel sheet and hot-dip galvanized after fabrication.
2. Posts at Swing Gate Openings: Square tubes 3 by 3 inches (76 by 76 mm) formed from 0.108-inch (2.74-mm) (12 GA) nominal-thickness, metallic-coated steel sheet or formed from 0.105-inch (2.66-mm) nominal-thickness steel sheet and hot-dip galvanized after fabrication.

D. Post Caps: Formed from steel sheet and hot-dip galvanized after forming.

E. Rails: Square tubes.

1. Size: 1-3/4 by 1-3/4 inches (45 by 45 mm)]. (14 GA)
2. Metal and Thickness: 0.079-inch (2.01-mm) nominal-thickness, metallic-coated steel sheet or 0.075-inch (1.90-mm) nominal-thickness, uncoated steel sheet, hot-dip galvanized after fabrication.

F. Pickets: Square tubes.

1. Extend pickets beyond intermediate rail as indicated and terminate at top rail forming square openings as indicated on drawings.
2. Picket Spacing: 4 inches (101.6 mm) clear, maximum.

G. Fasteners: Manufacturer's standard concealed fastening system.

H. Metallic-Coated Steel Sheet: Galvanized-steel sheet or aluminum-zinc, alloy-coated steel sheet.

I. Interior surface of tubes formed from uncoated steel sheet shall be hot-dip zinc coated same as exterior or coated with zinc-rich thermosetting coating to comply with ASTM F2408.

J. Galvanizing: For components indicated to be galvanized and for which galvanized coating is not specified in ASTM F2408, hot-dip galvanize to comply with ASTM A123/A123M. For hardware items, hot-dip galvanize to comply with ASTM A153/A153M.

K. Finish: Organic coating complying with requirements in ASTM F2408 or Powder coating.

2.2 SWING GATES

A. Gate Configuration: Double leaf.

B. Gate Frame Height: 6’ or as indicated.

C. Gate Opening Width: As indicated.

D. Galvanized-Steel Frames and Bracing: Fabricate members from 1-3/4 x 14-gauge double channel rail, 2-1/2 by 2-1/2 inches (64 by 64 mm) formed from 12-gauge nominal-thickness, metallic-coated steel sheet end posts and 1”x1”x14-gauge pickets..

E. Additional Rails: Provide as indicated, complying with requirements for fence rails.

F. Hardware: Latches permitting operation from both sides of gate, hinges, and keepers for each gate leaf more than 5 feet (1.52 m) wide. Provide center gate stops and cane bolts for pairs of gates. Fabricate latches with integral eye openings for padlocking; padlock accessible from both sides of gate.

G. Hinges: BHMA A156.1, Grade 1, suitable for exterior use.

1. Function: 39 - Full surface, triple weight, antifriction bearing.
2. Material: Wrought steel, forged steel, cast steel, or malleable iron; galvanized.

H. Cane Bolts: Provide for inactive leaf of pairs of gates. Fabricated from 3/4-inch- (19-mm-) diameter, round steel bars, hot-dip galvanized after fabrication. Finish to match gates. Provide galvanized-steel pipe strikes to receive cane bolts in both open and closed positions.

I. Finish exposed welds to comply with NOMMA Guideline 1, Finish #4 - good-quality, uniform undressed weld with minimal splatter.

J. Galvanizing: For items other than hardware that are indicated to be galvanized, hot-dip galvanize to comply with ASTM A123/A123M. For hardware items, hot-dip galvanize to comply with ASTM A153/A153M.

K. Steel Finish: The manufactured galvanized framework shall be subjected to the PermaCoat® thermal stratification coating process (high-temperature, in-line, multi-stage, multi-layer) including, as a minimum, a six-stage pretreatment/wash, an electrostatic spray application of an epoxy base, and a separate electrostatic spray application of a polyester finish. The base coat shall be a thermosetting epoxy powder coating (gray in color) with a minimum thickness of 2 mils (0.0508mm). The topcoat shall be a “no-mar” TGIC polyester powder coat finish with a minimum thickness of 2 mils (0.0508mm). The color shall be Black.

2.3 MISCELLANEOUS MATERIALS

A. Welding Rods and Bare Electrodes: Select according to AWS specifications for metal alloy welded.

1. For aluminum, provide type and alloy as recommended by producer of metal to be welded and as required for strength and compatibility in fabricated items.

B. Concrete: Normal-weight, air-entrained, ready-mix concrete complying with requirements in Section 033000 "Cast-in-Place Concrete" with a minimum 28-day compressive strength of 3000 psi (20 MPa), 3-inch (75-mm) slump, and 1-inch (25-mm) maximum aggregate size[or dry, packaged, normal-weight concrete mix complying with ASTM C387/C387M mixed with potable water according to manufacturer's written instructions].

C. Nonshrink Grout: Factory-packaged, nonstaining, noncorrosive, nongaseous grout complying with ASTM C1107/C1107M and specifically recommended by manufacturer for exterior applications.

2.4 GROUNDING MATERIALS

A. Comply with requirements of Section 260526 "Grounding and Bonding for Electrical Systems."

B. Grounding Conductors: Size as indicated on Drawings. Bare, solid wire for No. 6 AWG and smaller; stranded wire for No. 4 AWG and larger.

1. Material above Finished Grade: Aluminum.
2. Material on or below Finished Grade: Copper.
3. Bonding Jumpers: Braided copper tape, 1-5/8 inch (41 mm) wide and 1/16 inch (1.6 mm) thick, woven of No. 30 AWG bare copper wire, terminated with copper ferrules.

C. Grounding Connectors and Grounding Rods: Comply with UL 467.

1. Connectors for Below-Grade Use: Exothermic-welded type.
2. Grounding Rods: Copper-clad steel.
   a. Size: 5/8 by 96 inches (16 by 2440 mm).

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine areas and conditions, with Installer present, for compliance with requirements for site clearing, earth-work, pavement work, construction layout, and other conditions affecting performance of the Work.

B. Do not begin installation before final grading is completed unless otherwise permitted by Architect.

C. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 PREPARATION

A. Stake locations of fence lines, gates, and terminal posts. Do not exceed intervals of 500 feet (152.5 m) or line of sight between stakes. Indicate locations of utilities, lawn sprinkler system, underground structures, benchmarks, and property monuments.

1. Construction layout and field engineering are specified in Section 017300 "Execution."

3.3 DECORATIVE FENCE INSTALLATION

A. Install fences according to manufacturer's written instructions.

B. Install fences by setting posts as indicated and fastening rails and infill panels to posts. Peen threads of bolts after assembly to prevent removal.]

C. Post Excavation: Drill or hand-excavate holes for posts in firm, undisturbed soil. Excavate holes to a diameter of not less than 4 times post size and a depth of not less than 24 inches (600 mm) plus 3 inches (75 mm) for each foot (300 mm) or fraction of a foot (300 mm) that fence height exceeds 4 feet (1.2 m).

D. Post Setting: Set posts in concrete at indicated spacing into firm, undisturbed soil.

1. Verify that posts are set plumb, aligned, and at correct height and spacing, and hold in position during setting with concrete or mechanical devices.
2. Concrete Fill: Place concrete around posts and vibrate or tamp for consolidation. Protect aboveground portion of posts from concrete splatter.
   a. Concealed Concrete: Top 2 inches (51 mm) to allow covering with surface material. Slope top surface of concrete to drain water away from post.
3. Posts Set in Concrete: Extend post to within 6 inches (150 mm) of specified excavation depth, but not closer than 3 inches (75 mm) to bottom of concrete.
4. Space posts uniformly at 8 feet (2.44 m) o.c.

3.4 GATE INSTALLATION

A. Install gates according to manufacturer's written instructions, level, plumb, and secure for full opening without interference. Attach hardware using tamper-resistant or concealed means. Install ground-set items in concrete for anchorage. Adjust hardware for smooth operation and lubricate where necessary.

3.5 GROUNDING AND BONDING

A. Fence Grounding: Install at maximum intervals of 1500 feet (450 m) except as follows:

1. Fences within 100 Feet (30 m) of Buildings, Structures, Walkways, and Roadways: Ground at maximum intervals of 750 feet (225 m).
    a. Gates and Other Fence Openings: Ground fence on each side of opening.
        1) Bond metal gates to gate posts.

B. Grounding Method: At each grounding location, drive a grounding rod vertically until the top is 6 inches (150 mm) below finished grade. Connect rod to fence with No. 6 AWG conductor. Connect conductor to each fence component at grounding location.

C. Bonding Method for Gates: Connect bonding jumper between gate post and gate frame.

D. Connections: Make connections so possibility of galvanic action or electrolysis is minimized. Select connectors, connection hardware, conductors, and connection methods so metals in direct contact are galvanically compatible.
    1. Use electroplated or hot-tin-coated materials to ensure high conductivity and to make contact points closer in order of galvanic series.
    2. Make connections with clean, bare metal at points of contact.
    3. Make aluminum-to-steel connections with stainless-steel separators and mechanical clamps.
    4. Make aluminum-to-galvanized-steel connections with tin-plated copper jumpers and mechanical clamps.
    5. Coat and seal connections having dissimilar metals with inert material to prevent future penetration of moisture to contact surfaces.

E. Bonding to Lightning-Protection System: If fence terminates at lightning-protected building or structure, ground the fence and bond the fence grounding conductor to lightning-protection down conductor or lightning-protection grounding conductor, complying with NFPA 780.

3.6 ADJUSTING

A. Gates: Adjust gates to operate smoothly, easily, and quietly, free of binding, warp, excessive deflection, distortion, nonalignment, misplacement, disruption, or malfunction, throughout entire operational range. Confirm that latches and locks engage accurately and securely without forcing or binding.

B. Lubricate hardware and other moving parts.

END OF SECTION 323119

CODE COMPLIANCE TABLE

PROJECT: Verbena High School Gym

APPLICABLE CODES AND STANDARDS		
CODES ADOPTED BY THE ALABAMA DEPARTMENT OF CONSTRUCTION MANAGEMENT		
INTERNATIONAL BUILDING CODE	2021 EDITION	
INTERNATIONAL PLUMBING CODE	2021 EDITION	
INTERNATIONAL FUEL GAS CODE	2021 EDITION	
INTERNATIONAL MECHANICAL CODE	2021 EDITION	
NATIONAL ELECTRICAL CODE	2020 EDITION	
INTERNATIONAL FIRE CODE	2021 EDITION	
ANSI / ASHRAE / IESNA 90.1	2013 Energy Standard	
2010 ADA STANDARDS FOR ACCESSIBLE DESIGN	Supercedes accessibility requirements in IBC	
ICC/NSSA 500 DESIGN & CONSTRUCTION OF STORM SHELTERS	2014 ICC 500	No Shelter Required

DESIGN COMPONENTS	CODE APPLICATION		CODE REFERENCES AND NOTES
	DESCRIPTION	VALUE	
USE AND OCCUPANCY CLASSIFICATION			
PRIMARY OCCUPANCY	ASSEMBLY GROUP A (A-4)		IBC 303.5
ACCESSORY OCCUPANCIES	ASSEMBLY, BUSINESS, STORAGE		IBC 303.3 & 303.4
SPECIAL REQUIREMENTS	STORM SHELTER NOT REQUIRED		IBC 423.5
TYPE OF CONSTRUCTION	APPLIES TO ALL BUILDINGS		IBC 602
	II-B, SPRINKLERED		IBC 602.2
HEIGHT RESTRICTIONS	APPLIES TO ALL BUILDINGS		IBC 504
TABULAR HEIGHT ALLOWED	VALUE W/ SPRINKLER	75 FT	IBC TABLE 504.3
TOTAL STORIES ALLOWED	TABLULAR VALUE	3	IBC TABLE 504.4
ACTUAL NO. OF STORIES		1	HEIGHT IS IN COMPLIANCE
ACTUAL HEIGHT		35' - 5"	HEIGHT IS IN COMPLIANCE
AREA RESTRICTIONS	APPLIES TO ALL BUILDINGS		IBC 506
FIRST FLOOR	ACTUAL AREA PER FLOOR	**20,035**	
TABULAR AREA ALLOWED	VALUE W/ SPRINKLER (S1)	38,000	IBC TABLE 506.2
FRONTAGE INCREASE FORMULA	=(2001/2001-0.25)*30/30*NON-SPRINKLERED TABULAR AREA		IBC 506.2.1 & IBC 506.3.3
FRONTAGE TABULAR AREA	NONE TAKEN, TABULAR VALUE	0	IBC TABLE 506.2
TOTAL AREA ALLOWED PER FLOOR	WITH FRONTAGE INCREASE		IBC 506.2.1
TOTAL BUILDING AREA	TOTAL ACTUAL AREA	**20,035**	IN COMPLIANCE
FIRE RESISTANCE RATINGS FOR CONSTRUCTION TYPE			
STRUCTURAL FRAME		0 HOUR	IBC TABLE 601
BEARING WALLS			
EXTERIOR	SEPARATION DISTANCE > 30'	0 HOUR	IBC TABLE 601 & 705.5
INTERIOR		0 HOUR	IBC TABLE 601
NON-BEARING WALLS AND PARTITIONS			
EXTERIOR	SEPARATION DISTANCE > 30'	0 HOUR	IBC TABLE 705.5
INTERIOR		0 HOUR	IBC TABLE 601
FLOOR / CEILING		0 HOUR	IBC TABLE 601
FLOOR / CEILING		0 HOUR	ICC 500, 601
ROOF / CEILING		0 HOUR	IBC TABLE 601
FIRE RESISTANT PROTECTIVE CONSTRUCTION REQUIREMENTS			
MAX AREA OF EXTERIOR WALL OPNGS	FIRE SEPARATION DISTANCE IN SPRINKLERED BUILDING >/= 20'	NO LIMIT	IBC TABLE 705.8, SEE PLAN FOR COMPLIANCE
FIRE WALLS	TYPE II CONSTRUCTION	N/A	IBC TABLE 706.4, NOTE A
FIRE BARRIERS			IBC 707.1
SHAFT ENCLOSURES	N/A		IBC 713.1, 1023.2
STORM SHELTER FROM ADJ. BLDG.	N/A		ICC 500 601.1
FIRE AREA SEPARATION	NOT APPLICABLE		
FIRE-RESISTANT JOINT SYSTEMS	N/A		IBC 714.1 & 714.4
FIRE PARTITIONS - CORRIDOR WALLS	W/ SPRINKLER SYSTEM	0 HR	IBC TABLE 1020.1
SMOKE BARRIERS	NOT APPLICABLE		IBC 709
SMOKE PARTITIONS	NOT APPLICABLE		IBC 710
HORIZONTAL ASSEMBLIES	NOT APPLICABLE		IBC 711
OPENING PROTECTIVES			
OPENING FIRE RATING		N/A	IBC FIGURE 716.3(2)
SAFETY GLAZING REQUIREMENTS	HAZARDOUS LOCATIONS	N/A	IBC 2406.4
INTERIOR FINISHES			
EXIT ENCLOSURES AND PASSAGEWAYS	SPRINKLERED	CLASS B	IBC TABLE 803.13
CORRIDORS	SPRINKLERED	CLASS C	IBC TABLE 803.13
ROOMS AND ENCLOSED SPACES	SPRINKLERED	CLASS C	IBC TABLE 803.13
FIRE PROTECTION SYSTEMS			
AUTOMATIC FIRE SPRINKLER SYSTEM	REQUIRED FOR GROUP E OVER 12000 SF AND FOR GROUP A OVER 100 OCCUPANTS	PROVIDED	IBC 903.2.1.2, IBC 903.2.3
PORTABLE FIRE EXTINGUISHERS	MINIMUM TYPE 2A DISTRIBUTED THROUGHOUT BUILDING	PROVIDED	IFC 906.1, TABLE 906.3(1), ICC 500 602, NFPA 10
FIRE ALARM AND DETECTION SYSTEMS	REQUIRED	PROVIDED	IBC 907.2.3
MEANS OF EGRESS			
CEILING HEIGHT	MINIMUM ALLOWED	7' - 6"	IBC 1003.2
OCCUPANT LOAD	SEE PLANS FOR OL		IBC TABLE 1004.5
ASSEMBLY - GYMNASIUM (EGRESS)	NET SF / PERSON	7 SF	IBC TABLE 1004.5 (CONCENTRATED)
ASSEMBLY - GYMNASIUM (PLUMBING)	NET SF / PERSON	15 SF	IBC TABLE 1004.5 (UNCONCENTRATED)
KITCHEN	GROSS SF / PERSON	200 SF	IBC TABLE 1004.5
ACCESSORY STORAGE & MECH.	GROSS SF / PERSON	300 SF	IBC TABLE 1004.5
BUSINESS - OFFICES	GROSS SF / PERSON	100 SF	IBC TABLE 1004.5
DEAD END CORRIDORS	MAXIMUM ALLOWED, GROUP A	20 FT	IBC 1020.5 EXCEPTION 2
ACTUAL OCCUPANT LOAD FOR EGRESS			
FIRST FLOOR		1,703	PERSONS
ACTUAL OCCUPANT LOAD FOR EGRESS		1,703	
ACTUAL OCCUPANT LOAD FOR PLUMBING			
FIRST FLOOR		802	PERSONS
ACTUAL OCCUPANT LOAD FOR PLUMBING		802	
COMMON PATH OF TRAVEL	MAXIMUM ALLOWED	75 FT	IBC TABLE 1006.2.1
EXIT ACCESS TRAVEL DISTANCE	GROUP A SPRINKLERED	250 FT	IBC TABLE 1017.2
NUMBER OF EXITS - FIRST FLOOR	MINIMUM REQUIRED: 4	4+ PROV.	IBC TABLE 1006.3.3
REQUIRED EXIT WIDTH - FIRST FLOOR	1703 OCC. * 0.2" PER OCC.	341	IBC 1005.3.2, EXCEPTION 1
ACTUAL EXIT WIDTH - FIRST FLOOR	6 DOUBLE DOOR EXITS (6*72")	432	IBC TABLE 1006.3.1

EGRESS DATA	
EXIT PATH	DISTANCE
EGRESS PATH A	85' - 6"
EGRESS PATH B	78' - 9"
EGRESS PATH C	86' - 8"
EGRESS PATH D	102' - 3"
EGRESS PATH E	21' - 8"
EGRESS PATH F	39' - 0"
EGRESS PATH G	30' - 9"
EGRESS PATH H	41' - 4"

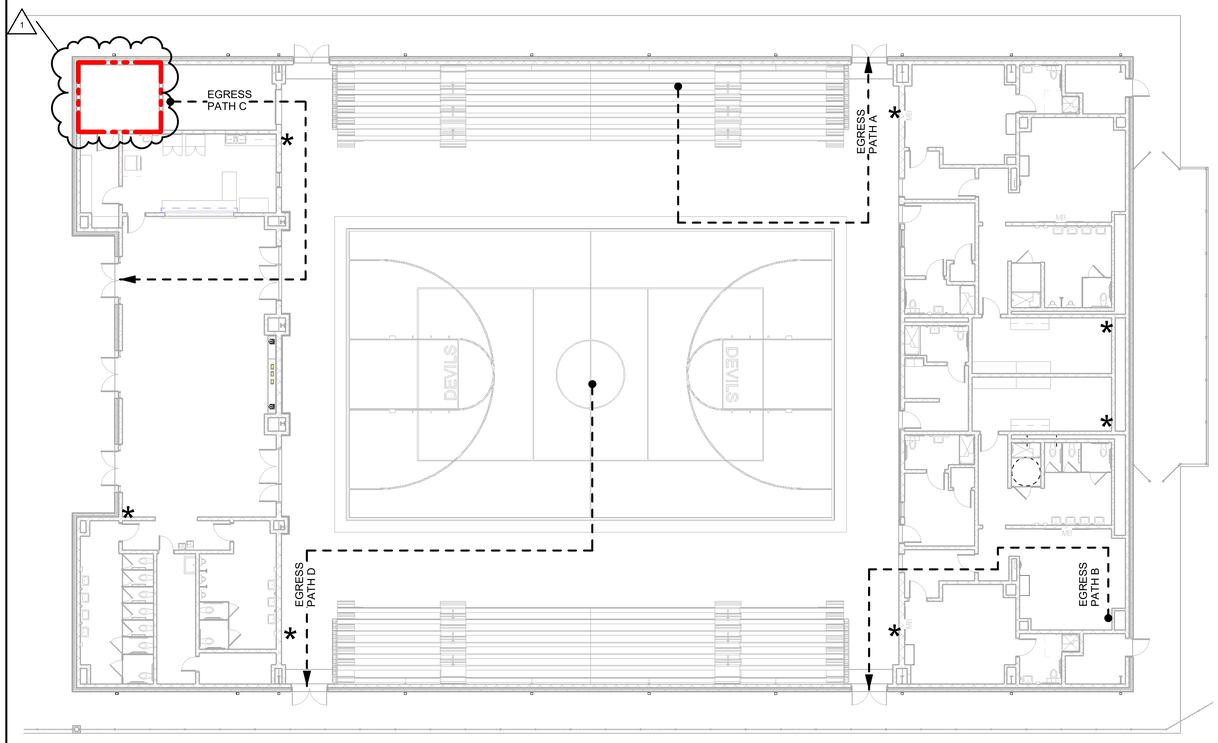
LIFE SAFETY PLAN LEGEND:

- EGRESS PATH
- * FIRE EXTINGUISHER / FIRE EXTINGUISHER CABINET
- 1 HR FIRE SEPARATION
- 2 HR FIRE SEPARATION

PLUMBING FIXTURE COUNT			
	PER IBC TABLE 2902.1	REQUIRED	PROVIDED
ASSEMBLY (GYMNASIUM)	OCCUPANT LOAD = 675*	338 PER GENDER	OVERAGE INDICATED BY +
WATER CLOSETS FEMALE	1:75 for first 1,500 seats	5	(+)7
WATER CLOSETS MALE	1:200 for first 1,500 seats	2	(+)9
WATER CLOSETS FEMALE	1:125 for next 1,500 seats	N/A	
WATER CLOSETS MALE	1:250 for next 1,500 seats	N/A	
WATER CLOSETS FEMALE	1:175 for first 1,500 seats	N/A	
WATER CLOSETS MALE	1:500 for remainder	N/A	
URINALS	NO GREATER THAN 2/3 REQUIRED		5
LAVATORIES FEMALE	1 PER 300	2	(+)7
LAVATORIES MALE		2	(+)7
DRINKING FOUNTAINS	1 PER 1000	1	(+)1
SERVICE SINK	1	1	

OCCUPANCY TYPE	ROOM NAME	AREA	PER OCCUPANT		OCCUPANCY LOAD
Assembly (A-4)	GYMNASIUM	11538	FIXED SEATING		611
Accessory Assembly	LOCKER ROOMS	2549	50	gross	51
Accessory Business	COACHES OFFICE	320	100	gross	4
Accessory Business	CONCESSIONS	365	100	gross	4
Accessory Mech/Elec	ELECTRICAL/MECHANICAL	381	300	gross	2
Accessory Storage	STORAGE	816	300	gross	3
		TOTAL OCCUPANCY			675

***NOTE: GYMNASIUM OCCUPANCY CALCULATED BY NUMBER OF SEATS IN BLEACHERS AND NUMBER OF PLAYERS, COACHES, AND REFEREES PRESENT DURING ATHLETIC EVENTS.**



1 LIFE SAFETY PLAN - GYMNASIUM
3/32" = 1'-0"

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BID DOCUMENTS

DATE: 01/08/26
PROJ NO: 25-032

REVISIONS

#	DESC	DATE
1	ADD 001	01/30/26

LIFE SAFETY PLAN - GYMNASIUM

G201

ROOM FINISH SCHEDULE

ROOM NUMBER	ROOM NAME	FLOOR	BASE	WAINSCOT MAT.	WAINSCOT HT.	WALL- NORTH	WALL- SOUTH	WALL- EAST	WALL- WEST	TRIM	MILLWORK FINISHES	CEILING MAT.	CEILING HT.	COMMENTS	ROOM NUMBER
1101	LOBBY	PC-1,PC-2,PC-3, PC-4	RB-2			PNT-1	PNT-1	PNT-1, PNT-4, PNT-7	PNT-1	PNT-2	SS-1	AC-PNL-A, AC-BAF-A, AC-BAF-B, EXPOSED	VARIES	3,5,6,9,13,22,28	1101
1102	CONCESSIONS	PC-1	RB-1			PNT-1	PNT-1	PNT-1	PNT-1	PNT-2	PL-1, PL-2, SS-1	AC-PNL-C	10'-0"	2,3	1102
1103	CONCESSION STOR.	PC-1	RB-1			PNT-1	PNT-1	PNT-1	PNT-1	PNT-2		AC-PNL-C	10'-0"		1103
1104	ELEC & RISER	S-CONC	RB-1			PNT-1	PNT-1	PNT-1	PNT-1	PNT-2		AC-PNL-C	9'-0"		1104
1105	STORAGE	S-CONC	RB-1			PNT-1	PNT-1	PNT-1	PNT-1	PNT-2		AC-PNL-C	9'-0"		1105
1106	COURT	AWF-1	AWF-1, RB-5			PNT-1	PNT-1	PNT-1	PNT-1	PNT-2		EXPOSED	---	7, 12,22,27	1106
1107	VISITOR LOCKER ROOM	RSF-1	RSF-1			PNT-1	PNT-1	PNT-1	PNT-1	PNT-2		AC-PNL-A	10'-0"	1,10,26	1107
1108	TLT / SHWR	RSF-1	RSF-1			PNT-1	PNT-1	PNT-1	PNT-1	PNT-2	PL-1	AC-PNL-B, GYP BD	VARIES	10,16,17	1108
1109	ELEC.	S-CONC	RB-1			PNT-1	PNT-1	PNT-1	PNT-1	PNT-2		AC-PNL-C	9'-0"		1109
1110	BOYS' LOCKER ROOM	RSF-1	RSF-1			PNT-1	PNT-1	PNT-1	PNT-1	PNT-2		AC-PNL-A	10'-0"	1,10,22,25	1110
1111	CORR	RSF-1	RSF-1			PNT-1	PNT-1	PNT-1	PNT-1	PNT-2		AC-PNL-A	9'-0"	10	1111
1112	COACH OFFICE	LVT-1	RB-1			PNT-1	PNT-1	PNT-6	PNT-1	PNT-2		AC-PNL-A	9'-0"	24	1112
1113	TLT/ SHWR	RSF-1	RSF-1			PWT-1, GWT-1, GWT-2, GWT-3	PNT-1	PNT-1	PNT-1	PNT-2		AC-PNL-B, GYP BD	VARIES	4,10,14,15,16,21	1113
1114	COACH TLT	RSF-1	RSF-1			PNT-1	PNT-1	PNT-1	PNT-1	PNT-2		AC-PNL-B, GYP BD	VARIES	10,16,17	1114
1115	REF. BATHROOM	RSF-1	RSF-1			PNT-1	PNT-1	PNT-1	PNT-1	PNT-2		AC-PNL-B, GYP BD	VARIES	10,16,17	1115
1116	UNIFORM STOR	RSF-1	RSF-1			PNT-1	PNT-1	PNT-1	PNT-1	PNT-2	PL-1, PL-2	AC-PNL-C	9'-0"	2,8	1116
1117	UNIFORM STOR	RSF-1	RSF-1			PNT-1	PNT-1	PNT-1	PNT-1	PNT-2	PL-1, PL-2	AC-PNL-C	9'-0"	2,8	1117
1118	REFEREE	RSF-1	RSF-1			PNT-1	PNT-1	PNT-1	PNT-1	PNT-2		AC-PNL-C	9'-0"		1118
1119	COACH TLT	RSF-1	RSF-1			PNT-1	PNT-1	PNT-1	PNT-1	PNT-2		AC-PNL-B	9'-0"	10,16,17	1119
1120	TLT/ SHWR	RSF-1	RSF-1			PNT-1	PWT-1, GWT-1, GWT-2, GWT-3	PNT-1	PNT-1	PNT-2		AC-PNL-B, GYP BD	VARIES	4,10,14,15,16,21	1120
1121	COACH OFFICE	LVT-1	RB-1			PNT-1	PNT-1	PNT-6	PNT-1	PNT-2		AC-PNL-A	9'-0"	24	1121
1122	GIRLS' LOCKER ROOM	RSF-1	RSF-1			PNT-1	PNT-1	PNT-1	PNT-1	PNT-2		AC-PNL-A	10'-0"	1,10,22,25	1122
1123	VEST.	RSF-1	RSF-1			PNT-1	PNT-1	PNT-1	PNT-1	PNT-2		AC-PNL-A	9'-0"		1123
1124	VISITOR/VOLLEYB ALL LOCKER ROOM	RSF-1	RSF-1			PNT-1	PNT-1	PNT-1	PNT-1	PNT-2		AC-PNL-A	10'-0"	1,10,22,25	1124
1125	TLT/ SHWR	RSF-1	RSF-1			PNT-1	PNT-1	PNT-1	PNT-1	PNT-2	PL-1	AC-PNL-B, GYP BD	VARIES	10,16,17	1125
1126	UTIL.	S-CONC	RB-1			PNT-1	PNT-1	PNT-1	PNT-1	PNT-2		AC-PNL-C	9'-0"		1126
1127	MECH	S-CONC	RB-1			PNT-1	PNT-1	PNT-1	PNT-1	PNT-2		AC-PNL-C	9'-0"		1127
1128	MENS	RSF-1	RSF-1			PNT-1	PNT-1	PWT-1, GWT-1, GWT-2, GWT-3	PNT-1	PNT-2		AC-PNL-B	10'-0"	4,10,14,15,21	1128
1129	VESTIBULE	PC-1	RB-2			PNT-1	PNT-1	PNT-1	PNT-1	PNT-2		AC-PNL-A	10'-0"		1129
1130	JAN	S-CONC	RB-1			PNT-1	PNT-1	PNT-1	PNT-1	PNT-2		AC-PNL-C	9'-0"		1130
1131	WOMENS	RSF-1	RSF-1			PNT-1	PNT-1	PNT-1	PWT-1, GWT-1, GWT-2, GWT-3	PNT-2		AC-PNL-B	10'-0"	4,10,14,15,21	1131
1201A	TICKET BOOTH	RSF-2	RSF-2			PNT-1A	PNT-1A	PNT-1A	PNT-1A	PNT-2A		GYP BD/PNT-7	9'-6 3/8"	10,18,22,23	1201A
1301A	WOMEN	RSF-2	RSF-2	PNT-1A,4,5	6'-0"	PNT-1A	PNT-1A	PNT-1A	PNT-1A	PNT-2A		GYP BD/PNT-7	9'-6 3/8"	4,10,18,19,23	1301A
1302	MEN	RSF-2	RSF-2	PNT-1A,4,5	6'-0"	PNT-1A	PNT-1A	PNT-1A	PNT-1A	PNT-2A		GYP BD/PNT-7	9'-6 3/8"	4,10,18,19,23	1302
1303	JAN	RSF-2	RSF-2	PNT-2A	6'-0"	PNT-1A	PNT-1A	PNT-1A	PNT-1A	PNT-2A		GYP BD/PNT-7	9'-6 3/8"	10,18,20,23	1303
1304	CONCESSIONS	RSF-2	RSF-2	PNT-1A,4,5	6'-0"	PNT-1A	PNT-1A	PNT-1A	PNT-1A	PNT-2A		GYP BD/PNT-7	9'-6 3/8"	10,18,19,23	1304

GENERAL NOTES

- ALL GYP SURFACES TO RECEIVE EGGSHELL PAINT SHEEN. ALL CMU SURFACES TO RECEIVE SEMI-GLOSS SHEEN. ALL TRIM SURFACES TO RECEIVE SEMI-GLOSS SHEEN. GYP BOARD CEILING SHEEN TO BE FLAT.
- CEILINGS TO BE PAINTED PNT-3.
- PROVIDE ADA COMPLIANT METAL TRANSITION STRIPS AS REQUIRED WHERE CHANGES IN FLOORING MATERIAL OCCUR - SEE FINISH LEGEND AND 1/A601 FOR SPECIFIC APPLICATIONS
- PROVIDE TRANSITION STRIPS/EDGES TRIM AT ALL PORCELAIN TILE LOCATIONS - SEE FINISH LEGEND FOR SPECIFIC APPLICATIONS
- PROVIDE GRAPHICS ALLOWANCE - SEE SPECIFICATIONS
- PROVIDE 3MM PVC EDGE BANDING TO MATCH HIGH PRESSURE LAMINATES - SUBMIT PHYSICAL SAMPLES FOR COLOR APPROVAL.
- REFER TO PLUMB. AND ELEC. DWGS FOR REQUIREMENTS RELATED TO THOSE TRADES.
- PROVIDE BLINDS IN WINDOWS AS INDICATED ON DRAWINGS. SEE SPECS.

REFERENCE NOTES

1. PROVIDE PNT-4 AND PNT-5 ACCENT STRIPE ON ALL WALLS AS SHOWN IN INTERIOR ELEVATIONS. SEE 1/A401 FOR WALL PAINT PATTERN DETAILS AND 1/A601 FOR WALL LOCATIONS.
2. MILLWORK FINISHES: PL-1 ON VERTICAL CABINET SURFACES AND PL-2 ON COUNTERTOP WITH FULL BULLNOSE EDGE AND 4" BACKSIDE SPLASHES. SEE INTERIOR ELEVATIONS.
3. TRANSACTION COUNTER TO BE SS-1 WITH PL-2 SKIRT ON LOBBY SIDE AND PL-1 BASE CABINET ON CONCESSIONS SIDE.
4. NEW TOILET PARTITIONS TO BE TP-1. SEE SPECIFICATIONS. SEE ELEVATIONS FOR TP-1 ASSIGNMENTS.
5. SEE 1/A601 FOR FLOOR PATTERN PLAN.
6. PROVIDE APPROXIMATELY 8' WIDE HIGH SCHOOL LOGO IN CONCRETE DESIGN. SHOP DWGS/SAMPLES OF LOGO DESIGN TO BE APPROVED BY DESIGNER. SEE 1/1A601 FOR LOCATION.
7. COLOR OF BLEACHER SEATS TO BE BLUE AND WALL PADS TO BE RED. PROVIDE 48" WIDE LOGO GRAPHIC ON WALL PADS AS SHOWN ON ELEVATIONS 2/A403. SEE 1/A101 FOR LOCATIONS OF WALL PADS.
8. PROVIDE 24" DEEP ADJUSTABLE PLASTIC LAMINATE (PL-1) SHELVING ON METAL STANDARDS.
9. 6" H GWB SOFFIT TO BE PAINTED PNT-4 FLAT FINISH ON ALL EXPOSED SIDES AND BOTTOM - SEE RCP.
10. SEE SPECS FOR RESINOUS FLOORING WEARING SURFACE LOCATION REQUIREMENTS AND FLOOR SYSTEM DETAILS. SEE 7/A406 FOR RESINOUS BASE DETAIL.
11. SEE 7/A406 FOR ATHLETIC WOOD FLOORING DETAIL.
12. GYM STRUCTURE TO BE PAINTED PNT-1EP. SEE INTERIOR ELEVATIONS.
13. PROVIDE CUSTOM TROPHY CASE ON EAST WALL. SEE ELEVATION 2/A401. SEE SPECS.
14. SEE INTERIOR ELEVATIONS FOR DECORATIVE WALL TILE PATTERN.
15. PWT-1 TO BE INSTALLED IN RUNNING BOND PATTERN.
16. SHOWER SOFFIT. TO BE PAINTED PNT-1 ON SIDE AND BOTTOM.
17. PROVIDE PL-1 ON UPPER CABINET.
18. PROVIDE 1X4 WOOD TRIM AT TOP OF WALL ADJACENT TO CEILING. TRIM TO BE PAINTED PNT-1A.
19. SEE 1/A406 FOR TYPICAL WALL PAINT PATTERN.
20. SEE 2/A406 FOR JANITOR/STORAGE WALL PAINT PATTERN.
21. SEE ELEVATIONS FOR TS-1 LOCATIONS.
22. PROVIDE WALL GRAPHICS. COORDINATE WITH ARCHITECT AND OWNER. SEE INTERIOR ELEVATION AND SPECS.
23. ALL DOOR AND WINDOW FRAMES TO BE PAINTED PNT-2A. SEMI GLOSS SHEEN.
24. SEE A601 FOR ACCENT PAINT COLOR LOCATIONS.
25. PROVIDE CUSTOM PHENOLIC LOCKERS. SEE SHEET A101 FOR LOCATIONS. SEE ALLOWANCE
26. PROVIDE SIT-IN METAL LOCKERS. SEE SHEET A111 FOR LOCATIONS. SEE SPEC
27. SEE SHEET A601 FOR RB-4 LOCATIONS. WHERE SEALED CONCRETE IS EXPOSED.
28. EXPOSED CEILING TO BE PAINTED PNT-7

FLOORING

- AWF-1 ATHLETIC WOOD FLOORING SYSTEM WITH GAMELINES
  ROBBINS SPORTS SURFACES
  BIO CHANNEL SB FLOOR SYSTEM
  STAIN COLOR: TWO-TONE (CLEAR/DARK WOOD STAIN)
  COURTLINE COLORS: TBD
  SEE 1/A601 FOR STAIN/COLOR LOCATIONS
  SEE 5/A331 FOR FLOORING DETAIL
- LVT-1 LUXURY VINYL TILE
  TARKETT
  COLLECTION: EVENT STONE
  STYLE: PEUS URBAN STONE
  COLOR: 11203 COSMIC
  SIZE: 12"X24"
  TOTAL THICKNESS: 3 MM
  WEAR LAYER: 30 MIL
  INSTALLATION METHOD: QUARTER TURN
- RSF-1 RESINOUS FLOORING WITH 6" INTEGRAL BASE
  SHERWIN WILLIAMS
  1/8" RESUFLOR DECO FLAKE BC
  COLOR: METEORITE GP6755FMT
  WEARING SURFACE: STANDARD AT ALL SCHEDULED LOCATIONS EXCEPT SHOWERS. SEE SPECS FOR MORE INFORMATION.
  SEE 7/A406 FOR BASE DETAIL.
- RSF-2 RESINOUS FLOORING WITH 6" INTEGRAL BASE
  SHERWIN WILLIAMS
  RESUFLOR DECO FLAKE BC SPECIAL
  CUSTOM CASE# 10727522
  1/8" RESUFLOR DECO FLAKE BC
  COLOR: CS-727522-1CUS
  TOPCOAT: ELLADUR 4850
  WEARING SURFACE: STANDARD AT ALL SCHEDULED LOCATIONS EXCEPT SHOWERS. SEE SPECS FOR MORE INFORMATION.
  SEE 7/A406 FOR BASE DETAIL.
  LOCATION: ATHLETIC UPGRADES
- PC-1 POLISHED CONCRETE
  CONSOLIDECK
  COLOR: WELSH SLATE
- PC-2 POLISHED CONCRETE
  AMERIPOLISH
  COLOR: MIDNIGHT BLACK
- PC-3 POLISHED CONCRETE
  AMERIPOLISH
  COLOR: SEPIA
- PC-4 POLISHED CONCRETE
  CONSOLIDECK
  COLOR: AMETHYST
- S-CONC SEALED CONCRETE

BASE

- RB-1 RUBBER BASE (THERMOSET)
  ROPPE
  STYLE: PINNACLE COVE
  SIZE: 4" HIGH CONTINUOUS ROLL
  TOE: STANDARD
  COLOR: 123 CHARCOAL
- RB-2 RUBBER BASE (THERMOPLASTIC)
  ROPPE
  STYLE: CONTOURS PROFILED WALL BASE SYSTEM
  SIZE: 6" H
  COLOR: 123 CHARCOAL
  OUTER CORNERS TO BE MITERED
- RB-3 RUBBER BASE
  ROPPE
  STYLE: PINNACLE COVE
  SIZE: 4" H
  COLOR: 114 LUNAR DUST
- RB-4 RUBBER BASE
  ROPPE
  STYLE: PINNACLE COVE
  SIZE: MATCH HEIGHT TO AWF-1 BASE
  TOE: STANDARD
  COLOR: 100 BLACK

TRANSITION STRIP

- TS-1 TRIM AT PORCELAIN WALL TILE EDGES
  SCHLUTER SYSTEMS
  JOLLY/SCHIENE
  FINISH: SATIN NICKEL ANODIZED ALUMINUM (AT)
- TS-2 LVT TO CONCRETE FLOORING TRANSITION
  SCHLUTER SYSTEMS
  VINPRO-U
  FINISH: BRUSHED NICKEL ANODIZED ALUMINUM (ATGB)
- TS-3 ATHLETIC WOOD FLOORING TO CONCRETE/RESINOUS/LVT
  ROBBINS SPORTS SURFACES
  MANUFACTURER-PROVIDED THRESHOLD COVER PLATE
- TS-4 CONCRETE TO RESINOUS
  MANF. RECOMMENDED

WALLS

- PNT-1 GENERAL PAINT
  SHERWIN WILLIAMS
  COLOR: GRAY CLOUDS SW 7658
- PNT-1EP GENERAL WALL PAINT EPOXY
  SHERWIN WILLIAMS
  COLOR: GRAY CLOUDS SW 7658
  LOCATION: COURT 1106
- PNT-1A GENERAL PAINT
  SHERWIN WILLIAMS
  COLOR: DORIAN GRAY SW 7017
  LOCATION: ATHLETIC UPGRADES FACILITIES
- PNT-2 TRIM PAINT
  SHERWIN WILLIAMS
  COLOR: PEPPERCORN SW 7674
- PNT-2A TRIM PAINT/WAINSCOT COLOR
  SHERWIN WILLIAMS
  COLOR: GAUNTLET GRAY 7019
  LOCATION: ATHLETIC UPGRADES FACILITIES
- PNT-3 CEILING PAINT
  SHERWIN WILLIAMS
  COLOR: EIDER WHITE 7014
- PNT-4 ACCENT PAINT
  BENJAMIN MOORE
  COLOR: EXOTIC RED 2086-10
- PNT-5 ACCENT PAINT
  SHERWIN WILLIAMS
  COLOR: SNOWBOUND SW 7004
- PNT-6 ACCENT PAINT
  SHERWIN WILLIAMS
  COLOR: AZURE TIDE SW 9684
- PNT-7 ACCENT PAINT
  SHERWIN WILLIAMS
  COLOR: TRICORN BLACK 6258

WALLS

- GWT-1 GLAZED ACCENT WALL TILE
  TRINITY SURFACES
  STYLE: WALL TILE COLLECTION
  COLOR: RED PEPPER
  FINISH: GLOSSY
  SIZE: 4" X 10"
  THICKNESS: 7MM
  GROUT COLOR: MAPEI - 77 FROST
- GWT-2 GLAZED ACCENT WALL TILE
  TRINITY SURFACES
  STYLE: WALL TILE COLLECTION
  COLOR: SNOW WHITE
  FINISH: GLOSSY
  SIZE: 4" X 10"
  THICKNESS: 7MM
  GROUT COLOR: MAPEI - 77 FROST
- GWT-3 GLAZED ACCENT WALL TILE
  TRINITY SURFACES
  STYLE: WALL TILE COLLECTION
  COLOR: COBALT
  FINISH: GLOSS
  SIZE: 3" X 6"
  THICKNESS: 7MM
  GROUT COLOR: MAPEI - 77 FROST
- PWT-1 PORCELAIN WALL TILE
  SOUTH CYPRESS
  COLLECTION: TEMPO
  COLOR: DARK GREY
  SIZE: 12" X 24"
  THICKNESS: 9MM
  GROUT: MAPEI - 19 PEARL GRAY
  INSTALLATION METHOD: SEE ELEVATIONS

MILLWORK FINISHES

- PL-1 HIGH PRESSURE LAMINATE
  PIONITE
  COLOR: TRYTOO SAVATRE WC 105
  LOCATION: VERTICAL CABINET SURFACES
- PL-2 HIGH PRESSURE LAMINATE
  PIONITE
  COLOR: DAYDREAMING AG750
  LOCATION: COUNTERTOPS
- SS-1 SOLID SURFACE
  DURASEIN
  COLOR: ROYAL CARRERA DM 5009
  LOCATION: CONCESSION COUNTERTOPS

CEILINGS

- AC-PNL-A ACOUSTICAL CEILING TILE
  ARMSTRONG CEILINGS
  ULTIMA HIGH NRC
  15/16" SQUARE LAY-IN
  #1940
  SIZE: 24" X 24" X 7/8"
  COLOR: WHITE
- AC-PNL-B ACOUSTICAL PANEL CEILING
  VINYL COVERED GWB
- AC-PNL-C ACOUSTICAL PANEL CEILING
  ARMSTRONG CEILINGS
  CORTEGA
  15/16" SQUARE LAY-IN
  #770
  SIZE: 24" X 24" X 7/8"
  COLOR: WHITE
- AC-BAF-A ACOUSTICAL BAFFLE
  ARMSTRONG TURF
  RIDGE BAFFLE
  COLOR: CHARCOAL 06
  SIZE: CUSTOM, SEE DETAIL 2/A501
- AC-BAF-B ACOUSTICAL BAFFLE
  ARMSTRONG TURF
  RIDGE BAFFLE
  COLOR: AZURE 31
  SIZE: CUSTOM, SEE DETAIL 2/A501

MISCELLANEOUS

- TP-1 SOLID PLASTIC (HDPE) TOILET PARTITIONS
  NFPA 286 APPROVED
  ASI ACCURATE PARTITIONS
  COLOR: CHARCOAL #9237
  LOCATION: VERBENA HS GYM
- LOCKERS METAL SIT-IN (AWAY) - SEE SPECS
  METAL DOUBLE (REFEREE) - SEE SPECS
  CUSTOM PHENOLIC (HOME) - SEE ALLOWANCE
- AWP-A ACOUSTICAL WALL PANEL
  IMPACT RESISTANT SOUND ABSORBING PANEL

FABRIC

- FP-1 ACOUSTICAL PANEL FABRIC
  GUILFORD OF MAINE
  PATTERN: STUDIO 54 1405
  COLOR: TWILIGHT GLEAM 120
  WIDTH: 66" MIN

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BID DOCUMENTS

DATE: 01/08/26
PROJ NO: 25-032

REVISIONS

#	DESC	DATE
1	ADD 001	01/30/26

FINISH SCHEDULE

A001

DOOR SCHEDULE

DOOR NUMBER	FIRE RATING	DOOR WIDTH	DOOR HEIGHT	DOOR ELEV.	DOOR MATERIAL	DOOR GLAZING	FRAME ELEV.	FRAME MATERIAL	FRAME GLAZING	HARDWARE	SIGNAGE	COMMENTS	DOOR NUMBER
1101A		6'-0"	8'-0"	D4	ALUM	G1	SF1	ALUM	G1	1.0		1	1101A
1101B		6'-0"	8'-0"	D4	ALUM	G1	SF1	ALUM	G1	2.0		1	1101B
1101C		6'-0"	8'-0"	D4	ALUM	G1	SF1	ALUM	G1	2.0		1	1101C
1102A		3'-0"	7'-0"	D1	WD	--	F2	HM	--	10.0	B		1102A
1102B		12'-0"	3'-10"	D6	MFR	--	MFR	MFR	--	--		3	1102B
1103A		3'-0"	7'-0"	D1	WD	--	F2	HM	--	10.0			1103A
1104A	2HR	3'-0"	7'-0"	D1	WD	--	F2	HM	--	9.0			1104A
1105A		6'-0"	8'-0"	D6	MFR	--	MFR	MFR	--	--		2	1105A
1106A		3'-0"	7'-0"	D2	WD	G3	F3	HM	--	8.0			1106A
1106B		6'-0"	7'-0"	D2	WD	G3	F3	HM	--	7.0		1	1106B
1106C		6'-0"	7'-0"	D2	WD	G3	F3	HM	--	7.0		1	1106C
1106D		3'-0"	7'-0"	D2	WD	G3	F3	HM	--	8.0			1106D
1106E		6'-0"	7'-0"	D4	ALUM	G1	SF2	ALUM	G1	3.0		1	1106E
1106F		6'-0"	7'-0"	D4	ALUM	G1	SF2	ALUM	G1	4.0		1	1106F
1106G		6'-0"	7'-0"	D4	ALUM	G1	SF2	ALUM	G1	4.0		1	1106G
1106H		6'-0"	7'-0"	D4	ALUM	G1	SF2	ALUM	G1	4.0		1	1106H
1107A		3'-0"	7'-0"	D1	WD	--	F2	HM	--	15.0	B		1107A
1108A		3'-0"	7'-0"	D1	WD	--	F2	HM	--	18.0	A		1108A
1109A		3'-0"	7'-0"	D1	HM	--	F2	HM	--	6.0			1109A
1110A		3'-0"	7'-0"	D1	WD	--	F2	HM	--	15.0	B		1110A
1111A		3'-0"	7'-0"	D2	WD	G1	F2	HM	--	14.0			1111A
1112A		3'-0"	7'-0"	D1	WD	--	F2	HM	--	12.0	C		1112A
1112B		3'-0"	7'-0"	D1	WD	--	F2	HM	--	16.0			1112B
1114A		3'-0"	7'-0"	D1	WD	--	F2	HM	--	18.0			1114A
1115A		3'-0"	7'-0"	D1	WD	--	F2	HM	--	18.0			1115A
1116A		3'-0"	7'-0"	D1	WD	--	F2	HM	--	10.0			1116A
1117A		3'-0"	7'-0"	D1	WD	--	F2	HM	--	10.0			1117A
1118A		3'-0"	7'-0"	D2	WD	G1	F2	HM	--	13.0	B		1118A
1119A		3'-0"	7'-0"	D1	WD	--	F2	HM	--	18.0			1119A
1121A		3'-0"	7'-0"	D2	WD	G1	F2	HM	--	12.0	C		1121A
1121B		3'-0"	7'-0"	D1	WD	--	F2	HM	--	16.0			1121B
1122A		3'-0"	7'-0"	D1	WD	--	F2	HM	--	15.0	B		1122A
1123A		3'-0"	7'-0"	D1	WD	G1	F2	HM	--	14.0			1123A
1124A		3'-0"	7'-0"	D1	WD	--	F2	HM	--	15.0	B		1124A
1125A		3'-0"	7'-0"	D1	WD	--	F2	HM	--	18.0	A		1125A
1126A		3'-0"	7'-0"	D1	WD	--	F2	HM	--	5.0			1126A
1127A		2'-6"	7'-0"	D1	HM	--	F2	HM	--	17.0			1127A
1128A		3'-0"	7'-0"	D1	WD	--	F2	HM	--	14.0	A		1128A
1130A		2'-6"	7'-0"	D1	WD	--	F2	HM	--	11.0			1130A
1131A		3'-0"	7'-0"	D1	WD	--	F2	HM	--	14.0	A		1131A
1201A		3'-0"	7'-0"	D1	HM	--	F2	HM	--	20.0			1201A
1301A		3'-0"	7'-0"	D1	HM	--	F2	HM	--	22.0			1301A
1302A		3'-0"	7'-0"	D1	HM	--	F2	HM	--	22.0			1302A
1303A		3'-0"	7'-0"	D1	HM	--	F2	HM	--	23.0			1303A
1304A		3'-0"	7'-0"	D1	HM	--	F2	HM	--	21.0			1304A
1304B		5'-8"	4'-8"	D6	MFR	--	MFR	MFR	--	--		3	1304B
1304C		5'-8"	4'-8"	D6	MFR	--	MFR	MFR	--	--		3	1304C
1304D		5'-8"	4'-8"	D6	MFR	--	MFR	MFR	--	--		3	1304D
1304E		5'-8"	4'-8"	D6	MFR	--	MFR	MFR	--	--		3	1304E

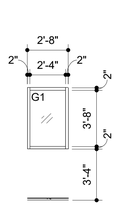
DOOR SCHEDULE LEGEND:
ALUM - ALUMINUM
HM - HOLLOW METAL
MFR - MANUFACTURER'S STANDARD
WD - WOOD

GLAZING LEGEND:
G1 - CLEAR TEMPERED GLASS
G2 - TEMPERED, INSULATED, SECURITY, REFLECTIVE GLAZING

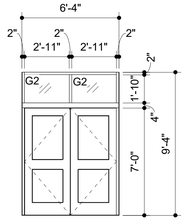
DOOR SCHEDULE COMMENTS:
1. PAIR OF DOORS
2. INTERIOR OVERHEAD COILING DOOR
3. COUNTER-TOP COILING DOOR

4 SF-4
1/4" = 1'-0"

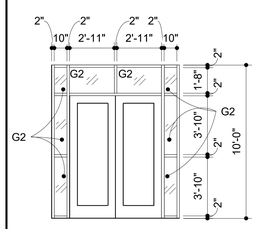
W1 ELEVATION
1/4" = 1'-0"



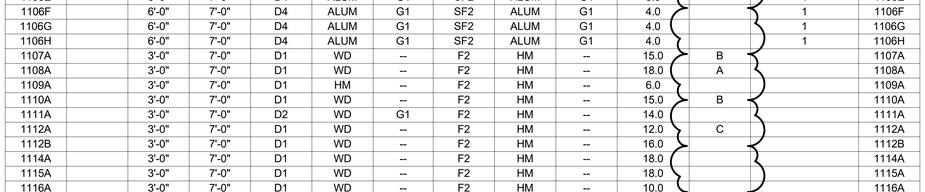
3 SF-3
1/4" = 1'-0"



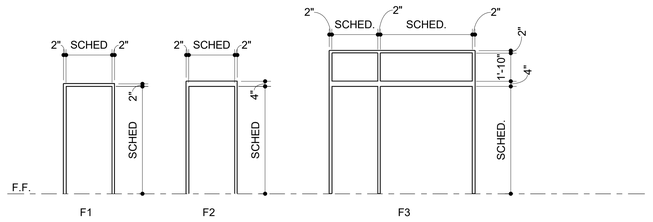
2 SF-2
1/4" = 1'-0"



1 SF-1
1/4" = 1'-0"



DOOR ELEVATIONS
1/4" = 1'-0"



FRAME ELEVATIONS
1/4" = 1'-0"

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PROJ NO: 25-032

REVISIONS

#	DESC	DATE
1	ADD 001	01/30/26

OPENING SCHEDULES & ELEVATIONS

A002

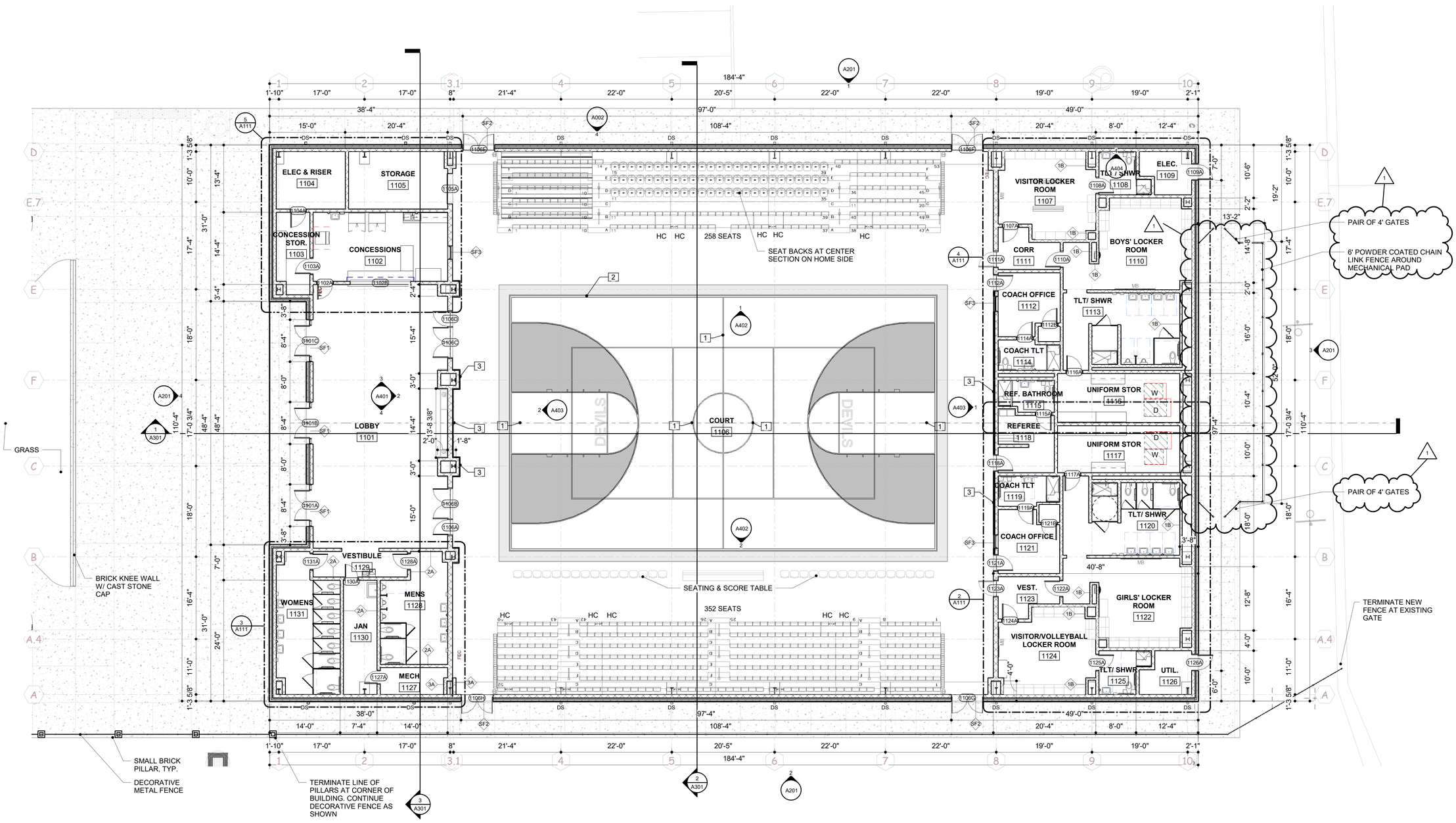
REFERENCE NOTES	
NUMBER	NOTE
1	RECESSED POST MOUNTS WITH COVERS.
2	SEE A601 & SPECS FOR GYMANSIUM STRIPING PLAN.
3	WALL PADS - SEE SPECS.

DRAWING LEGEND:

- STUD WALL
- CMU WALL

SEE A316 FOR WALL PARTITION TYPES, ALL WALLS TYPICAL WALL TYPE U.N.O.

ALL DOORS ARE 4" FROM FACE OF WALL (ON HINGED SIDE) U.N.O.



1 FLOOR PLAN - GYMNASIUM
1/8" = 1'-0"

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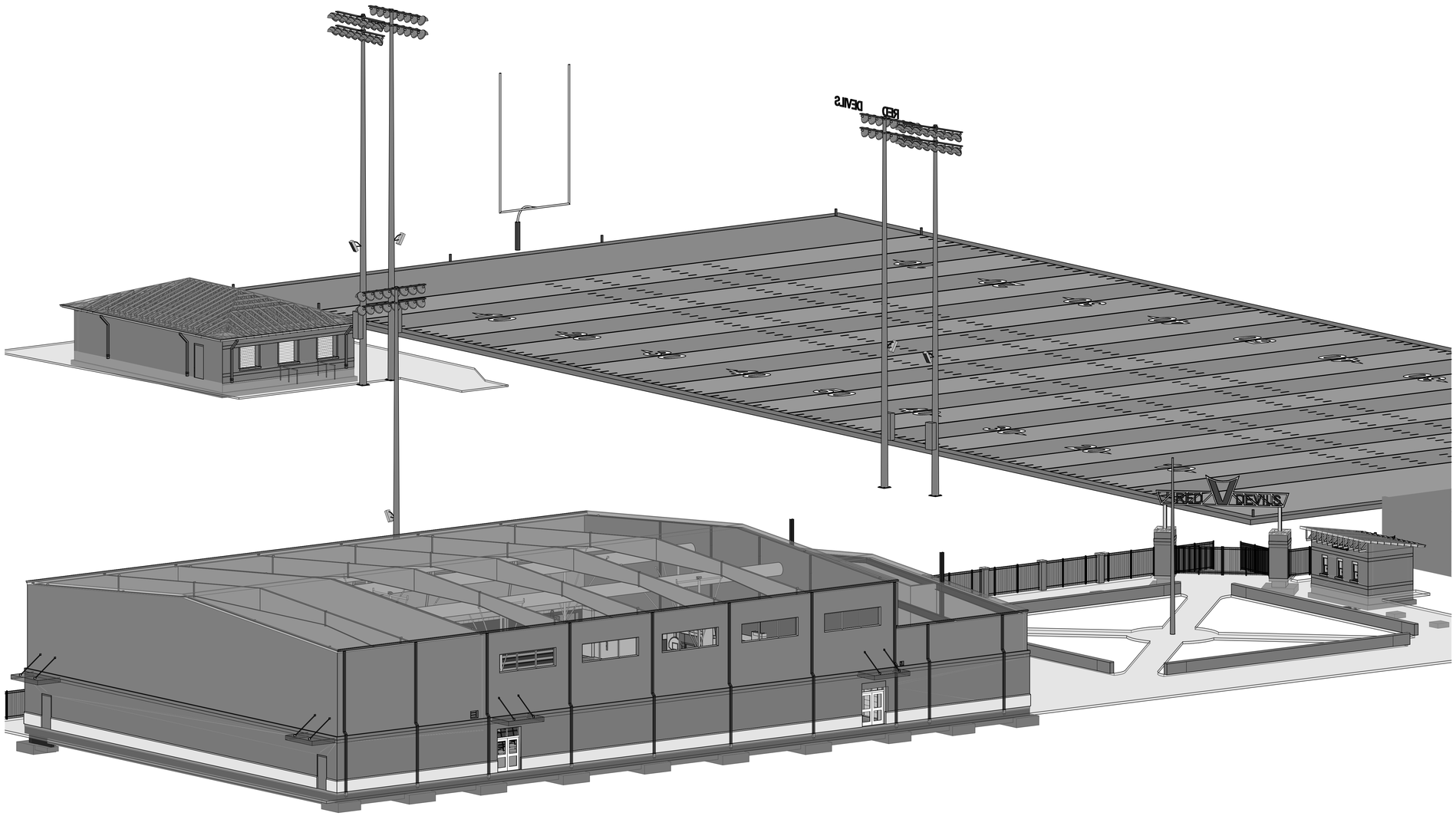
1	ADD 001	01/30/26

FLOOR PLAN - GYMNASIUM

A101

BJW STRUCTURAL ENGINEERS
BARNETT JONES WILSON, LLC ● PELL CITY ● TUSCALOOSA ● CHATTANOOGA ● WWW.STRUCT-ENGR.COM



STRUCTURAL ISOMETRIC

1

REVISION - SHEET NUMBER

Sheet Number	Sheet Name	Current Revision	Current Revision Description
S000	STRUCTURAL ISOMETRIC	1	ADD 1
S001	GENERAL NOTES	1	ADD 1
S002	TYPICAL DETAILS	1	ADD 1
S003	TYPICAL DETAILS		
S100	GYM FOUNDATION PLAN		
S100.1	GYM SLAB CONTROL JOINT PLAN		
S101	RESTROOMS AND TICKET BOOTH FOUNDATION PLAN		
S301	RESTROOMS AND TICKET BOOTH FRAMING PLAN		
S500	SECTIONS & DETAILS		
S501	SECTIONS & DETAILS		
S502	SECTIONS & DETAILS		
S503	SECTIONS & DETAILS		
S504	SECTIONS & DETAILS		

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ALABAMA LICENSED PROFESSIONAL ENGINEER
No. 33979
PROFESSIONAL
MICHAEL JOSHUA OSBORN
2-02-2026

BID DOCUMENTS

DATE: 1-08-26
PROJ NO: 25-032

REVISIONS

#	DESC	DATE
1	ADD 1	2-02-26

STRUCTURAL ISOMETRIC

S000

2/2/2026 11:34:14 AM

GENERAL NOTES
1. Contractor shall compare Structural drawings and Architectural drawings. Any omissions or discrepancies between plans, details, and specifications shall be brought to the attention of the Architect or Engineer before bidding. In all cases, more the more stringent requirement governs. Architectural dimensions and elevations will control.
2. Structural drawings or parts of the structural drawings may not be used as shop drawings without prior written approval.
3. All or parts of these drawings were produced with computer aided drafting. Drawings are available from the Engineer in DWG format on request.
4. Contractor proposed changes to details must be clearly noted on the first sheet of all shop drawings.
5. Construction shown is stable after the building is complete including interior and exterior finishes. The Contractor is responsible for temporary bracing of the structure during construction.
6. Review of submittal information shall be for general compliance with the contract documents and shall not include checking of detailed dimensions or detailed quantities.
7. Shop drawing detailer shall check all Architectural and Mechanical drawings for attachments, clips, openings, or duct work and shall include these items in the shop drawings.
8. Furnish design calculations sealed by a Professional Engineer licensed in the project state for all shoring.
9. Site visits by Engineer of Record are not considered inspections or special inspections, rather are observations for general compliance with contract documents.
10. Electronic submittal of shop drawings is required. Review of submittal information shall be for general conformance with the contract documents and shall not include checking of detailed dimensions or detailed quantities.

DESIGN LOADS
1. Reference code for loading — IBC 2021 & ASCE/SEI 7-16
   - A. Building Classification — III
   - B. Wind Load
     - a. Basic Wind Speed (3 sec gust) — 118 mph
     - b. Wind Exposure — B
     - c. Internal Pressure Coefficient — +/- 0.18
     - d. Velocity Pressure (q_z) — 16.9 psf
     - e. Components & Cladding Pressures — See table and diagram
   - C. Seismic Load
     - a. Importance Factor — 1.25
     - b. Mapped Spectral Response Accelerations
       - 1. S_S — 0.189
       - 2. S_1 — 0.082
     - c. Site Class — D
     - d. Spectral Response Coefficients
       - 1. S_{DS} — 0.201
       - 2. S_{D1} — 0.130
     - e. Seismic Design Category — B
     - f. Base Seismic-Force-Resisting System(s) and Response Modification Factor
       - 1. Ordinary Reinforced Masonry Shear Walls — 2
     - g. Seismic Response Coefficient (C_S) — 0.05
     - h. Analysis Procedure = — Equivalent Lateral Force
   - D. Live Load
     - a. Roof — 20 psf
     - b. Slabs on grade — 100 psf
     - c. Slabs on deck — 100 psf
     - d. Stairs and exitways — 100 psf
   - E. Fluid Roof Pressure Load
     - a. Any low-roof area design for secondary drain height of 2" above roof: 5.2 psf/in x 2" = 10.4 psf

FOUNDATIONS
1. Foundation design for this project was based on soils information provided by TTL, Inc. Report #**000250101196.00**, dated **July 25, 2025.**
2. Bearing value of soil: **2500 psf**
3. All footings are to bear on undisturbed soil or on engineered fill as dictated by the geotechnical report.
4. Provide 8'-0" long top steel reinforcing, same size as bottom steel, at transitions between engineered fill and undisturbed soil locations.
5. Install corner bars at all footing intersections and corners (Provide lap length e.w.).
6. Step all footings where necessary to provide a minimum of 1'-0" below the finish grade or 0'-8" below finish floor.
7. All footing elevations are given to the top of the footings.
8. Footing steps shown on the plans are furnished as a guide for estimating quantities. Final elevations are to be set in the field. Bearing elevations must be approved by a Soils Engineer before any concrete is placed.
9. Coordinate foundation elevations with plumbing requirements. Step footings down as required to clear plumbing lines.
10. Slabs on grade should be supported on 4" compacted dense graded base material (ALDOT 825B, #8910, or equivalent), compacted to a minimum of 98% compaction and +/- 3% optimum moisture based on ASTM D698, unless noted otherwise in construction documents or geotechnical report.
11. Provide drainage for all retaining walls; see Architectural for notes and details.

MASONRY
1. All masonry work to be in accordance with *Building Code Requirements and Specification for Masonry Structures* (TMS 402/602-16).
2. Fill all concrete masonry units with concrete or grout from the top of the footing to the finish floor or to 8" above finish grade, whichever is higher.
3. Use truss type joint reinforcement (BLOK-LOK BL-34 or better) at 16" o.c. in all cavity walls where brick is used for one or more of the wythes.
4. Use truss type joint reinforcement (DUR-O-WAL SW DA3100 or better) at 16" o.c. in all other masonry walls.
5. Provide joint reinforcement at 8" o/c. for all walls constructed with stack bond.
6. Use Type "M" or "S" mortar in accordance with IBC Table 2103.2.1, unless noted or approved otherwise.
7. Minimum compressive strength of concrete masonry f'_m = 2000 psi in accordance with the unit strength method and TMS 402/602-16. Submit for review test data on strength of units before starting any masonry work.
8. Minimum compressive strength of grout f'_c = 2000 psi. Use 3/8" max size aggregate. See Special Inspection Schedule for any testing requirements. Grout slump shall be 8" to 11".
9. Use "Fine" grout for all reinforced piers and reinforced wall in accordance with ASTM C476.
10. Each grout lift shall not exceed 5'-0" unless cleanouts are provided in the bottom course.
11. Fill cells under all lintels with grout.
12. Provide lintels over all openings through wall. See lintel details for reinforcement.
13. Unless noted otherwise, provide control joints in all walls 4'-0" from wall intersections or corners and at 20'-0" o.c.
14. Provide continuous bond beam at top of wall and at 8'-0" o.c. vertical spacing. Coordinate w/ openings, TYP.
15. Extend all horizontal steel and bond beams through control joints.
16. Vertical reinforcement shall extend into the bond beam and terminate with an ACI standard 90° degree hook.
17. Rebar positioners to be coordinated during submittals and used unless approved otherwise.
18. Unless noted otherwise, all vertical bars are to be located at the center of cell. Where bars are specified at each face, provide 3/4" clear space between reinforcement and CMU face shell.
19. Anchor bolt into grouted cell locations only, unless noted otherwise.
20. Perimeter CMU walls shall be reinforced with minimum #5 bars in fully grouted cells @ 2'-8" o.c. Provide Bond Beam at top of wall and at 8'-0" o.c. Brace top of wall to roof structure with rigid bracing @ 8'-0" o.c.. Alternate each direction.
21. Non Load Bearing Interior CMU walls shall be reinforced with minimum #4 bars in fully grouted cells @ 4'-0" o.c. Provide Bond Beam at top of wall. Brace top of wall to roof structure with rigid bracing @ 8'-0" o.c.. Alternate each direction.
22. Anchor all steel columns to CMU walls @ 24" o.c. vertically into reinforced cell. See typical detail.

METAL BUILDING
1. Metal building manufacturer shall be a member of the Metal Building Manufacturer's Association (MBMA) and be accredited according to the Inspections Program for Manufacturers of Metal Building Systems (AC472).
2. Reference Design Loads for Live, Wind, Snow, and Seismic loads on PEMB.
3. Building design shall include an allowance of global 5 psf superimposed dead load on the roof structure for adequate frame design for the miscellaneous interior suspension of ceilings, mechanical ducts, sprinklers, lights, speakers, etc... (Contractor is responsible to refer to Arch, Mechanical, & Electrical for bracing of interior non-loadbearing stud walls, suspended duct trunks, sprinkler piping, speaker clusters, etc... and coordinate their location with the the PEMB engineer so the layout and bracing of the affected roof purlins can be designed, stiffened, braced, and detailed appropriately.)
4. PEMB designer to also independently design for heavy concentrated loads such as basketball goals. Coordinate with Arch and other disciplines.
5. Maximum displacements based on building code service loads shown below (10 year recurrence interval is allowed for deflection checks only):
   - A. Spandrels backing up masonry — L/400
   - B. Frames — H/360
   - C. Girts — L/240
   - D. Roof framing deflection limit — L/240
6. Structural foundation design based on bearing pressure provided in geotechnical report. Owner will be responsible for the cost incurred in foundation changes due to unforeseen soil conditions or bearing pressure issues.
7. All structural design of foundations is based on an assumed metal building with pin-based columns.
8. Plans shall be reviewed and adjusted to correspond to the building manufacturer's requirements. Contractor will be responsible for the cost incurred in foundation changes due to change in final PEMB detailing and/or loading, via allowances and unit prices.
9. Building Manufacturer to submit complete design calculations for review before fabrication of any components.
10. Metal building and metal building components are not part of the design contract. Barnett/Jones/Wilson, LLC has no control or responsibility for the metal building and therefore should not be considered to be the Structural Engineer of Record for the metal building elements.

REINFORCING STEEL AND CONCRETE
1. All concrete work is to be in accordance with the *Building Code Requirements for Structural Concrete* (ACI 318-19).
2. All detailing work is to be in accordance with the *ACI Detailing Manual* (MNL-66(20)).
3. Use of calcium chloride, chloride ions, or other salts in concrete are prohibited.
4. Concrete Properties: See schedule
   - A. All concrete must obtain 7 day strength of 70% of design strength.
   - B. Concrete mixes may replace cement with other cementitious materials; submit these for approval.
   - C. Combined weight of all replacement cementitious materials may not exceed 25% of the total cementitious weight.
   - D. Concrete mixes may use water reducers, accelerators, or retarders with prior approval.
   - E. Do not provide air entrainment in concrete mixes for interior slabs.
5. All steel reinforcement shall be of deformed bars of billet steel conforming to ASTM A615, Grade 60 in all concrete.
6. Welded wire fabric (WWF) shall be ASTM A185 and shall lap (2) cross wires or 6", whichever is greater on all sides. All laps shall be wired together.
7. Provide (2) #4 bars x 4'-0" at re-entrant corner locations TYP. Locate 3" away from corner and space 0'-6" apart.
8. All slabs on grade are 4" unless noted otherwise. Slabs are to be placed on 10 Mil, PVC vapor barrier over 4" of porous fill. Reinforce slabs with 6x6 W1.4xW1.4 WWF placed 1" from top of slab. Unless noted otherwise, slabs shall have joints placed at a maximum of 10'-0" o.c.. The aspect ratio of the joint layout should not exceed 1.5:1. Joints may be control joints or construction joints. See Architectural Plans for floor slopes and recesses for hard tile.
9. Minimum concrete cover for reinforcement:
   - A. Columns — 1 1/2" outside of ties
   - B. Footings — 3" bottom & sides, 2" top
   - C. Slabs on grade — 3/4"
   - D. Slabs on deck — 3/4"
   - E. Grade Beams, Cast-In-Place Walls, & Column Piers
     - a. Surfaces exposed to weather or soil — 2" - #6 and greater, 1-1/2" - #5 and smaller
     - b. Surfaces cast directly against grade — 3"
     - c. Other surfaces — 3/4"
10. Provide corner bars at all wall and footing intersections.
11. Contractor shall include an allowance of **2.0 tons of reinforcing steel and 50 cubic yards of concrete in place &** in addition to the steel & concrete shown on the contract documents in the base bid. This material is to be acquired, detailed, fabricated, and placed at no additional cost to the Owner in sizes and at locations as directed by the Architect or Engineer. Unused materials will be credited to the Owner.
12. No openings shall be allowed to penetrate any concrete work, unless it is shown on the structural framing plans, without prior written approval. Contractor shall submit for review locations of proposed openings not shown 30 days prior to pouring any concrete.
13. When joints in beams, slabs, and joists shall be located in the center one-third of the span. Contractor shall submit for review locations of proposed openings not shown 30 days prior to pouring any concrete.
14. Provide a continuous water bar at all wall construction joints below ground level.
15. Use 3/4" chamfer for all exposed corners unless noted otherwise.
16. Mechanical openings through the floor have not been shown on the Structural drawings. See Mechanical plans for size and location of openings. Reinforcing at opening will be coordinated at time of placement.
17. Contractor to provide PEMB reactions for footing verification before reinforcing steel shop drawings are submitted.

STRUCTURAL STEEL
1. All structural steel work to be in accordance with the *Specification for Structural Steel Buildings* (ANSI/AISC 360-16) and the *Structural Welding Code - Steel* (AWS D1.1).
2. All seismic force-resisting systems work to be in accordance with the *Seismic Provisions for Structural Steel Buildings* (ANSI/AISC 341-16).
3. Fabricator shall be AISC Certified or shall pay for Special Inspections on Shop Fabricated items.
4. All reactions shown are ASD loads.
5. All connections are to be detailed as Type 2 "simple frame connections," unless noted otherwise.
6. All structural steel W shapes shall be ASTM A992.
7. All structural steel Tube sections shall be ASTM A500 Grade C.
8. All structural steel Pipe sections shall be ASTM A53 Grade B.
9. All structural steel channels, angles and other sections shall be ASTM A36, unless noted otherwise.
10. Headed Studs shall be Type B Shear Connectors.
11. Shop and field connections shall be welded with E70XX electrodes or bolted with 3/4" dia. A325-N or A325-X bolts, unless noted otherwise.
12. Connection schedules are based on snug tight bolts. Do not use slip-critical or tension-controlled bolts unless noted otherwise.
13. Use 3/4" cap and bearing plates, unless noted otherwise.
14. Use 3/4" dia x 1'-0" long ASTM F1554 Grade 36 anchor bolts, unless noted otherwise. In lieu of cast bolts, 3/4"x1'-0" long HAS rods epoxied with Hilti HVA epoxy, or equal, may be used with prior approval.
15. If anchor rods are installed without quite enough projection, contractor may submit elongated Elocone nuts for approval as a potential means to correct the issue.
16. Grout under baseplates with ASTM C1107 6000 psi Non-Shrink Grout. For 3/4" dia. anchored baseplates, use 1.5" grout. For 1" dia. anchored baseplates, use 2" grout. Coordinate top of pier/footing elevations to accomodate grout thickness required.
17. Provide L3x3x1/4 frames around all roof openings through metal decking.
18. Provide L3x3x1/4 continuous perimeter deck angle around all deck, unless noted otherwise.
19. Where floor or roof decking changes direction, on top of support framing provide L2-1/2x2-1/2x3/16 continuously for 2-1/2" seats or C5x6.7 continuously for 5" seats.
20. Provide design calculations for connections other than standard frame or seat connections.
21. Structural steel shall be shop primed per SSPC-SP 7 / NACE No. 4. Primer shall be SSPC paint with a minimum thickness of 2.0 mils. Omit paint at surfaces to be fireproofed.
22. If steel sizes do not meet specified U.L. listing (See Arch), thickness of fire protections shall be increased as required.
23. All steel exposed to weather, and/or specified in bid documents to be galvanized, shall be hot dipped galvanized per ASTM A123. (Galvanizing to adhere to G90 coating thickness.)
24. All steel exposed to earth shall receive bitumen coating.
25. Contractor shall include an allowance of **1.5 tons of structural steel in place** in addition to the steel shown on the contract documents in the base bid. This material is to be acquired, detailed, fabricated, and placed at no additional cost to the Owner in sizes and at locations as directed by the Architect or Engineer. Unused materials will be credited to the Owner.
26. Contractor shall include an allowance of **300 lineal feet of L3x3x1/4 angle in place** in addition to the steel shown on the contract documents in the base bid. This material is to be acquired, detailed, fabricated, and placed at no additional cost to the Owner in sizes and at locations as directed by the Architect or Engineer. Unused materials will be credited to the Owner.
27. Stairs, handrails, guardrails, and other miscellaneous steel items not specifically detailed on these drawings are the responsibility of the Contractor.
28. Contractor must furnish design calculations sealed by a Professional Engineer for stair and handrail designs.

DELEGATED DESIGN – ALUMINUM AWNINGS/CANOPIES
1. Reference Architectural drawings for layout, location, size, configuration, etc. for all awnings and canopies.
2. Contractor to provide blocking details at frame and tie rod connection points and then field locate blocking based on connection points shown in awning shop drawing submittal.
3. Provide shop drawings showing: product data, cut sheets, structural properties, plan views, section views, and detail views.
4. Contractor to provide calculations for all members and connections. Calculations to be signed and sealed by a Professional Engineer licensed in the State of the Project.

DELEGATED DESIGN – STAIRS, LADDERS, HANDRAILS, AND GUARDRAILS
1. Design Loads for design of stairs, ladders, handrails, and guardrails.
   - A. Handrails/Guardrails
     - a. 200 lb force applied in any direction at any point on handrail or top rail
     - b. 50 plf force applied in any direction at any point on handrail or top rail
     - c. 50 psf force on intermediate rails, openings, and space between rails
   - B. Ladders
     - a. 300 lb force applied in any direction at any point, with a minimum of (1) 300 lb force every 10 ft of ladder height
     - b. 100 lb force in any direction at any height at each side rail extension
     - c. Ships ladders with treads to be designed for same loads as Stairs
   - C. Grab Bars
     - a. 250 lb force applied in any direction at any point on grab bar
2. Provide shop drawings showing: product data, cut sheets, structural properties, plan views, section views, and detail views.
3. Provide calculations for all members, connections of members to members, and connections of members to primary structure. Calculations to be signed and sealed by a Professional Engineer licensed in the State of the Project.

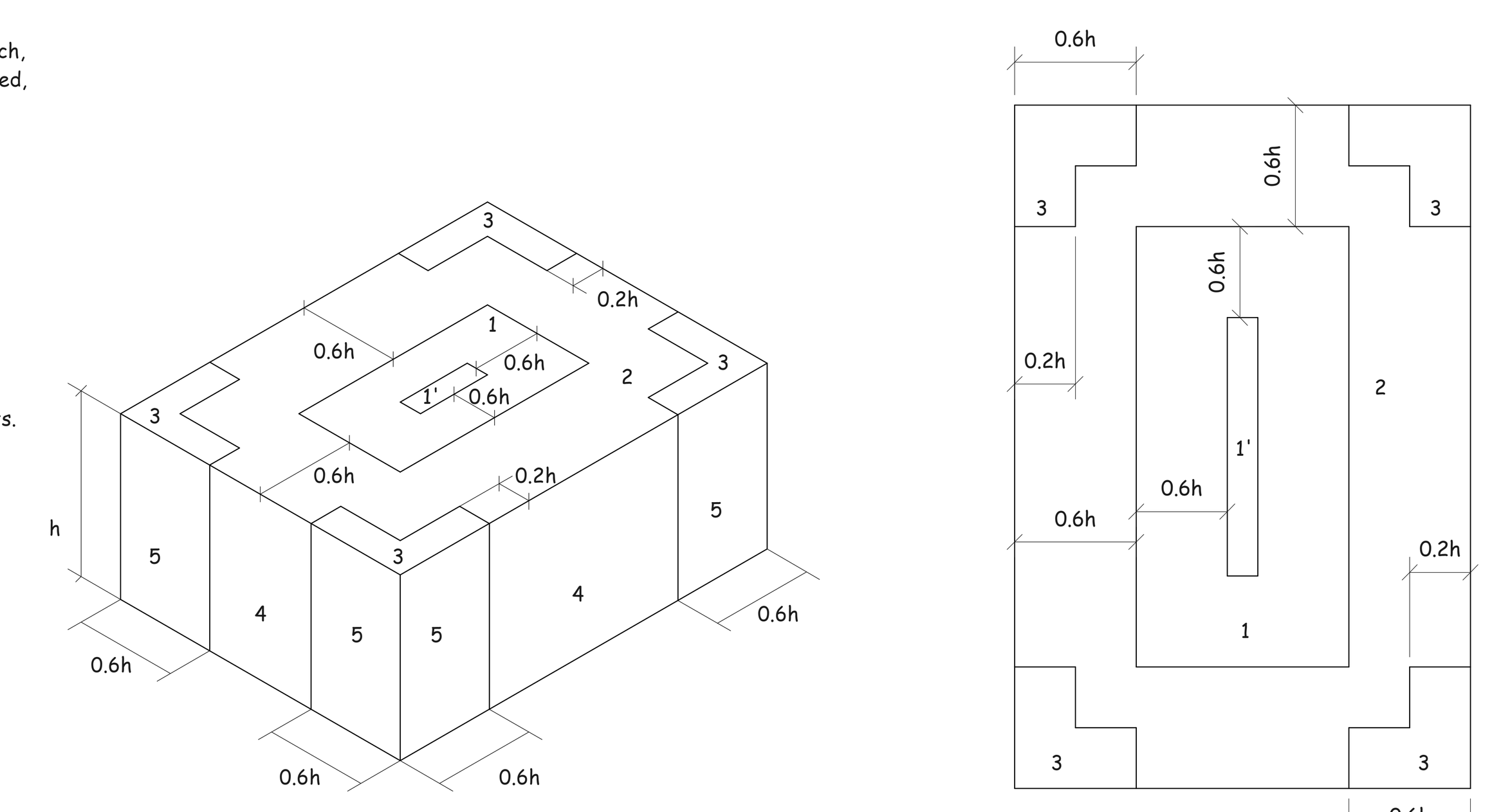
STEEL JOIST AND JOIST GIRDERS
1. All steel joists shall conform to the standard specifications for the joist noted, as adopted by the Steel Joist Institute.
2. Contractor must furnish design calculations sealed by a Professional Engineer for steel bar joist designs.
3. Joist designation Joist depth/Series/Total Load/Live Load/Net Uplift.
4. Joist designation Joist depth/Series/Total Load/Live Load.
5. There are no uplift requirements for joists on this project.
6. Unless noted otherwise, design all joists for an uplift load of **????** psf.
7. Refer to Components & Cladding Table and Diagram for roof uplift zones and pressures.
8. Do not camber joist placed on roof slopes greater than 2:12.
9. Refer to roof framing plan for uplift loading areas and diagrams.
10. Joist supplier has the option of combining joist sizes to a larger section.
11. Extend bottom chord of joist and attach to 6"x6" plate welded to the column per OSHA standards.
12. K Series joists shall be welded to bearing plates or steel members with (2) 1/8" fillet welds with length 2".
13. LH and DLH Series joists shall be welded to bearing plates or steel members with (2) 1/4" fillet welds with length 2".
14. SLH Series joists shall be welded to bearing plates or steel members with (2) 1/4" fillet welds with length 4".
15. All K Series joists supported by concrete or masonry walls are to be supported by a 3/8" x 4" x 0'- 6" embed plate with (1) ½" x 4" headed stud unless detailed otherwise. Plate to be located within ½" of face of support.
16. All LH Series joists supported by concrete or masonry walls are to be supported by a 3/8" x 6" x 0'- 9" embed plate with (1) ½" x 4" headed stud unless detailed otherwise. Plate to be located within ½" of face of support.
17. All joist bearing plates are to be set 1/4" above the top of concrete masonry units.
18. Design cantilever ends of joist and joist outriggers for a uniform load of 50 psf and concentrated load on the end of section of 50 plf unless noted otherwise.
19. Joist girder bottom chord struts shall not be welded to the column until all dead loads are in place.
20. Weights of mechanical units are not included in the joist loading designation shown. Design joist for loading shown plus the weight of mechanical shown. Contractor is to verify all weights of mechanical units with Mechanical Subcontractor before submitting shop drawings.
21. Provide double joist under all mechanical units unless otherwise noted.
22. Weights of mechanical units are not included in the joist loading designation shown. Design locations and weights were not available at time of bid documents. Contractor is to coordinate the locations and weights of the units with the joist supplier.
23. Provide double joist under all athletic equipment unless otherwise noted.
24. If the Contractor elects to use joists provided by Canam Steel, provide an allowance of $10,000 for additional structural engineering services to be paid to the Architect.

METAL STUDS (STRUCTURAL)
1. All cold-formed steel work to be in accordance with *North American Specification for the Design of Cold-Formed Steel Structural Members* (AISI S100-16(2020)) and the *North American Standard for Cold-Formed Steel Structural Framing* (AISI S240-20).
2. All studs, joists, tracks, bridging, and accessories shall be a minimum of G60 galvanized and have minimum yield strength of 33ksi, unless noted otherwise.
3. Top and bottom tracks to be same gauge as studs unless noted otherwise.
4. Provide double studs at all wall intersections, jambs, corners, and intersections.
5. At all openings in walls, provide additional studs each side of opening to replace members cut at the opening.
6. Provide (2) 8"x14ga headers at all openings, unless noted otherwise on structural drawings.
7. Provide blocking or strapping at a maximum of 4'-0" - see typical detail.
8. All wall studs to have full bearing at top and bottom of stud.
9. Limit deflection of studs supporting brick to H/600.
10. Use a minimum of 18 gauge for studs used with brick anchors.
11. Limit deflection of all studs not supporting brick to H/360.
12. Limit roof truss live load deflections to L/360.
13. Provide minimum of 6"x18ga structural stud top and bottom chord for all truss members.
14. Truss supplier will provide anchorage hardware unless noted otherwise on structural drawings.
15. Align roof trusses with stud wall framing or provide double 2x wood nailer on top of track; attach with #10 screws at 8" o.c.
16. Attach roof deck to trusses with #10 screws at 12" o.c.
17. Furnish design calculations sealed by a Professional Engineer licensed in the project state for all truss members.
18. Unless noted otherwise, all steel stud information should be considered to be schematic. Final design is to be provided by the stud supplier. Provide shop drawings and design calculations sealed by a Professional Engineer licensed in the project state for all members.
19. The minimum sizes, spacing, gauges, connections, details, and other information required to construct the load-bearing metal stud framing are shown on the contract documents. Unless otherwise indicated, all cold-formed metal stud information should be considered schematic in nature. Final design is to be provided by the contractor's stud supplier.
20. Provide shop drawings and design calculations sealed by a Professional Engineer licensed in the project state for all members. These are to include the proposed load-bearing metal stud manufacturer's product data, cut sheets, structural properties, recommended construction details, and details for all members and connections. Shop drawings are required to be reviewed by the design team prior to fabrication and installation of load-bearing metal stud framing.
21. The contractor has the option to propose alternative framing methods or components. The contractor shall submit shop drawings and calculations on the proposed alternative framing system for review by the Architect and Engineer. All design calculations for the alternative framing methods or components shall be sealed by a Professional Engineer licensed in the state of the project. The Professional Engineer shall provide a signed statement signifying they have reviewed the stud framing shop drawings for the alternative framing system and that the drawings conform to their calculations. The proposed alternate framing system shall be designed for the loads indicated below.

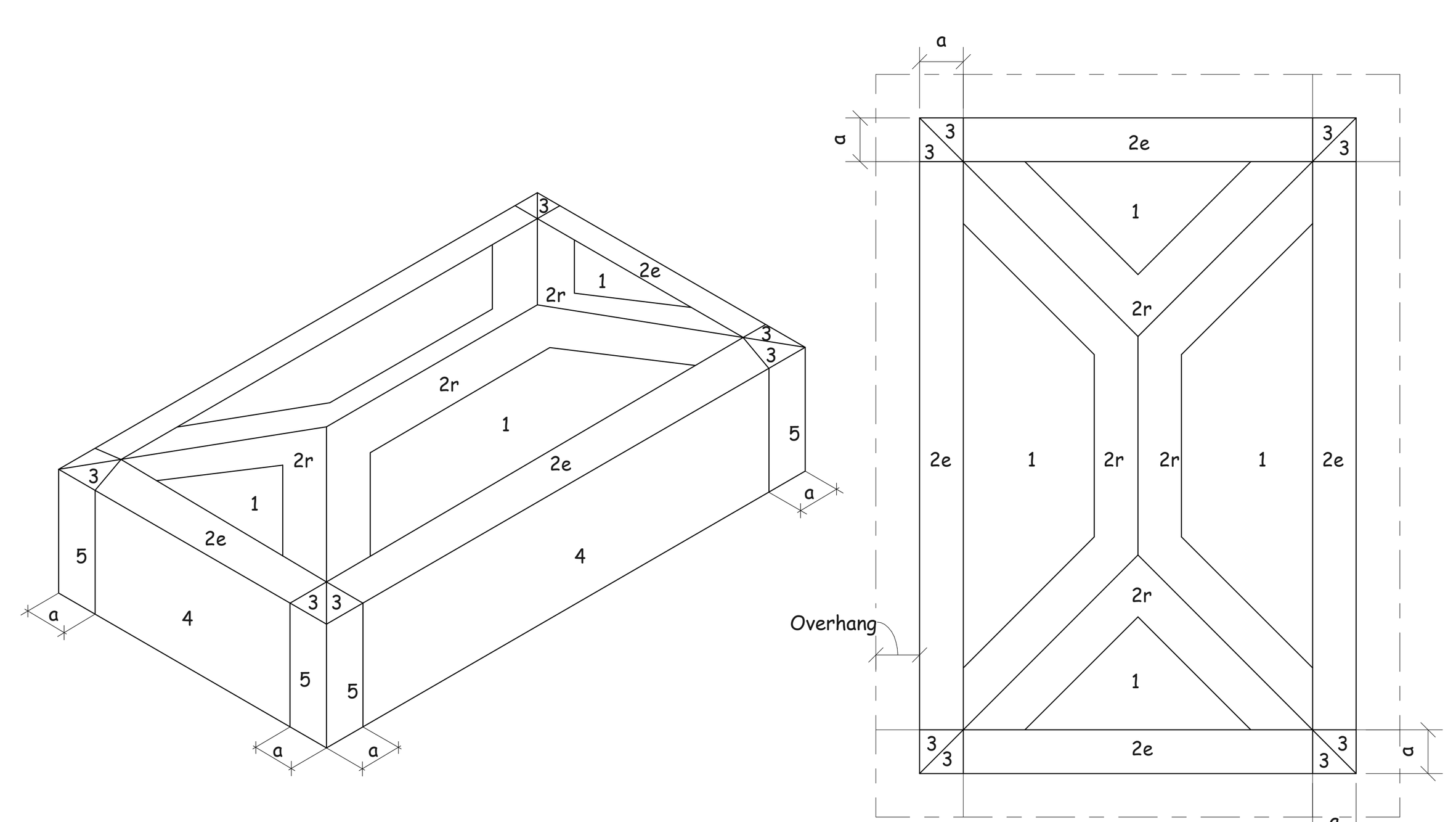
WOOD (STRUCTURAL)
1. All floor framing shall be #2KD Southern Yellow Pine (SYP) or approved equal.
2. All vertical framing shall be Spruce-Pine-Fir (SPF), #2.
3. All wood exposed to weather or in contact w/ CMU or concrete shall be pressure-treated in accordance w/ American Wood Preserves Association Manual of Recommended Practice.
4. All fasteners and nails in contact w/ pressure-treated lumber to be stainless steel Type 304. Submit all alternates for approval.
5. Provide minimum of 2"x6" top and bottom chord for all truss members.
6. Furnish design calculations sealed by a Professional Engineer licensed in the project state for all truss members.
7. All truss-truss and truss-wall connections by Truss Supplier/Designer. See notes, plans, sections, and Arch, TYP.
8. See Arch for roof profile, slope, insulation, roofing material above decking, glashing, gutters, overhangs, soffits, fascia, downspout, etc. TYP.
9. Pre-engineered wood roof trusses @ 24" o.c. max unless noted otherwise. See plan for layout and see Arch for details.
10. Provide (4) studs at all beam and girder truss bearing locations.
11. Roof decking shall be 5/8" APA-rated sheathing, Exposure 1 w/ 32/16 span rating. Provide plyclips at all roof sheathing connections, unless noted otherwise.
12. Roof sheathing shall be nailed w/ 8d ring shank nails at 6" o.c.
13. All bolts connecting horizontal sill plates to concrete, masonry, or steel shall have minimum 0.229"x3"x3" flat washers.

EPOXY AND MECHANICAL ANCHORS
1. All anchors shall be installed per Manufacturer's Printed Installation Instructions (MPII).
2. Contractor must get pre-approval from Engineer of Record before using post-installed adhesive or mechanical anchors not detailed or specified in these drawings. All post-installed anchors must have an evaluation report showing code compliance with the intended application.
3. Adhesive anchors into concrete to be Simpson SET-3G or approved equal. Adhesive anchors into masonry to be Simpson SET-XP. Typical Embedment shall be 12 x dia. Design bond strength has been based on cracked concrete, ACI 355.4 Temperature Category B and installations into dry holes drilled into concrete that has cured for at least 21 days using a drill bit and technique that is qualified by the manufacturer.
4. All mechanical anchors to be Simpson TITEN HD Screw Anchors or approved equal. Typical Embedment shall be 8 x dia.
5. All Powder Actuated Fasteners (PAF) to be 0.157 Simpson PDPA pins w/ 1 1/4" minimum embedment into concrete or masonry. For installations into steel, PAF shall completely penetrate steel thickness.

TESTING
1. All testing is to be completed under the supervision of the Structural Engineer.
2. The Owner will provide testing and special inspection under a separate contract. See the project specifications for schedule of special inspections.



Flat/Hip/Gable (7° or less)



Hip (7° or more)

Components & Cladding Wind Loads - Hip Roofs (7° - 20°)

	Zone 1m (+)	Zone 1m (-)	Zone 1g (+)	Zone 1g (-)	Zone 2em (+)	Zone 2em (-)	Zone 2eg (+)	Zone 2eg (-)	Zone 2r (+)	Zone 2r (-)	Zone 3 (+)	Zone 3 (-)	Zone 4 (+)	Zone 4 (-)	Zone 5 (+)	Zone 5 (-)
10 SF	14.8 psf	-24.9 psf	14.8 psf	-24.9 psf	14.8 psf	-33.4 psf	14.8 psf	-33.4 psf	12.1 psf	-43.5 psf	12.1 psf	-33.4 psf	18.2 psf	-19.7 psf	18.2 psf	-24.3 psf
20 SF	12.8 psf	-24.9 psf	12.8 psf	-24.9 psf	12.8 psf	-30.6 psf	12.8 psf	-30.6 psf	10.9 psf	-39.2 psf	10.9 psf	-30.6 psf	17.4 psf	-18.9 psf	17.4 psf	-22.7 psf
50 SF	10.1 psf	-22.1 psf	10.1 psf	-22.1 psf	10.1 psf	-27.0 psf	10.1 psf	-27.0 psf	9.3 psf	-33.5 psf	9.3 psf	-27.0 psf	16.3 psf	-17.8 psf	16.3 psf	-20.5 psf
100 SF	8.1 psf	-19.9 psf	8.1 psf	-19.9 psf	8.1 psf	-24.3 psf	8.1 psf	-24.3 psf	8.1 psf	-29.2 psf	8.1 psf	-24.3 psf	15.5 psf	-17.0 psf	15.5 psf	-18.9 psf
500 SF	8.1 psf	-19.9 psf	8.1 psf	-19.9 psf	8.1 psf	-21.6 psf	8.1 psf	-21.6 psf	8.1 psf	-24.9 psf	8.1 psf	-21.6 psf	13.7 psf	-15.2 psf	13.7 psf	-15.2 psf

Components & Cladding Wind Loads - Flat/Gable Roofs less than 7°

Area	Zone 1 (+)	Zone 1 (-)	Zone 1' (+)	Zone 1' (-)	Zone 2 (+)	Zone 2 (-)	Zone 3 (+)	Zone 3 (-)	Zone 4 (+)	Zone 4 (-)	Zone 5 (+)	Zone 5 (-)
10 SF	9.9 psf	-38.9 psf	9.9 psf	-22.4 psf	9.9 psf	-51.3 psf	9.9 psf	-70.0 psf	22.4 psf	-24.2 psf	22.4 psf	-29.8 psf
20 SF	9.3 psf	-36.3 psf	9.3 psf	-22.4 psf	9.3 psf	-48.0 psf	9.3 psf	-63.4 psf	21.4 psf	-23.2 psf	21.4 psf	-27.8 psf
50 SF	8.5 psf	-33.0 psf	8.5 psf	-22.4 psf	8.5 psf	-43.7 psf	8.5 psf	-54.6 psf	20.1 psf	-21.9 psf	20.1 psf	-25.2 psf
100 SF	7.9 psf	-30.4 psf	7.9 psf	-22.4 psf	7.9 psf	-40.4 psf	7.9 psf	-48.0 psf	19.1 psf	-20.9 psf	19.1 psf	-23.2 psf
500 SF	7.9 psf	-24.4 psf	7.9 psf	-15.1 psf	7.9 psf	-32.7 psf	7.9 psf	-32.7 psf	16.8 psf	-18.6 psf	16.8 psf	-18.6 psf

STRIP FOOTING SCHEDULE

Type	Width	Thickness	Reinforcing
W24	2' - 0"	1' - 0"	(3)#4 bars cont w/ #4 bars @ 12" o.c. Short
W28	2' - 4"	1' - 0"	(4)#4 bars cont w/ #4 bars @ 12" o.c. Short
W36	3' - 0"	1' - 0"	(4)#4 bars cont w/ #4 bars @ 10" o.c. Short
W54	4' - 6"	1' - 0"	(6)#5 bars cont t&b w/ #5 bars @ 10" o.c. Short t&b

1

SPREAD FOOTING SCHEDULE

Mark	Width	Length	Thickness	Reinforcing
F36	3' - 0"	3' - 0"	1' - 0"	(4) #4 bars e.w. t&b
F60	5' - 0"	5' - 0"	1' - 0"	(5) #5 bars e.w.
F72	6' - 0"	6' - 0"	1' - 2"	(7) #5 bars e.w.
F72x24	6' - 0"	6' - 0"	2' - 0"	(7) #5 bars e.w. t&b
F84	7' - 0"	7' - 0"	1' - 5"	(6) #6 bars e.w.
F84x24	7' - 0"	7' - 0"	2' - 0"	(6) #6 bars e.w. t&b

1

CONCRETE SCHEDULE

Concrete Use	Design Strength	Max W/C Ratio	Slump Limits	Entrained Air Range	Weight	Notes
Columns	4000 psi	n/a	6" to 8"	3% to 5%	150 pcf	Use HRWR
Exterior Slabs on Grade & Grade Beams	4000 psi	n/a	6" to 8"	3% to 5%	150 pcf	Use HRWR
Footings	3000 psi	n/a	3" to 5"	3% to 5%	150 pcf	-
Interior Polished Slabs on Grade	4000 psi	n/a	6" to 8"	no air	150 pcf	Use HRWR & limit shrinkage to 0.03%
Interior Slabs on Grade	4000 psi	n/a	6" to 8"	no air	150 pcf	Use HRWR
Retaining Walls	4000 psi	n/a	6" to 8"	3% to 5%	150 pcf	Use HRWR

Schedule Notes:
1. Schedules are to be used as a guide for estimating only and should not be exclusively for takeoffs and bidding.
2. Schedules reflect major uses of materials, but do not necessarily contain all aspects of the project.
3. Refer to plans, sections, elevations, notes, details, and all other portions of the project documents for all items not scheduled.

BJW STRUCTURAL ENGINEERS
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CHILTON CO. VERBENA HS GYM
CHILTON COUNTY BOARD OF EDUCATION
202 COUNTY ROAD 510, VERBENA, AL 36091

ALABAMA LICENSED 2-02-2026 No. 33979 PROFESSIONAL ENGINEER MICHAEL JOSHUA DOGAN

BID DOCUMENTS

DATE: 1-08-26
PROJ NO: 25-032

REVISIONS		
#	DESC	DATE
1	ADD 1	2-02-26

GENERAL NOTES

S001

BJW STRUCTURAL ENGINEERS
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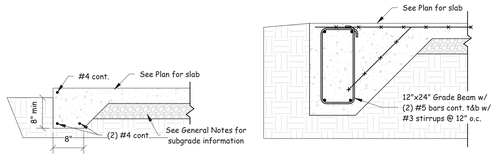
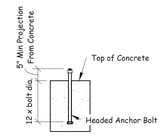
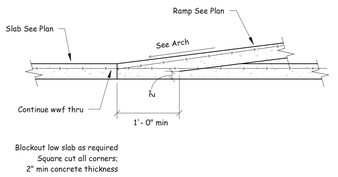


Typical Slab Turndown

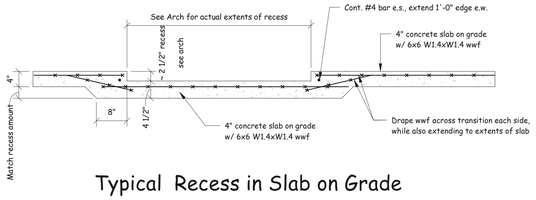
Typical Grade Beam



Typical Anchor Bolt Detail



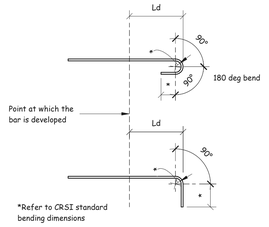
Slab on Grade Ramp Termination Detail



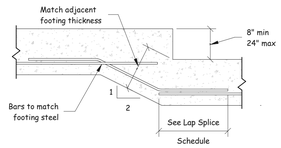
Typical Recess in Slab on Grade

Reinforcing Steel Lap Splice Lengths				
Bar Size	Column Splices	Bm, Ftg & Wall Splices Top Bars	Bm, Ftg & Wall Splices Other Bars	CMU Wall Splices
# 3	12"	19"	15"	18"
# 4	15"	25"	19"	24"
# 5	19"	31"	24"	30"
# 6	23"	37"	29"	36"
# 7	26"	54"	42"	42"
# 8	30"	62"	48"	48"
# 9	34"	70"	54"	54"
# 10	38"	79"	61"	60"
# 11	42"	87"	67"	66"

4000 psi Concrete

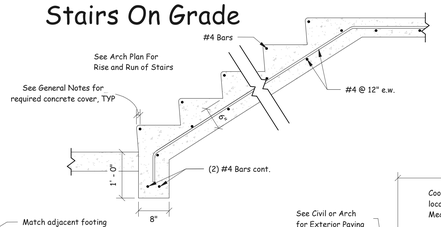


Notes:
1. Top bars are any horizontal reinforcing steel that has another layer of steel more than 2" below the bars or reinforcing steel that has more than 12" of concrete below the bars.
2. All horizontal reinforcing bars in walls may be detailed as "Other Bars".
3. All corner bars may be detailed as "Other Bars".



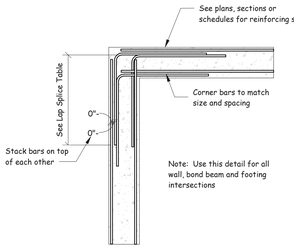
Single Footing Step

Stairs On Grade

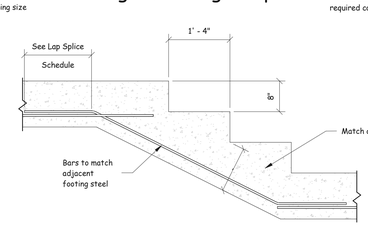


Reinforcing Steel Lap Splice Lengths		
	Footing & Grade Beams	
Bar Size	Top Bars	Other Bars
# 3	24"	24"
# 4	33"	24"
# 5	42"	28"
# 6	50"	33"
# 7	72"	49"
# 8	82"	55"

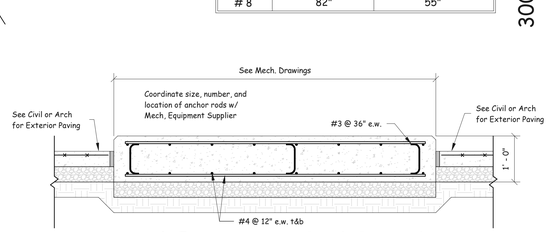
3000 psi Concrete



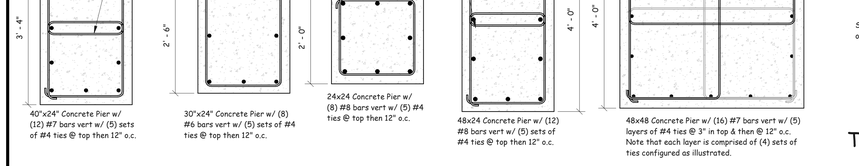
Typical Beam, Wall or Footing Reinforcing at Corners



Multiple Footing Step

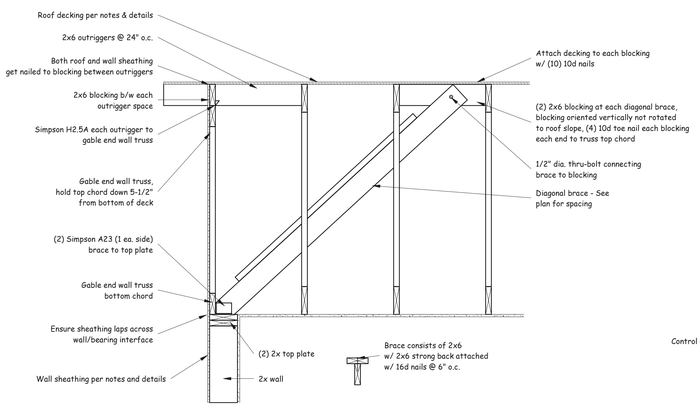


Typical Equipment Pad Foundation

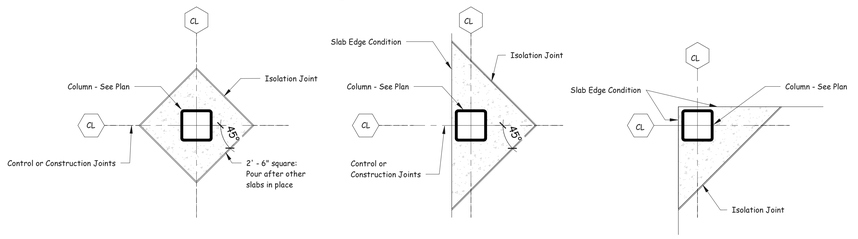


Typical Large Pier Configurations

NOTE: At PEMB columns requiring piers greater than 24"x24", provide 1/2" thick embedded steel plate encompassing all anchors at the anchor head

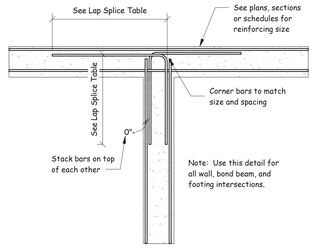


Typical Gable Truss Bracing

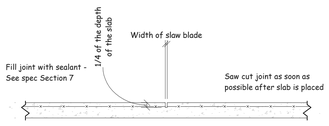


Interior Detail Edge Detail Corner Detail

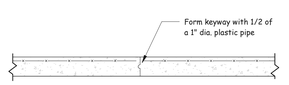
Typical Isolation Joint



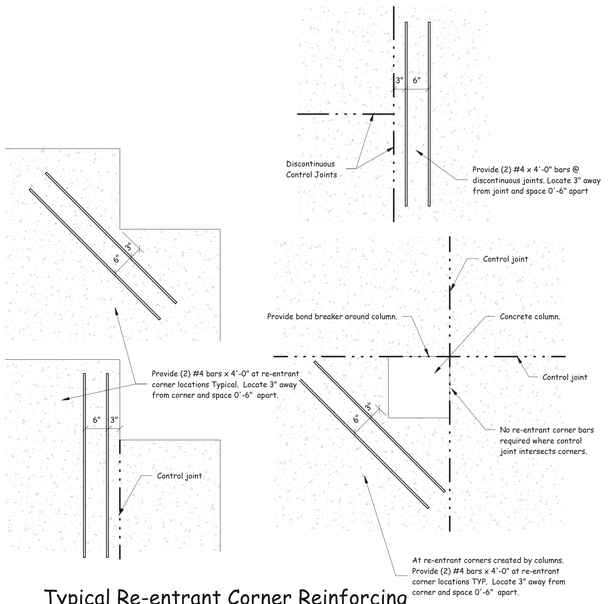
Typical Beam, Wall or Footing Reinforcing at Intersections



Typical Control Joint



Typical Construction Joint



Typical Re-entrant Corner Reinforcing

Note: If control joint hits re-entrant corner in both directions, no re-entrant corner bars are required.

ALABAMA LICENSED 2-02-2026 No. 33979 PROFESSIONAL ENGINEER MICHAEL JOSHUA DOSS

BID DOCUMENTS

DATE: 1-08-26
PROJ NO: 25-032

REVISIONS

#	DESC	DATE
1	ADD 1	2-02-26

TYPICAL DETAILS

S002