SECTION 00 91 03

ADDENDUM 003

DATE: November 15, 2024

RE: Public Works - Site, Washbay, and Shooting Range
City of Sherwood
Sherwood, Arkansas

Architect Engineer Project No. 2023-249

FROM: CROMWELL ARCHITECT ENGINEERS, INC.
1300 East 6th Street
Little Rock, Arkansas 72202

TO: BIDDERS OF RECORD

This Addendum forms a part of the Contract Documents and modifies the original Bidding Documents dated September 23, 2024, as noted below. Acknowledge receipt of this Addendum in the space provided on the Bid Form. Failure to do so may subject Bidder to disqualification.

Each item in Contract Documents complements each of the other Contract Documents. No sheet, section, or document is to be followed without referring to all sheets, sections, and parts of the Contract Documents.

This Addendum consists of the following Documents and Revisions.

CHANGES TO PROCUREMENT AND CONTRACTING REQUIREMENTS:

1: Replace Section 00 01 10 - Table of Contents with revised Section issued with this Addendum.

2: Insert (this) Section 00 91 03 - Addendum 003 issued with this Addendum.

CHANGES TO SPECIFICATIONS:

3: Replace Section 08 36 13 – Sectional Doors with revised Section issued with this Addendum.

4: Replace Section 13 34 19 – Metal Building Systems with revised Section issued with this Addendum.

CHANGES TO DRAWINGS:

5: Insert the attached revised and/or new Drawings issued with this Addendum dated with original issue date:

Sheet	Title/Description	Issue Date	Revision No.
GENERAL INFORMATION			
G-002	INDEX, SYMBOLS & ABBREV	09/23/2024	3
CIVIL			
CS100	OVERALL SITEL LAYOUT PLAN	09/23/2024	2
CS101	SITE LAYOUT PLAN	09/23/2024	3
C-502	CIVIL DETAILS	09/23/2024	1
STRUCTURAL			
S-102	SHOOTING RANGE SHED	**DELETED**	
ARCHITECTURAL			
A-101	PLANS - WASHBAY	09/23/2024	2

END OF SECTION

SECTION 00 01 10

TABLE OF CONTENTS

MODIFICATIONS

New sections indicated by [*Addm00X], bold print and underline.

Modified sections indicated by [*Addm00X] and underline.

Deleted sections indicated by [*Addm00X] and strikethrough.

PROCUREMENT AND CONTRACTING REQUIREMENTS

DIVISION 00 -- PROCUREMENT AND CONTRACTING REQUIREMENTS

SPECIFICATIONS

DIVISION 01 -- GENERAL REQUIREMENTS

END OF SECTION

SECTION 08 36 13
SECTIONAL DOORS

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Overhead sectional doors, electrically and manually operated.

B. Operating hardware and supports.

C. Electrical controls.

1.02 RELATED REQUIREMENTS

A. Section 05 50 00 - Metal Fabrications: Steel channel opening frame.

B. Section 07 92 00 - Joint Sealants: Sealing joints between frames and adjacent construction.

C. Section 26 05 83 - Wiring Connections.

1.03 REFERENCE STANDARDS

A. ASTM A653/A653M - Standard Specification for Steel Sheet, Zinc-Coated (Galvanized) or Zinc-Iron Alloy-Coated (Galvannealed) by the Hot-Dip Process; 2020.

B. ASTM C1036 - Standard Specification for Flat Glass; 2021.

C. ASTM E283/E283M - Standard Test Method for Determining Rate of Air Leakage Through Exterior Windows, Skylights, Curtain Walls, and Doors Under Specified Pressure Differences Across the Specimen; 2019.

D. ASTM E330/E330M - Standard Test Method for Structural Performance of Exterior Windows, Doors, Skylights and Curtain Walls by Uniform Static Air Pressure Difference; 2014 (Reapproved 2021).

E. DASMA 102 - American National Standard Specifications for Sectional Overhead Type Doors; 2011.

F. ITS (DIR) - Directory of Listed Products; current edition.

G. NEMA ICS 2 - Industrial Control and Systems Controllers, Contactors and Overload Relays Rated 600 Volts; 2000, with Errata (2008).

H. NEMA 250 - Enclosures for Electrical Equipment (1000 Volts Maximum); 2020.

I. NFPA 70 - National Electrical Code; Most Recent Edition Adopted by Authority Having Jurisdiction, Including All Applicable Amendments and Supplements.

J. UL (DIR) - Online Certifications Directory; Current Edition.

K. UL 325 - Standard for Door, Drapery, Gate, Louver, and Window Operators and Systems; Current Edition, Including All Revisions.

1.04 SUBMITTALS

A. See Section 01 30 00 - Administrative Requirements for submittal procedures.

B. Shop Drawings: Indicate opening dimensions and required tolerances, connection details, anchorage spacing, hardware locations, and installation details.

C. Product Data: Show component construction, anchorage method, and hardware.

D. Manufacturer's Installation Instructions: Include any special procedures required by project conditions.

E. Manufacturer's qualification statement.

F. Installer's qualification statement.

G. Operation Data: Include normal operation, troubleshooting, and adjusting.

H. Maintenance Data: Include data for motor and transmission, shaft and gearing, lubrication frequency, spare part sources.

I. Specimen warranty.

1.05 QUALITY ASSURANCE

A. Manufacturer Qualifications: Company specializing in manufacturing the products specified in this section with minimum three years of documented experience.

B. Installer Qualifications: Company specializing in performing work of type specified and with at least three years documented experience.

C. Comply with applicable code for motor and motor control requirements.

D. Products Requiring Electrical Connection: Listed and classified by ITS (DIR), UL (DIR), or testing firm acceptable to authorities having jurisdiction, as suitable for purpose specified.

1.06 WARRANTY

A. Extended Correction Period: Correct defective work within a 2-year period commencing on Date of Substantial Completion.

PART 2 PRODUCTS

2.01 MANUFACTURERS

A. Basis of Design Products: To establish standards of manufacturer, operation, performance and appearance, drawings and specifications are based on products of the manufacturer(s) listed herein. Provided compliance with requirements, products of other manufacturers may also be acceptable.

B. Basis of Design Sectional Doors:
   1. Overhead Door Corporation; 418: www.overheaddoor.com/#sle.
   2. Substitutions: See Section 01 60 00 - Product Requirements.

2.02 PERFORMANCE REQUIREMENTS

A. Performance: Withstand positive and negative wind loads equal to 1.5 times design wind loads specified by local code without damage or permanent set, when tested in accordance with ASTM E330/E330M, using 10 second duration of maximum load.

B. Air Leakage Rate: Less than 0.40 cfm/sq ft when tested in accordance with ASTM E283/E283M at test pressure difference of 1.57 psf.

C. Thermal Transmittance: U-factor of 0.31 Btu/hr sq ft degrees F, maximum, in accordance with DASMA 102.

2.03 STEEL DOORS

A. Doors: Flush steel, insulated; standard lift operating style with track and hardware; complying with DASMA 102, Commercial application.
   1. Door Panels: Steel construction; outer steel sheet of 16 gauge, 0.0598 inch minimum thickness, flush profile; inner steel sheet of 26 gauge, 0.0217 inch minimum thickness, flat profile; core reinforcement sheet steel roll formed to channel shape, rabbeted weather joints at meeting rails; expanded polystyrene (EPS) insulation.
   2. Door Nominal Thickness: 2 inches thick.
   3. Exterior Finish:
      a. Factory finished with acrylic baked enamel; color as selected by Architect.
   4. Interior Finish:
      a. Factory finished with acrylic baked enamel; color as selected from manufacturers standard line.
   5. Glazed Lites: Full panel width, one row; set in place with resilient glazing channel.
      a. Glazing: Annealed float glass; single pane; clear; 1/8 inch nominal overall thickness.
   6. Manual Operation: ~~Chain hoist~~ Spring loaded for doors 10'-0" or less in height.

7. Electric Operation: Electric control station for doors over 10'-0" in height.

2.04 COMPONENTS

A. Track: Rolled galvanized steel, 0.090 inch minimum thickness; 2 inch wide, continuous one piece per side; galvanized steel mounting brackets 1/4 inch thick.

B. Hinge and Roller Assemblies: Heavy duty hinges and adjustable roller holders of galvanized steel; floating hardened steel bearing rollers, located at top and bottom of each panel, each side.

C. Lift Mechanism: Torsion spring on cross head shaft, with braided galvanized steel lifting cables.
   1. For Manual Operation: Requiring maximum exertion of 25 lbs force to open.

D. Sill Weatherstripping: Resilient hollow rubber strip, one piece; fitted to bottom of door panel, full length contact.

E. Jamb Weatherstripping: Roll formed steel section full height of jamb, fitted with resilient weatherstripping, placed in moderate contact with door panels.

F. Head Weatherstripping: EPDM rubber seal, one piece full length.

G. Panel Joint Weatherstripping: Neoprene foam seal, one piece full length.

H. Lock: Inside center mounted, adjustable keeper, spring activated latch bar with feature to retain in locked or retracted position; interior and exterior handle.

2.05 MATERIALS

A. Sheet Steel: Hot-dipped galvanized steel sheet, ASTM A653/A653M, with G60/Z180 coating, plain surface.

B. Float Glass: Provide float glass glazing, unless noted otherwise.
   1. Annealed Type: ASTM C1036, Type I, transparent flat, Class 1 clear, Quality Q3 (glazing select).

C. Insulation: Expanded polystyrene (EPS), bonded to facing.

2.06 ELECTRIC OPERATION

A. Electric Operators:
   1. Mounting: Side mounted on cross head shaft.
   2. Motor Enclosure:
   3. Motor Rating: 1/3 hp; continuous duty.
   4. Motor Voltage: 120 volts, single phase, 60 Hz.
   5. Motor Controller: NEMA ICS 2, full voltage, reversing magnetic motor starter.
   6. Controller Enclosure: NEMA 250, Type 1.
   7. Opening Speed: 12 inches per second.
   8. Brake: Adjustable friction clutch type, activated by motor controller.
   9. Manual override in case of power failure.
   10. See Section 26 05 83 for electrical connections.

B. Wiring Terminations: Provide terminal lugs to match branch circuit conductor quantities, sizes, and materials indicated; enclose terminal lugs in terminal box sized to comply with NFPA 70.

C. Control Station: Provide standard three button (Open-Close-Stop) momentary-contact control device for each operator complying with UL 325.
   1. 24 volt circuit.
   2. Surface mounted, at interior door jamb.
   3. Entrapment Protection Devices: Provide sensing devices and safety mechanisms complying with UL 325.

a. Primary Device: Provide ~~electric sensing edge, wireless sensing,~~ NEMA 1 photo eye sensors or NEMA 4X photo eye sensors as required with momentary-contact control device.

~~D. Safety Edge: Electro-mechanical sensitized type, wired to stop and reverse door direction upon striking object; hollow neoprene covered to provide weatherstrip seal.~~

PART 3 EXECUTION

3.01 EXAMINATION

A. Verify that wall openings are ready to receive work and opening dimensions and tolerances are within specified limits.

B. Verify that electric power is available and of the correct characteristics.

3.02 INSTALLATION

A. Install door unit assembly in accordance with manufacturer's instructions.

B. Anchor assembly to wall construction and building framing without distortion or stress.

C. Securely brace door tracks suspended from structure. Secure tracks to structural members only.

D. Fit and align door assembly including hardware.

E. Coordinate installation of electrical service. Complete power and control wiring from disconnect to unit components.

3.03 ADJUSTING

A. Adjust door assembly for smooth operation and full contact with weatherstripping.

3.04 CLEANING

A. Clean doors and frames.

B. Remove temporary labels and visible markings.

3.05 PROTECTION

A. Protect installed products from damage until Date of Substantial Completion.

B. Do not permit construction traffic through overhead door openings after adjustment and cleaning.

END OF SECTION

SECTION 13 34 19
METAL BUILDING SYSTEMS

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Manufacturer-engineered, shop-fabricated structural steel building frame.

B. Insulated Metal roof panels including soffits, gutters and downspouts, and roof mounted equipment curbs.

1.02 RELATED REQUIREMENTS

A. Section 01 45 33 - Special Inspections: Code required special tests and inspections.

B. Section 05 50 00 - Metal Fabrications.

C. Section 07 92 00 - Joint Sealants: Sealing joints between accessory components and wall system.

D. Section 08 11 13 - Hollow Metal Doors and Frames.

E. Section 08 36 13 - Sectional Doors.

1.03 REFERENCE STANDARDS

A. AISC 360 - Specification for Structural Steel Buildings; 2016 (Revised 2021).

B. AISI S100 - North American Specification for the Design of Cold-Formed Steel Structural Members; American Iron and Steel Institute; 2012.

C. ASTM A36/A36M - Standard Specification for Carbon Structural Steel; 2019.

D. ASTM A307 - Standard Specification for Carbon Steel Bolts, Studs, and Threaded Rod 60 000 PSI Tensile Strength; 2021.

E. ASTM A500/A500M - Standard Specification for Cold-Formed Welded and Seamless Carbon Steel Structural Tubing in Rounds and Shapes; 2021a.

F. ASTM A501/A501M - Standard Specification for Hot-Formed Welded and Seamless Carbon Steel Structural Tubing; 2021.

G. ASTM A529/A529M - Standard Specification for High-Strength Carbon-Manganese Steel of Structural Quality; 2019.

H. ASTM A572/A572M - Standard Specification for High-Strength Low-Alloy Columbium-Vanadium Structural Steel; 2021, with Editorial Revision.

I. ASTM A992/A992M - Standard Specification for Structural Steel Shapes; 2020.

J. ASTM C1107/C1107M - Standard Specification for Packaged Dry, Hydraulic-Cement Grout (Nonshrink); 2017.

K. ASTM F3125/F3125M - Standard Specification for High Strength Structural Bolts and Assemblies, Steel and Alloy Steel, Heat Treated, Inch Dimensions 120 ksi and 150 ksi Minimum Tensile Strength, and Metric Dimensions 830 MPa and 1040 MPa Minimum Tensile Strength; 2019, with Editorial Revision (2020).

L. ASCE 7 - Minimum Design Loads and Associated Criteria for Buildings and Other Structures; 2016.

M. AWS A2.4 - Standard Symbols for Welding, Brazing, and Nondestructive Examination; 2012.

N. AWS D1.1/D1.1M - Structural Welding Code - Steel; 2020.

O. IAS AC472 - Accreditation Criteria for Inspection Programs for Manufacturers of Metal Building Systems; 2018.

P. MBMA (MBSM) - Metal Building Systems Manual; 2019.

Q. NRCA (ML 104) - NRCA Roofing and Waterproofing Manual; Current Edition.

R. UL 580 - Standard for Tests for Uplift Resistance of Roof Assemblies; Current Edition, Including All Revisions.

1.04 ADMINISTRATIVE REQUIREMENTS

A. Preinstallation Meeting: Convene one week before starting work of this section.

1.05 SUBMITTALS

A. See Section 01 30 00 - Administrative Requirements for submittal procedures.

B. Product Data: Provide data on profiles, component dimensions, thermal blocks, insulation, metal panels, and fasteners.

C. Design Information: Submit a copy (For Information Only) of the Design Information portion of the Metal Building Manufacturer contract prior to preparation of shop drawings.

D. Shop Drawings: Indicate assembly dimensions, locations of structural members, connections; wall and roof system dimensions, panel layout, general construction details, anchorages and method of anchorage, installation, and structural calculations; framing anchor bolt settings, sizes, and locations from datum, foundation loads including allowable stress design load combinations; indicate welded connections with AWS A2.4 welding symbols; indicate net weld lengths. Shop drawings shall be signed and sealed by a professional engineer licensed to practice in the state where the project is located.

E. Structural Calculations: Include design criteria, loads, deflection, building drift, foundation loads, and loads on lateral load resisting system. Calculations shall be signed and sealed by a professional engineer licensed to practice in the state where the project is located.

F. Samples: Submit two samples of precoated metal panels for each color selected, 24 by 24 inch in size illustrating color and texture of finish.

G. Manufacturer's Instructions: Indicate preparation requirements, anchor bolt placement.

H. Erection Drawings: Indicate members by label, assembly sequence, and temporary erection bracing.

I. Manufacturer's Qualification Statement: Provide documentation showing metal building manufacturer is accredited under IAS AC472.
   1. Include statement that manufacturer designs and fabricates metal building system as integrated components and assemblies, including but not limited to primary structural members, secondary members, joints, roof, and wall cladding components specifically designed to support and transfer loads and properly assembled components form a complete or partial building shell.

J. Submit manufacturer specimen warranty that meets specified project requirements.

K. Project Record Documents: Record actual locations of concealed components and utilities.

1.06 QUALITY ASSURANCE

A. Designer Qualifications: Design structural components, develop shop drawings, and perform shop and site work under direct supervision of a Professional Structural Engineer experienced in design of this type of work.
   1. Design Engineer Qualifications: Licensed in the state where the project occurs.
   2. Comply with applicable code for submission of design calculations and reviewed shop and erection drawings as required for acquiring permits.
   3. Cooperate with regulatory agency or authorities having jurisdiction (AHJ), and provide data as requested.

B. Perform work in accordance with NRCA (ML 104), AISC 360 and MBMA (MBSM).

C. Manufacturer Qualifications: Company specializing in the manufacture of products similar to those required for this project.
   1. Not less than five years of documented experience.

2. Accredited by IAS in accordance with IAS AC472.

D. Erector Qualifications: Company specializing in performing the work of this section with minimum five years documented experience.

E. Welder Qualifications: Welding processes and welding operators qualified in accordance with AWS D1.1/D1.1M and no more than 12 months before start of scheduled welding work.

1.07 WARRANTY

A. See Section 01 78 00 - Closeout Submittals for additional warranty requirements.

B. Correct defective Work within a five year period after Date of Substantial Completion.

C. Manufacturer's Finish Warranty for Prefinished Roof, Soffit, and Wall Panels: Manufacturer agrees to repair finish or replace sheet metal roofing that shows evidence of deterioration of factory-applied finished within specified warranty period
   1. Provide manufacturer's special warranty covering failure of factory-applied exterior finish on metal roof and wall panels and agreeing to repair or replace panels that show evidence of finish degradation, including significant fading, chalking, cracking, or peeling.
   2. Exposed Panel Finish: Deterioration includes, but is not limited to, the following:
      a. Color fading more than 5 Hunter units when tested according to ASTM D 2244.
      b. Chalking in excess of a No. 8 rating when tested according to ASTM D 4214.
   3. Warranty Period: 20 years from date of Substantial Completion, system warranty shall not be prorated over the life of the warranty.

D. Roof Waterproofing Warranty: Manufacturer agrees to repair or stop any roof leaks attributable to defects in the metal roofing assembly which includes workmanship, roof panels, fasteners, connectors, eaves, ridge, valley, equipment curbs, roof securement components and assemblies, and roof flashings, penetration flashings, mastic, closures, and sealants. The manufacturer's limit of liability shall be NO DOLLAR LIMIT.
   1. Warranty Period: 20 years from date of Substantial Completion, system warranty shall not be prorated over the life of the warranty.

E. The General Contractor shall warrant the complete roofing, soffit, and wall system workmanship and materials for a period of 5 years after date of Substantial Completion. During warranty period, Contractor shall, at Contractor's own cost and expense, make or cause to be made such repairs to or replacements of said work as are necessary to correct faulty and defective work and as are necessary to maintain the said work in watertight conditions.

PART 2 PRODUCTS

2.01 MANUFACTURERS

A. Metal Building Systems:
   1. American Buildings Company: www.americanbuildings.com
   ~~2. Butler Manufacturing Company : www.butlermfg.com.~~
   ~~3. Ceco Building Systems : www.cecobuildings.com.~~
   ~~4. Heritage Building Systems: www.heritagebuildings.com~~
   2. ~~5.~~Kirby Building Systems, a Nucor Company: www.kirbybuildingsystems.com.
   ~~6. Pinnacle Structures, Inc.: www.pinnaclestructures.com~~
   ~~7. Star Building System, Inc.: www.starbuildings.com~~
   3. ~~8.~~Nucor Building Systems: www.nucorbuildingsystems.com.
   4. ~~9.~~VP Buildings: www.vp.com.
   5. ~~10.~~Substitutions: See Section 01 60 00 - Product Requirements.

2.02 METAL BUILDING SYSTEMS COMPONENTS

A. Single span rigid frame and continuous beam rigid frame buildings.

B. Primary Framing: Rigid frame of rafter beams and columns, canopy beams, intermediate columns, braced end frames, and end wall columns, and wind bracing.

1. Wash Bay columns shall be galvanized rolled wide-flange sections.

C. Secondary Framing: Purlins, girts, eave struts, flange bracing, sill supports, clips, and other items detailed.

D. Wall System: Preformed metal panels of vertical profile, with sub-girt framing/anchorage assembly, insulation, and liner sheets, and accessory components.

E. Roof System: Steel deck and preformed metal panels oriented parallel to slope, with sub-girt framing/anchorage assembly and insulation, and accessory components.

2.03 PERFORMANCE REQUIREMENTS

A. Design structural members to withstand dead loads, snow loads, seismic loads, and wind loads calculated in accordance with ASCE 7 and as indicated in the drawings.
   1. Wind loads for strength design shall be calculated using the basic wind speed (ultimate) determined in accordance with ASCE 7 or as indicated on the drawings.
   2. Wind loads for serviceability requirements shall be calculated using 0.42 times the components and cladding loads calculated from the basic wind speed or directly from the 10-year mean return interval wind speed.

B. Component deflections shall be limited as follows:
   1. Primary Framing:
      a. L/180 for roof live load or snow load.
      b. L/120 for roof live load (or snow load) plus dead load.
      c. L/180 for wind load on roofs.
   2. Secondary Framing:
      a. L150 for roof live load or roof snow load.
      b. L/120 for roof live load (or snow load) plus dead.
      c. L/90 for wind load on walls.
      d. Roof framing deflection shall not be less than that required to maintain positive drainage for the greater of dead load plus 1/2 roof snow load or dead load plus 5 psf.
   3. Total deflection of wall panels, secondary framing, and primary framing shall not exceed L/60

C. Design the building structure for a maximum allowable drift of H/100 under the nominal (allowable) wind speed determined in accordance with ASCE 7 or as indicated on the drawings. Wind forces used to calculate drift shall not be reduced. Seismic drift shall be limited based on ASCE 7 assuming accommodations for story drift have not been incorporated into the design. Drift calculations shall be based on pinned column bases.

D. Roof panels to have a “fixed” ridge with a “floating” eave. Provide for lateral thermal movement in panel configuration or with clip designed for lateral and longitudinal movement.

E. Provide drainage to exterior for water entering or condensation occurring within wall or roof system.

F. Permit movement of components without buckling, failure of joint seals, undue stress on fasteners or other detrimental effects, when subject to temperature range of 100 degrees F.

G. Size and fabricate wall and roof systems free of distortion or defects detrimental to appearance or performance.

H. For structural steel design, comply with AISC 360.

I. For cold formed steel design, comply with AISI S100.

J. For welded connections, comply with AWS D1.1/D1.1M and AWS A2.4.

K. Fire and uplift ratings to comply with Underwriters Laboratories, Inc. and ratings as specified.

L. Comply with applicable American Society for Testing Materials (ASTM) Standards as referenced.

M. Comply with Structural Steel Painting Council (SSPC) Standards as referenced.

2.04 MATERIALS - FRAMING

A. Structural Steel Members: ASTM ASTM A992/A992M, A36 or A572.

B. Structural Tubing: ASTM A500/A500M, Grade B cold-formed.

C. Plate or Bar Stock: ASTM A 529/A 529M, Grade 50 or A36 or A572 Grade 50.

D. Anchor Rods: ASTM A 36 or F 1554 Grade 36, unprimed.

E. Bolts, Nuts, and Washers: ASTM F3125.

F. Welding Materials: Perform in accordance with AWS D1.1/D1.1M.

G. Wind Bracing: Adjustable, threaded steel rods, 1/2 inch diameter minimum; ASTM A36 or A572, Grade D.

H. Primer: Manufacturer's standard lead and chromate free primer meeting VOC requirements of authorities having jurisdiction.

I. Grout: ASTM C1107/C1107M; Non-shrink; premixed compound consisting of non-metallic aggregate, cement, water reducing and plasticizing agents.
   1. Minimum Compressive Strength at 48 Hours: 2,400 pounds per square inch.
   2. Minimum Compressive Strength at 28 Days: 7,000 pounds per square inch.

2.05 MATERIALS - WALLS AND ROOF

A. General: Provide roofing and siding sheets formed to general profile or configuration as indicated. Provide flashings, closers, fillers, metal expansion joints, ridge covers, fascias, and other sheet metal accessories, factory formed of same material and finish as roofing and siding.

B. Roof Covering and Supports: The roof construction shall carry an Underwriters Laboratories Construction (Uplift) classification of not less than Class 1-90, roof system shall meet wind uplift pressure indicated herein and on the drawings.
   1. Roof Panels:
      a. Exposed metal roof covering to be configured to provide the specified load carrying capabilities and deflection requirements of this specification. Roof panels shall be of "standing-seam interlocking" design and secured to purlins with concealed structural fastening system. Concealed system to provide minimal through penetration of exposed roofing surface and allow roof covering to move independently of any differential thermal movement by the structural framing system. Except at the concealed fasteners, there shall be no thermal contact of the roof panels with supporting purlin. Standing seams shall have a factory-applied, non-hardening sealant, and seams shall be continuously locked or crimped together by mechanical means during erection. Roof panels with lap-type side (longitudinal) joints and exposed structural fasteners are not acceptable. Panels to have a “fixed” ridge with a “floating” eave. Provide for lateral thermal movement in panel configuration or with clip designed for lateral and longitudinal movement. Panels shall be of continuous length for application, splicing of panels shall not be considered acceptable.
         1) Steel Panels: Factory-formed panels with factory-applied finish.
            (a) Zinc-coated steel conforming to ASTM A 653/A 653M; minimum Z180 (G90) galvanizing.
            (b) Steel Thickness: 24 gauge minimum.
         2) Profile: Standing seam, with minimum 2.0 inch seam height; concealed fastener system, lapped seam with integral factory installed sealant bead, for field seaming with special tool.
         3) Texture: Smooth, with striations.
         4) Length: Full length of roof slope, without lapped horizontal joints.
         5) Width: Maximum panel width of 16 inches.
      b. Roof panels to be fastened to purlins with concealed clip or backing device of steel having a protective metallic coating. Through penetration of roofing surface by

exposed fasteners shall occur only at terminal locations of roof panels. Such fasteners shall be stainless steel or aluminum screws, bolts or rivets, with weather-seal washers. Carbon steel shank fasteners with vinyl or stainless steel-capped heads are acceptable also.

2. Purlins:
   a. Purlin's configuration, thickness and spacing to be the building manufacturer's standard for the condition provided all design criteria, including deflection, is met or exceeded. Purlin bracing system to comply with AISI or AISC Specification as applicable.
3. Roof Jacks and Curbs:
   a. Openings, 8 inch or smaller, may be flashed and sealed to the roof panel by jacks, providing complete structural support and weathertightness is maintained. Material shall be either of metal with a protective metallic coating or of an EPDM material with an aluminum sealing ring base.
   b. Openings, larger than 8 inch, round or square, shall be framed with a welded metal base fabricated from 0.07 inch minimum thick aluminum or 16 gauge minimum galvanized steel. The base and its appurtenance shall be supported by the roof purlins and header framing. The base shall have a minimum projection or 8 inch above the weather surface of the roof, and the configuration of the flanges shall match the roof panel. The flange-to-panel joint shall be sealed with a non-hardening sealant and fastened in such a manner to provide complete support and weathertightness.
   c. All curbs or jacks shall be integral component of the roofing system, designed and supplied by the metal building manufacturer.

C. Wall Coverings and Supports
1. Wall Panels:
   a. Wall panels to be exterior type to which the thermal qualities and various interior finishes are field applied. Metal faces to be aluminum or zinc coated steel and shall be supplied with a factory applied color coating. Color to be selected from building manufacturer standard offerings. Color coated metal panels to have a fire hazard rating equal to a Class 1 material as classified by Factory Mutual System.
   b. The covering width and configuration of the panel to be building manufacturer's standard provided all design criteria including deflection is met or exceeded. Side seams to be interlocking exposed fasteners.
   c. Wall panel to be fastened to supports with exposed primary fasteners. Exposed (non-load-bearing) stainless steel or aluminum screws, bolts and/or rivets are acceptable for securing trim, fascias, gutters and miscellaneous flashings to either the wall or roof panels.
   d. Top, bottom, and intermediate panel closures, flashings, fascias, gutters and trim to be building manufacturer's standard, compatible with the material furnished as wall panels.
   e. Steel Panels: Factory-formed panels with factory-applied finish.
      1) Zinc-coated steel conforming to ASTM A 653/A 653M; minimum Z180 (G90) galvanizing.
      2) Steel Thickness: 26 gauge minimum
2. Eave Beam:
   a. Beam configuration and thickness to be the building manufacturer's standard provided all design criteria, including deflection and beam spacing, is met.
   b. Based on a simple span, the deflection of the eave beams to be proportioned with due regard to that produced by the previously prescribed design (wind) load and its effect on the type of interior finish specified hereafter.

D. Finishes

1. Fluoropolymer Coating System: Manufacturer’s standard multi-coat thermocured coating system, including minimum 70 percent fluoropolymer color topcoat with minimum total dry film thickness of 0.9 mil; color and gloss as selected from manufacturer’s standards.
2. Unexposed surfaces for coated panels shall be baked-on polyester coating with .20 to .30 dry film thickness (TDF), minimum.

2.06 SHEET METAL ACCESSORIES

A. General: Unless otherwise indicated, provide coated steel accessories with coated steel roofing; aluminum accessories with aluminum roofing.

B. Fasteners: Manufacturer's standard type, galvanized to comply with requirements of ASTM A 153/A 153M, finish to match adjacent surfaces when exterior exposed.

C. Sealant: Manufacturer's standard type.

D. Gutter and Downspouts: Meet requirements of SMACNA (ASMM), Architectural Sheet Metal Manuals and NRCA, Architectural Sheet Metal Manual. Gutter system to meet requirements of ANSI/SPRI GT-1 stand for gutter systems
   1. Gutters: Formed in sections not less than 8 feet lengths, complete with end pieces, outlet tubes, and special pieces that may be required. Join sections with riveted and soldered or sealed joints. Unless otherwise indicated, provide expansion type slip joint at center of runs. Furnish gutter supports spaced at 36 inch o.c., constructed of same metal as gutters. Provide standard bronze, copper, or aluminum wire ball strainers at each outlet. Finish to match roof fascia and rake.
   2. Downspouts: Formed in sections approximately 10 feet long, complete with elbows and offsets. Join sections with minimum 1-1/2 inch telescoping joints. Provide fasteners for top, bottom, and 5 feet o.c. intermediately between, designed to securely hold downspouts not less than 1 inch away from walls. Finish to match wall panels.

E. Ice and Snow Guards: Aluminum bar type with aluminum clamps for mounting to standing seam roof, of the type that will accept a 2 inch strip pf prefinished metal to match the roof color, including all components. Include all accessories by same manufacturer.
   1. Basis of Design: S-5! Attachment Solutions; ColorGard Rail System: www.s-5.com.
   2. Furnish aluminum snow and ice clips designed to retard the migration of snow and ice.
      a. Basis of Design: S-5! Attachment Solutions; SnoClip II: www.s-5.com.

2.07 FABRICATION - FRAMING

A. Fabricate members in accordance with AISC 360 for plate, bar, tube, or rolled structural shapes.

B. Anchor Bolts: Formed with straight shank with a head or nut tack welded to the rod at the end to be embedded in concrete, assembled with template for casting into concrete.

2.08 FINISHES

A. Framing Members: Clean, prepare, and shop prime. Do not prime surfaces to be field welded.

B. Exterior Surfaces of Wall Components and Accessories: Precoated enamel on steel of 70% fluoropolymer finish, color as indicated or as selected from manufacturer's standard range.

C. Interior Surfaces of Wall Components and Accessories: Precoated enamel on steel of fluoropolymer finish, color as indicated or as selected from manufacturer's standard range.

PART 3 EXECUTION

3.01 EXAMINATION

A. Verify that foundation, floor slab, mechanical and electrical utilities, and placed anchors are in correct position

3.02 ERECTION

A. Framing: Erect structural framing true to line, level and plumb, rigid and secure. Level base plates to a true even plane with full bearing to supporting structures, set with double-nutted anchor bolts. Use a non-shrinking grout to obtain uniform bearing and to maintain a level base line elevation. Moist cure grout for not less than 7 days after placement.

B. Eave Beams And Purlins: Provide rake or gable purlins with tight fitting closure channels and fascias. Locate and space eave beams to suit door and window arrangements and heights.

C. Bracing: Provide diagonal rod or angle bracing in both roof and sidewalls as required.
   1. Moment resisting frames may be used in lieu of sidewall rod bracing, to suit manufacturer's standards.
   2. Where diaphragm strength of roof covering is adequate to resist wind forces, rod or other forms of bracing will not be required.

D. Framed Openings: Provide shapes of proper design and size to reinforce opening and to carry loads and vibrations imposed, including equipment furnished under mechanical or electrical work. Securely attach to building structural frame.

3.03 ERECTION - FRAMING

A. Erect framing in accordance with AISC 360.

B. Provide for erection and wind loads. Provide temporary bracing to maintain structure plumb and in alignment until completion of erection and installation of permanent bracing. Locate braced bays as indicated.

C. Set column base plates with non-shrink grout to achieve full plate bearing.

D. Do not field cut or alter structural members without approval.

E. After erection, prime welds, abrasions, and surfaces not shop primed.

3.04 ERECTION - WALL AND ROOF PANELS

A. General: Apply panels and associated items for neat and weathertight enclosure. Avoid "panel creep" or application not true to line. Protect factory finishes from damage. Apply all roofing in strict accordance with the manufacturer's written instructions.

B. Install in accordance with manufacturer's instructions.

C. Exercise care when cutting prefinished material to ensure cuttings do not remain on finish surface.

D. Fasten cladding system to structural supports, aligned level and plumb.

E. Locate end laps over supports. End laps minimum 2 inches. Place side laps over bearing.

F. Provide expansion joints where indicated.

G. Use concealed fasteners.

H. Install sealant and gaskets, providing weather tight installation.

3.05 ERECTION - GUTTERS AND DOWNSPOUTS

A. Rigidly support and secure components. Join lengths with formed seams sealed watertight. Flash and seal gutters to downspouts.

3.06 INSTALLATION - ACCESSORY COMPONENTS IN WALL SYSTEM

A. Sheet Metal Accessories: Install gutters, downspouts, ventilators, louvers, and other sheet metal accessories in accordance with manufacturer's recommendations for positive anchorage to building and weathertight mounting. Adjust operating mechanism for precise operation.

3.07 TOLERANCES

A. Framing Members: 1/4 inch from level; 1/8 inch from plumb.

B. Siding and Roofing: 1/8 inch from true position.

C. Structural frame shall be erected plumb, level and aligned, within the tolerances stipulated in the MBMA Metal Buildings Systems Manual

3.08 QUALITY CONTROL

A. An independent testing and inspection agency acceptable to the Architect Engineer shall perform field quality control inspections and tests, as specified in Section 01 45 33 - Special Inspections.

B. Testing agency shall conduct and interpret tests and state in each report whether test specimens comply with requirements, and specifically state any deviations therefrom.

C. Visual Inspection of Field Welding: Testing agency shall visually inspect field welding while the operators are making the welds and again after the work is completed. The welder or welding operator's identification mark shall be stamped on the steel so that the full and complete identity and history of the welding operation will be known. After the welding is completed, hand or power wire brush welds and thoroughly clean them before the inspector makes the check inspection. Inspect welds with magnifiers under strong, adequate light for surface cracking, porosity, and slag inclusions; excessive roughness, unfilled craters, gas pockets, undercuts, overlaps, size, and insufficient throat and concavity. Inspect the preparation of groove welds for adequate throat opening and for snug positioning of back up bars.

D. Field Bolted Connections: All connections including rod bracing shall be visually inspected to insure quantity and tested per AISC.

E. Field Welding: Inspect and test during erection of structural steel as follows:
   1. Certify welders and conduct inspections and tests as required. Record types and locations of defects found in work. Record work required and performed to correct deficiencies.
   2. Perform visual inspection of all field welds.
   3. Perform tests on welds not passing visual inspection as follows:
      a. Liquid Penetrant Inspection: ASTM E165.
      b. Magnetic Particle Inspection: ASTM E109; performed on root pass and on finished weld. Cracks or zones of incomplete fusion or penetration not acceptable.

F. All column anchor bolts shall be visually inspected for size, quantity and completeness.

G. Copy of the laboratory report shall be submitted to the Architect Engineer for review.

H. Connections that are found unsatisfactory by the inspecting laboratory, shall be corrected as directed, at the Contractor's expense, and to the satisfaction of the inspector. A copy of the final report shall be submitted to the Architect Engineer for approval.
   1. Correction of Defective Welds: Weld areas containing defects exceeding the standards of acceptance in AWS D1.1 shall be corrected in accordance with AWS D1.1 Section 3.7. Additional testing of the repaired areas shall be made at the Contractor's expense. If 20 percent or more of the tests of welds made by a given welder contain defects requiring repair, 100 percent radiographic inspection of that welder's work will be required at the Contractor's expense.
   2. Connections shall not be covered or made inaccessible until the final approval is obtained.

I. Metal Building Inspection Report: Metal building supplier’s professional engineer or delegated licensed engineer shall submit a report of inspection of the erected structure. The report shall indicate that all structural items have been erected and installed in conformance with the metal building drawings and specifications.

J. Manufacturer's Field Service: Engage a factory-authorized service representative to inspect metal roof panel installation, including accessories at the start, midpoint of installation, and final installation, minimum. Report results in writing to Architect Engineer.

END OF SECTION

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