

**SECTION 133419  
METAL BUILDING SYSTEMS**

**PART 1 GENERAL****1.01 SECTION INCLUDES**

- A. Manufacturer-engineered, shop-fabricated structural steel building frame.
- B. Metal roof panels including gutters and downspouts.

**1.02 RELATED REQUIREMENTS**

- A. Section 079200 - Joint Sealants: Sealing joints between accessory components and wall system.
- B. Section 081113 - Hollow Metal Doors and Frames.
- C. Section 081213 - Hollow Metal Frames.
- D. Section 083600 - Overhead Door
- E. Section 083613 - Sectional Doors - Four Fold
- F. Section 088000 - Glazing.

**1.03 REFERENCE STANDARDS**

- A. AISC 360 - Specification for Structural Steel Buildings; 2022, with Errata (2025).
- B. ASTM A36/A36M - Standard Specification for Carbon Structural Steel; 2019.
- C. ASTM A123/A123M - Standard Specification for Zinc (Hot-Dip Galvanized) Coatings on Iron and Steel Products; 2024.
- D. ASTM A153/A153M - Standard Specification for Zinc Coating (Hot-Dip) on Iron and Steel Hardware; 2023.
- E. ASTM A500/A500M - Standard Specification for Cold-Formed Welded and Seamless Carbon Steel Structural Tubing in Rounds and Shapes; 2023.
- 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; 2026.
- H. ASTM A572/A572M - Standard Specification for High-Strength Low-Alloy Columbium-Vanadium Structural Steel; 2025.
- I. ASTM A653/A653M - Standard Specification for Steel Sheet, Zinc-Coated (Galvanized) or Zinc-Iron Alloy-Coated (Galvannealed) by the Hot-Dip Process; 2025a.
- J. ASTM A792/A792M - Standard Specification for Steel Sheet, 55% Aluminum-Zinc Alloy-Coated by the Hot-Dip Process; 2025a.
- K. ASTM A992/A992M - Standard Specification for Structural Steel Shapes; 2022.
- L. ASTM E96/E96M - Standard Test Methods for Gravimetric Determination of Water Vapor Transmission Rate of Materials; 2024a.
- M. ASTM F1554 - Standard Specification for Anchor Bolts, Steel, 36, 55, and 105-ksi Yield Strength; 2020.
- N. ASTM F3125/F3125M - Standard Specification for High Strength Structural Bolts and Assemblies, Steel and Alloy Steel, Heat Treated, Inch Dimensions 120 ksi, 144 ksi, and 150 ksi Minimum Tensile Strength, and Metric Dimensions 830 MPa and 1040 MPa Minimum Tensile Strength; 2025a.
- O. AWS A2.4 - Standard Symbols for Welding, Brazing, and Nondestructive Examination; 2020.
- P. AWS D1.1/D1.1M - Structural Welding Code - Steel; 2025, with Amendment (2026).

- Q. IAS AC472 - Accreditation Criteria for Inspection Programs for Manufacturers of Metal Building Systems; 2024, with Editorial Revision (2025).

#### **1.04 ADMINISTRATIVE REQUIREMENTS**

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

#### **1.05 SUBMITTALS**

- A. See Section 013000 - Administrative Requirements for submittal procedures.
- B. Product Data: Provide data on profiles, component dimensions, fasteners.
- C. Shop Drawings: Indicate assembly dimensions, locations of structural members, connections; wall and roof system dimensions, panel layout, general construction details, anchors and methods of anchorage, and installation; framing anchor bolt settings, sizes, locations from datum, and foundation loads; indicate welded connections with AWS A2.4 welding symbols; indicate net weld lengths; provide professional seal and signature.
- D. Manufacturer's Instructions: Indicate preparation requirements, anchor bolt placement.
- E. Erection Drawings: Indicate members by label, assembly sequence, and temporary erection bracing.
- F. Designer's Qualification Statement.
- G. 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.
- H. Erector's Qualification Statement.
- I. 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 in which the Project is located.
  2. Comply with applicable code for submission of design calculations as required for acquiring permits.
  3. Cooperate with regulatory agency or authorities having jurisdiction (AHJ), and provide data as requested.
- B. Manufacturer Qualifications: Company specializing in the manufacture of products similar to those required for this project.
1. Not less than three years of documented experience.
- C. Erector Qualifications: Company specializing in performing the work of this section approved by manufacturer.
- D. 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 017800 - Closeout Submittals for additional warranty requirements.
- B. Correct defective Work within a one year period after Date of Substantial Completion.

### **PART 2 PRODUCTS**

#### **2.01 MANUFACTURERS**

- A. Metal Buildings Systems:

1. Kirby Building Systems, a Nucor Company: [www.kirbybuildingsystems.com/#sle](http://www.kirbybuildingsystems.com/#sle).
2. Nucor Building Systems: [www.nucorbuildingsystems.com/#sle](http://www.nucorbuildingsystems.com/#sle).
3. Basis of Design: American Buildings; [www.americanbuildings.com](http://www.americanbuildings.com).
4. Substitutions: See Section 016000 - Product Requirements.

## **2.02 ASSEMBLIES**

- A. Single span rigid frame.
- B. Bay Spacing: Varies see plans.
- C. Primary Framing: Rigid frame of rafter beams and columns, canopy beams, and wind bracing.
- D. Secondary Framing: Purlins, and other items detailed.
- E. Wall System: Preformed metal panels of vertical profile provided by other manufacturer, see section # 074213 - Metal Wall Panels, with sub-girt framing/anchorage assembly, and accessory components by metal building manufacturer.
- F. Roof System: Preformed metal panels oriented parallel to slope, with sub-girt framing/anchorage assembly, insulation, and liner panels, and accessory components.
- G. Roof Slope: 1 inches in 12 inches (1/12).

## **2.03 PERFORMANCE REQUIREMENTS**

- A. Installed Thermal Resistance of Wall System: R-13 + R-6.5 ci
- B. Installed Thermal Resistance of Roof System: R-19 + R-11 LS
- C. Design structural members to withstand dead load, applicable snow load, and design loads due to pressure and suction of wind calculated in accordance with applicable code.
- D. Provide drainage to exterior for water entering or condensation occurring within wall or roof system.
- E. Size and fabricate wall and roof systems free of distortion or defects detrimental to appearance or performance.

## **2.04 MATERIALS - FRAMING**

- A. Structural Steel Members: ASTM A36/A36M.
- B. Structural Tubing: ASTM A500/A500M Grade B cold-formed.
- C. Plate or Bar Stock: ASTM A529/A529M, Grade 50.

## **2.05 MATERIALS - ROOF**

- A. Steel Sheet: ASTM A792/A792M aluminum-zinc alloy coated to AZ50/AZM150.
- B. Joint Seal Gaskets: Manufacturer's standard type.
- C. Fasteners: Manufacturer's standard type, galvanized to comply with requirements of ASTM A153/A153M, finish to match adjacent surfaces when exterior exposed.
- D. Sealant: Manufacturer's standard type.
- E. Trim, Closure Pieces, Caps, Flashings, Gutters, Downspouts, Rain Water Diverter, Fascias, and Infills: Same material, thickness and finish as exterior sheets; brake formed to required profiles.

## **2.06 COMPONENTS**

- A. Doors and Frames: See Section 081113.
- B. Frames: See Section 081213.
- C. Overhead Doors: See Section 083613 and Section 083600.

## **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 bent shank, assembled with template for casting into concrete.
- C. Provide wall opening framing for doors, windows, and other accessory components.

## **2.08 FABRICATION - WALL AND ROOF PANELS**

- A. Siding: See Section #074213 - Metal Wall Panels
- B. Roofing: Minimum 0.0225 inch (0.5715 mm) metal thickness, SS360 profile, lapped edges fitted with continuous gaskets.
- C. Liner: Minimum 0.0238 inch (0.060452 mm) metal thickness, flat profile indicated, lapped V edges fitted with continuous gaskets.
- D. Soffit Panels: See Section #074213 Metal Wall Panels
- E. Girts/Purlins: Rolled formed structural shape to receive siding, roofing and liner sheet.
- F. Internal and External Corners: See Section #074213 - Metal Wall Panels
- G. Flashings, Closure Pieces, Fascia: Same material and finish as adjacent material, profile to suit system.
- H. Fasteners: To maintain load requirements and weather tight installation, same finish as cladding, non-corrosive type.

## **2.09 FABRICATION - GUTTERS AND DOWNSPOUTS**

- A. Fabricate of same material and finish as roofing metal.
- B. Form gutters and downspouts of pre-engineered metal building manufacturer standard profile and size indicated to collect and remove water. Fabricate with connection pieces.
- C. Form sections in maximum possible lengths. Hem exposed edges. Allow for expansion at joints.
- D. Fabricate support straps of same material and finish as roofing metal, color as selected.

## **2.10 FINISHES**

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

# **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 - FRAMING**

- A. Erect framing in accordance with AISC 360.
- B. Provide for erection and wind loads. Provide temporary bracing to maintain structure plumb and in alignment until completion of erection and installation of permanent bracing. Locate braced bays as indicated.
- C. Set column base plates with non-shrink grout to achieve full plate bearing.
- D. Do not field cut or alter structural members without approval.
- E. After erection, prime welds, abrasions, and surfaces not shop primed.

## **3.03 ERECTION - WALL AND ROOF PANELS**

- A. Install in accordance with manufacturer's instructions.
- B. Exercise care when cutting prefinished material to ensure cuttings do not remain on finish surface.
- C. Fasten cladding system to structural supports, aligned level and plumb.
- D. Locate end laps over supports. End laps minimum 2 inches (50 mm). Place side laps over bearing.
- E. Provide expansion joints where indicated.

- F. Use concealed fasteners.
- G. Install sealant and gaskets, providing weather tight installation.

#### **3.04 ERECTION - GUTTERS AND DOWNSPOUTS**

- A. Rigidly support and secure components. Join lengths with formed seams sealed watertight. Flash and seal gutters to downspouts.
- B. Slope gutters minimum .125 inch/ft (3.175 mm/m).
- C. Connect downspouts to storm sewer system.

#### **3.05 INSTALLATION - ACCESSORY COMPONENTS IN WALL SYSTEM**

- A. Install insulation in accordance with manufacturer's instructions.

#### **3.06 TOLERANCES**

- A. Framing Members: 1/4 inch (6 mm) from level; 1/8 inch (3 mm) from plumb.
- B. Siding and Roofing: 1/8 inch (3 mm) from true position.

**END OF SECTION**