SECTION 13.34.19
METAL BUILDING SYSTEMS

PART 1 GENERAL

1.01 SECTION INCLUDES
A. Metal wall and roof panels including gutters and downspouts.

1.02 RELATED REQUIREMENTS
A. Section 05.50.00 - Metal Fabrications.
B. Section 07.92.00 - Joint Sealants: Sealing joints between accessory components and wall system.
C. Section 08.11.13 - Hollow Metal Doors and Frames.

1.03 REFERENCE STANDARDS
C. ASTM A500/A500M - Standard Specification for Cold-Formed Welded and Seamless Carbon Steel Structural Tubing in Rounds and Shapes; 2013.
G. AWS D1.1/D1.1M - Structural Welding Code - Steel; American Welding Society; 2011 w/Errata.
I. MBMA (MBSM) - Metal Building Systems Manual; Metal Building Manufacturers Association; 2012.

1.04 ADMINISTRATIVE REQUIREMENTS
A. Preinstallation Meeting: Convene two weeks 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, fasteners.
C. Shop Drawings: Indicate assembly dimensions, locations of structural members, connections; wall and roof system dimensions, panel layout, general construction details, anchorages and method of anchorage, installation; framing anchor bolt settings, sizes, and locations from datum, foundation loads; indicate welded connections with AWS A2.4 welding symbols; indicate net weld lengths; provide professional seal and signature.

CONSTRUCTION DOCUMENTS PACKAGE
31-AUG-15
D. Samples: Submit two samples of precoated metal panels for each color selected, ____ by ____ inch in size illustrating color and texture of finish.

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

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

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

1.06 QUALITY ASSURANCE

A. Design structural components, develop shop drawings, and perform shop and site work under direct supervision of a Professional Structural Engineer experienced in design of this Work.
   2. Conform to applicable code for submission of design calculations as required for acquiring permits.
   3. Cooperate with regulatory agency or authority and provide data as requested.

B. Perform work in accordance with AISC 360 and MBMA (MBSM).

C. Perform welding in accordance with AWS D1.1/D1.1M.

D. Manufacturer Qualifications: Company specializing in the manufacture of products similar to those required for this project.
   1. Not less than 3 years of documented experience
   2. Accredited by IAS in accordance with IAS AC472.

E. Erector Qualifications: Company specializing in performing the work of this section approved by manufacturer.

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. Provide five year manufacturer warranty for ____________.
   1. Include coverage for exterior pre-finished surfaces to cover pre-finished color coat against chipping, cracking or crazing, blistering, peeling, chalking, or fading. Include coverage for weather tightness of building enclosure elements after installation.

PART 2 PRODUCTS

2.01 MANUFACTURERS

A. Metal Buildings:
   5. Substitutions: See Section 01.60.00 - Product Requirements.

2.02 METAL BUILDING

A. Bay Spacing: 12’ at recycling center ft.
B. Primary Framing: Rigid frame of rafter beams and columns, braced end frames and end wall columns, and wind bracing.

C. Secondary Framing: Purlins, and other items detailed.

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

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

F. Roof Slope: 4 inches in 12 inches.

2.03 MATERIALS - FRAMING

A. Structural Steel Members: ASTM A572/A572M, Grade 50.

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

C. Plate or Bar Stock: ASTM A529/A529M, Grade 50.

D. Anchor Bolts: ASTM A307, galvanized to ASTM A153/A153M.

E. Bolts, Nuts, and Washers: ASTM A325 (ASTM A325M), Type 1, galvanized to ASTM A153/A153M, Class C.

F. Welding Materials: Type required for materials being welded.

G. Primer: SSPC-Paint 20, zinc rich.

H. Grout: ASTM C1107/C1107M, Non-shrink type, premixed compound consisting of non-metallic aggregate, cement, water reducing and plasticizing agents, capable of developing minimum compressive strength of 2400 psi in two days and 7000 psi in 28 days.

2.04 MATERIALS - WALLS AND ROOF

A. Steel Sheet: Hot-dipped galvanized steel sheet, ASTM A653/A653M, SS Grade 33/230, with G90/Z275 coating.

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: ASTM C920, elastomeric sealant with movement capability of at least plus/minus 50 percent; 100 percent silicone; for exposed applications, match adjacent colors as closely as possible.

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.

2.05 DESIGN CRITERIA

A. Design members to withstand dead load, applicable snow load, and design loads due to pressure and suction of wind calculated in accordance with applicable code.

B. Design members to withstand UL 580 Uplift Class 60.

C. Exterior wall and roof system shall withstand imposed loads with maximum allowable deflection of 1/90 of span.

D. Permit movement of components without buckling, failure of joint seals, undue stress on fasteners or other detrimental effects, when subject to temperature range of -10 - 110 degrees F.

E. Size and fabricate wall and roof systems free of distortion or defects detrimental to appearance or performance.
2.06 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.

2.07 FABRICATION - WALL AND ROOF PANELS
   A. Siding: Minimum 1/16 inch metal thickness, ____ profile, 1 inch deep, lapped edges.
   B. Roofing: Minimum 1/16 inch metal thickness, ____ profile, lapped edges fitted with continuous gaskets.
   C. Girts/Purlins: Rolled formed structural shape to receive siding, roofing and liner sheet.
   D. Internal and External Corners: Same material thickness and finish as adjacent material, profile brake formed to required angles. Back brace mitered internal corners with 1/16 inch thick sheet.
   E. Flashings, Closure Pieces, Fascia: Same material and finish as adjacent material, profile to suit system.
   F. Fasteners: To maintain load requirements and weather tight installation, same finish as cladding, non-corrosive type.

2.08 FABRICATION - GUTTERS AND DOWNSPOUTS
   A. Fabricate of same material and finish as roofing metal.
   B. Form gutters and downsputs of ogee profile and size indicated to collect and remove water. Fabricate with connection pieces.
   C. Form sections in maximum possible lengths. Hem exposed edges.
   D. Fabricate support straps of same material and finish as roofing metal, color as selected.

2.09 FINISHES
   A. Framing Members: Clean, prepare, and galvanize to ASTM A123.
   B. Exterior Surfaces of Wall Components and Accessories: Precoated enamel on steel of modified silicone finish, ________ color as selected from manufacturer's standard range.
   C. Interior Surfaces of Wall Components and Accessories: Precoated enamel on steel of modified silicone finish, ________ color 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 - 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.
   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 galvanized.
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. 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 downsputs.
   B. Slope gutters minimum 1/8 inch/ft.
   C. Install splash pans under each downspout.

3.05 TOLERANCES
   A. Framing Members: 1/4 inch from level; 1/8 inch from plumb.
   B. Siding and Roofing: 1/8 inch from true position.

END OF SECTION