SECTION 13125
PRE-ENGINEERED WOOD POST FRAME BUILDING SYSTEM

PART 1 GENERAL

1.01 SUMMARY

A. Section Includes: Primary and secondary wood structural framing systems, roofing and wall covering systems, roof and wall insulation, personnel doors, windows, and accessories.

B. Products Supplied But Not Installed Under This Section:
   1. Bent reinforcing bar column anchors.

C. Related Sections:
   1. Section 03300, Cast-in-Place Concrete
   2. Section 08100, Metal Door and Frames
   3. Section 08200, Interior Wood Doors
   4. Section 08360, Sectional Overhead Door
   5. Section 08700, Hardware

1.02 DEFINITIONS

A. Drawings: Contract documents prepared by the Engineer.

B. Erection Drawings: Detailed project drawings prepared by the building manufacturer.

C. Primary Framing: Pre-fabricated wood columns and pre-fabricated wood trusses including corner and endwall columns and trusses with required fasteners.

D. Secondary Framing: Wood purlins, girts, splashplank, and bracing.

1.03 SYSTEM DESCRIPTION

A. Design Requirements:
2. Design Loads:
   a. Roof Load: Snow load: 30 psf
   b. Dead Loads: Truss top chord: 5 psf
      Truss bottom chord: 10 psf
   c. Wind Load: Wind speed: 80 mph
      Exposure factor: C
   d. Seismic Load: Seismic zone: II
   e. Collateral Loads: Additional loads imposed by contract documents
      other than weight of building systems specified in this section.

3. Structural Design:
   a. Perform calculations using diaphragm design analysis. Incorporate
      bracing as required if building exceeds diaphragm requirements.
   b. Comply with AF&PA “National Design Specification for Wood
      Construction (NDS).”
   c. Trusses:
      1) Limit deflection for live or snow loads to L/360 for trusses
         supporting future ceilings.
      2) Comply with appropriate NDS and Truss Plate Institute
         (TPI) standards.
   d. Metal Roof and Wall Panels:
      1) Design in accordance with AISI “Specifications for the
         Design of Light-Gauge, Cold-Formed Steel Structural
         Members” and in accordance with sound engineering
         methods and practices.
      2) Design to support a 200 pound load evenly distributed over
         a 2 foot square area centered between purlins; limit
         deflection to L/180 in a two-span condition.

1.04 SUBMITTALS

A. Reference Section 01300–Submittal Procedures.

B. Submit following items:
   1. Product Data: Include manufacturer’s specifications and installation
      instructions for building components and accessories.
   2. Shop Drawings: Erection Drawings showing roof framing, cross sections,
      roof and wall covering and trim details and accessory and component
      details clearly indicating proper assembly.
   4. Quality Assurance/Control Submittals:
      a. Certificates:
         1) Structural Engineer Certification of compliance with
            Design Requirements.
         2) Manufacturer qualification.
3) Dealer qualification.
4) Installer qualification.

1.05 QUALITY ASSURANCE

A. Qualifications:
   1. Manufacturer Qualifications: Minimum five years experience in producing pre-engineered wood buildings of the type specified.
   2. Dealer Qualifications: Must be manufacturer authorized dealer; state date authorization granted and expiration if any.
   3. Installer Qualifications: Minimum one year experience in erection of pre-engineered wood buildings of the type specified.

B. Structural Engineer Certification: Letter signed by a Professional/Structural Engineer, registered to practice in the state of Colorado verifying compliance with specified Design Requirements. Letter must reference specific dead loads, live loads, wind loads, tributary area load reductions (if applicable) collateral loads, seismic loads, end use categories, and governing building code including edition and load applications.

C. Trusses:
   2. Manufacturer shall have a third party inspection program to verify compliance with requirements of TPI.
   3. Stamp trusses with inspection agency identification.

1.06 DELIVERY STORAGE AND HANDLING

A. Follow manufacturer’s instructions.

1.07 WARRANTY

A. Special Warranty:
   1. Treated Wood Columns: Minimum 40 years against decay and insect damage when in contact with soil.
   2. Steel Panels with painted finish: 20 years under normal weather and atmospheric conditions against:
      a. Crack, check, peel, flake, blister, or loss of adhesion of paint coating.
      b. Chalk of paint coating in excess of an 8 rating per ASTM D 4214.
      c. Fade of paint coating in excess of 5 units of color per ASTM D 2244.
PART 2 PRODUCTS

2.01 STRUCTURAL FRAMING

A. Primary Framing:
   1. Columns:
      a. Treated Lumber Section:
         1) Lumber: No. 1 or Better Southern Yellow Pine, pressure treated with Chromated Copper Arsenate, Type III, to a retention of 0.6 pcf and kiln dried after treating to 19 percent maximum moisture content.
         2) Fabrication: Laminate individual pieces using treated lumber ring shank or wire feed nails per manufacturer’s engineered nailing pattern.
      b. Untreated Lumber Section:
         1) Lumber: No. 1 or Better Southern Yellow Pine or Douglas Fir-Larch kiln dried to 19 percent maximum moisture content.
         2) Fabrication: Laminate individual pieces using ring shank or wire feed nails per manufacturer’s engineered nailing pattern.
      c. Connection of Treated and Untreated Sections: Factory fabricated finger joint.
      d. Configuration:
         1) Sidewall and Endwall Columns: 3 ply or 4 ply combining 2x6, 2x8, or 2x10 dimension lumber as required by “Structural Design” requirements specified herein and configured to accept interlocking girts and splashplank.
         2) Corner Columns: 2 ply or 3 ply 2x6 or 2x8 dimension lumber as required by “Structural Design” requirements specified herein and configured to accept interlocking girts and splashplank from side and endwall directions.
      e. Column Anchor Reinforcing Bars: ASTM A 615, deformed, U-shaped bars, size as required by “Structural Design” requirements as specified herein.
   2. Trusses: Comply with “Structural Design” and “Quality Assurance” requirements as specified herein.

B. Secondary Framing:
   1. Purlins and Girts:
      a. Lumber: No. 2 or Better dimension lumber kiln dried to 19 percent maximum moisture content.
      b. Configuration: 2x4 or 2x6 as required by “Structural Design” requirements specified herein.
         1) Girts: Precision cut to fit.
         2) Purlins: Precision cut to fit between trusses flush with top
of top chord. Provide 20 gauge galvanized purlin saddle hangers.

c. Spacing: As required by “Structural Design” requirements specified herein.

2. Splashplank:
   a. Lumber: No. 2 or Better Southern Yellow Pine, pressure treated with Chromated Copper Arsenate, Type III, to a retention of 0.6 pcf and kiln dried after treating to 19 percent maximum moisture content.
   b. Configuration: 2x8 tongue and groove dimension lumber precision cut to fit between and interlock with columns.

3. Bracing, Wall and Lateral Truss Type (where required by “Structural Design”):
   a. Lumber: No. 2 or Better dimension lumber.
   b. Configuration: 2x4 or 2x6 as required by “Structural Design” requirements specified herein.

2.02 STEEL ROOF PANELS

A. Panel Description:
   1. Material and Finish:
      a. 29 gauge ASTM A 792, Structural Quality, Grade 80 (550) (formerly Grade E), GALVALUME® steel with AZ55 (AZ165) aluminum-zinc coating both sides, Triple-Spot Test.
   2. Configuration:
      a. Roll-formed; 36 inch coverage width. Provide panels covering up to 38 foot-9 inch lengths in single pieces.
      b. Four major corrugations, 1-1/2 inches high, spaced 12 inches on center with 2 minor vee corrugations, 1/8 inch high, spaced 4 inches on center between each major corrugation.
      c. Form one outboard corrugation as overlapping corrugation.
      d. Form opposite outboard corrugation as underneath corrugation with continuous sealant groove.
      e. Factory cut to required length.

B. Fasteners: Color coated No. 10 drill screws with 1/4 inch (6 mm) hex head pre-assembled to 1/2 inch o.d. dome seal or bond seal galvanized steel and EPDM washers.

C. Accessories:
   1. Provide manufacturer’s standard pre-engineered ridgecap, flashings and eave and gable trim. Field fabricate minor flashings as shown on Erection Drawings.
   2. Provide manufacturer’s gutters and downspouts as shown on Drawings.
   3. Closure Strips: Closed cell, 2 pcf density polyethylene foam, premolded to match configuration of panels.
4. Material and Finish: As shown on Erection Drawings.

2.03 STEEL WALL PANELS

A. Panel Description:
   1. Material and Finish:
      a. 29 gauge, ASTM A 653, Structural Quality, Grade 33 (230), galvanized steel with G90 (Z275) zinc coating.
      b. Exterior Surface Finish: Bonderize and provide on primer and (fluoropolymer) finish coat, 0.9 mil (0.023 mm) minimum dry film thickness.
         1) Color: As selected by Owner from Manufacturer’s standard color range.
      c. Interior Surface Finish: Manufacturer’s standard polyester color coat.
   2. Configuration:
      a. Roll-formed; 36 inch coverage width. Provide panels covering up to 38 foot-9 inch lengths in single pieces.
      b. Four major corrugations, 1-1/2 inches high, spaced 12 inches on center with 2 minor vee corrugations, 1/8 inch high, spaced 4 inches on center between each major corrugation.
      c. Factory cut to required length.

B. Fasteners: Color coated No.10 drill screws with 1/4 inch hex head pre-assembled to 1/2 inch o.d. dome seal or bond seal galvanized steel and EPDM washers.

C. Accessories:
   1. Provide manufacturer’s standard pre-engineered wall trim and flashings. Field fabricate minor flashings as shown on Erection Drawings.
   2. Closure Strips: Closed cell, 2 pcf density polyethylene foam, premolded to match configuration of panels.
   3. Material and Finish: As shown on Erection Drawings, except as specified herein.

2.04 INSULATION

A. Tempshield Single Bubble, Double Foil Insulation:
   2. Physical Properties:
      a. One layer of 5/32” barrier bubble film laminated between two layers of foil

B. ASTM C 665, Type II, Class C, Kraft Faced Fiberglass Blanket:
   2. Physical Properties:
      a. Water Vapor Transmission, ASTM E 96:
1.00 Perm (57.45 ng/(Pa·s·m²) or less.

2.05 PERSONNEL DOORS

A. Series 20 pre-hung and pre-finished door and frame system as manufactured by Plyco Corporation (or equal) including 16 gauge steel jambs, aluminum header and threshold, 1-1/2 inch thick door with 24 gauge steel faces, polyurethane foam core and full perimeter adjustable weatherstrips.

1. Door Style:
   a. Full Flush Panel.

B. Finish: Bronze baked enamel.

C. Hardware: Commercial grade cylindrical lock and hinges w/ Bronze finish..

2.06 JOINT SEALANT MATERIALS

A. Sealant: ASTM C 920, Type S, Class 25, Grade NS.


PART 3 EXECUTION

3.01 EXAMINATION

A. Verify that site conditions are acceptable for erection/installation of pre-engineered wood building system.

B. Coordinate with responsible entity to perform corrective work on unsatisfactory conditions.

C. Commencement of work by erector/installer is acceptance of site conditions.

3.02 ERECTION–STRUCTURAL FRAMING

A. Erect in accordance with manufacturer’s instructions and approved shop drawings.

B. Provide temporary erection and wind load bracing to maintain structure plumb and in alignment until installation of permanent bracing and/or roofing and wall coverings are completed.

C. Do not field cut or alter structural members without approval of manufacturer.
3.03 INSTALLATION

A. Metal Roofing:
   1. General: Install in accordance with manufacturer’s instructions. Secure to structural framing aligned, level and plumb. Space fasteners as shown on manufactures’ erection drawings.
   2. Sidelap: Minimum one full corrugation.
   3. Endlap: 12 inches for slopes less than 4 in 12. Secure together over and to structural members.
   4. Accessories: Install as shown on manufactures’ erection drawings.

B. Metal Siding:
   1. General: Install in accordance with manufacturer’s instructions. Secure to structural framing aligned, level and plumb. Space fasteners as shown on manufactures’ erection drawings.
   2. Sidelap: Minimum one full corrugation.
   3. Field cut endwall panels to match roof slope.
   4. Accessories: Install as shown on manufactures’ erection drawings.

C. Insulation: Follow manufacturer’s instructions for the type(s) of insulation specified.
   1. Insulation with tabs: Overlap tabs and secure to provide continuous vapor barrier.
   2. Fill miscellaneous voids and cavity spaces to ensure continuously insulated envelope.

D. Personnel Doors: Follow manufacturer’s instructions.

E. Windows: Follow manufacturer’s instructions.

F. Joint Sealant Materials:
   1. Preparation: Clean joints and surfaces to receive sealants of foreign materials.
   2. Apply sealant with caulking gun using sufficient pressure to completely fill joints and ensure full contact of sealant to joint sides.
   3. Toll surface smooth and uniform, free of ridges, sags and air pockets.
   4. Clean sealant from adjacent surfaces.

3.04 CLEANING

A. Clean surfaces soiled by work as recommended by manufacturer.

B. Touch up abrasions and other defects on pre-painted metal panel surfaces with same type of primer and paint as original finish.

C. Remove surplus material and debris from site.
END OF SECTION