

**DIVISION 13 - SPECIAL CONSTRUCTION**  
**SECTION 13 3418 - POST FRAME BUILDING SYSTEMS**

**PART 1 GENERAL**

**1.01 SECTION INCLUDES**

- A. Pre-Engineered factory and field fabricated Timber Column Structure
- B. Prefinished metal roofing and siding panels
- C. Prefinished metal trim items
- D. Prefinished soffits
- E. Prefinished gutters and downspouts
- F. Interior Liner Package

**1.02 PRODUCTS NOT FURNISHED UNDER THIS SECTION**

- A. None

**1.03 RELATED SECTIONS**

- A. None

**1.04 REFERENCE STANDARDS**

- A. Building Design Standards
  - 1. XXXX International Building Code
  - 2. American Society of Civil Engineers; ASCE-7-XX Minimum Design Loads and Associated Criteria for Buildings and Other Structures
  - 3. American Wood Council (AWC)
    - a. National Design Specification (XXXX NDS) for Wood Construction
- B. Preservative Treated Lumber
  - 1. American Wood Protection Association (AWPA)
    - a. XXXX AWPA Book of Standards
      - i. Use Category System U1, User Specification for Treated Wood
      - ii. UC4A, Important\_Structural - Ground Contact
      - iii. UC4B, Structural Support - Ground Contact
  - 2. International Code Council - Evaluation Service Report 2240
    - a. Micronized Copper Azole preservative-treated lumber
- C. Pre-cast Concrete / Cast-In-Place Concrete
  - 1. American Concrete Institute (ACI)
    - a. ACI 318-XX Building Code Requirements for Structural Concrete

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D. Framing Lumber

1. National Design Specification for Wood Construction (XXXX NDS)
2. Southern Pine Inspection Bureau (SPIB)
  - a. XXXX Standard Grading Rules for Southern Pine Lumber
3. National Lumber Grades Authority (NLGA)
  - a. XXXX National Lumber Grades Authority Standard Grading Rules for Canadian Lumber

E. Wood Trusses

1. Truss Plate Institute (ANSI / TPI-1 - XXXX National Design Standard for Metal Plate Connected Wood Truss Construction)
  - a. Design, engineering, and quality control requirements for manufactured wood trusses

**1.05 SYSTEM DESCRIPTION**

A. Post-Frame Construction

1. Clear span
2. Primary Framing
  - a. Columns
  - b. Trusses
  - c. Lateral bracing
3. Secondary framing
  - a. Perimeter baseboards / preservative-treated
  - b. Wall girts (nailers)
  - c. Purlins
  - d. Overhang rafters and fascia
  - e. Ancillary blocking or furring as required
4. Roof Covering
  - a. Prefinished ribbed metal panels
  - b. Other roof coverings as required
5. Wall Covering
  - a. Prefinished ribbed metal panels
  - b. Other wall coverings as required
6. Insulation and Liner Package
  - a. Wall insulation
  - b. Ceiling insulation
  - c. Air deflectors
  - d. Vapor retarder
  - e. Wall stripping
  - f. Prefinished ribbed metal panels

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**1.06 DESIGN REQUIREMENTS**

- A. Building shall be designed in accordance with standards identified in Section 1.04
  - 1. Roof Design Loads
    - a. Top and Bottom Truss Chords: See building plans for specific loads required
      - i. Top Chord Live Load
      - ii. Top Chord Dead Load
      - iii. Bottom Chord Dead Load
      - iv. Bottom Chord Point Load
    - b. Unbalanced Snow Loads: In accordance with ASCE-7-XX
  - 2. Wind Speed: See Building Plans for specific wind speed requirements
  - 3. Seismic Loads: See Building Plans for specific seismic load requirements
  - 4. System Requirements
    - a. Roof and wall system shall be able to withstand the imposed loads with maximum allowable deflection in accordance with XXXX IBC.
    - b. Assembly shall permit movement of components without buckling, failure of joint seals, undue stress on fasteners or other detrimental effects.
    - c. Size and fabrication of roof and wall systems to be free of distortion or defects that would be detrimental to appearance or performance

**1.07 SUBMITTALS**

- A. Submit under provisions of Division 01.
- B. Provide XX sets of the following bearing the seal of a Professional Engineer, registered in the state where the project is located.
  - 1. Complete and detailed shop and erection drawings showing size and location of each part and component, certifying that the building design meets specified roof and wind loading requirements
  - 2. Truss engineering analysis and design data, including the following
    - a. Axial forces and bending moments for each member
    - b. Basic plate design value
    - c. Design analysis of each joint showing that proper plates have been applied
  - 3. Manufacturer's metal panel standard color chart

**1.08 PROJECT RECORD DOCUMENTS**

- A. Submit under provisions of Division 01

**1.09 QUALITY ASSURANCE**

- A. Truss Assembly Quality
  - 1. Manufacturer shall provide evidence of compliance with quality control requirements of TPI-1 - XXXX
  - 2. Trusses shall be stamped to indicate quality assurance auditing by an independent agency

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- B. Prefinished Ribbed Metal Panels
  - 1. Manufacturer shall provide evidence of compliance with UL2218 and UL790 (Hail impact and external fire resistance, respectively) for roofing panels.
    - a. Prefinished Ribbed Metal Panels to be applied as roofing shall be delivered with a certificate to indicate compliance with UL2218 Class 4 and UL790 Class A
- C. Other Manufacturer Certifications and Approvals as Required

**1.10 QUALIFICATIONS**

- A. Contractor shall have a minimum of forty years documented experience in the manufacture and erection of this type of structure.
- B. Contractor shall present evidence of written procedures to describe how components are to be assembled during erection of the structure.
- C. Design of structural components shall be performed under the direct supervision of a Professional Engineer experienced in design of this type of structure and licensed in the state where the project is located.
- D. The Contractor shall employ adequate numbers of skilled workmen who are thoroughly trained and experienced in the necessary crafts and who are completely familiar with the specified requirements and methods needed for proper and safe performance of the work.
- E. Contractor shall be responsible for proper storage of all materials, including subcontractors' materials

**1.11 REGULATORY REQUIREMENTS**

- A. Contractor shall be responsible for compliance with all applicable building codes and ordinances covering the work.
- B. Contractor shall cooperate with regulatory agencies or authorities to provide data as requested.

**1.12 PRE-CONSTRUCTION MEETING**

- A. The contractor shall convene a meeting no later than one week prior to commencing work under provisions of Division 01.
- B. The meeting shall include owner(s), contractors and subcontractors.
- C. The meeting's agenda shall include a review of the project, responsibilities, timing and coordination required of contractor and subcontractors, safety plans and other information pertinent to the project.

**1.13 FIELD MEASUREMENTS**

- A. Field measurements shall be taken to verify that components match shop drawings.

**1.14 DELIVERY, STORAGE AND HANDLING**

- A. The contractor shall deliver and store prefabricated components (trusses, columns, steel panels and other materials) to ensure that they will not be damaged or deformed.

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- B. The contractor shall be responsible to stack materials on platforms, pallets or other structures covered with tarpaulins or other suitable weather-tight ventilated covering. The contractor shall additionally handle and store structural parts in a manner that will avoid deforming members or subjecting parts to excessive stresses.
- C. The contractor shall store roofing and siding panels to allow water to drain freely.
- D. The contractor shall not store panels in contact with other materials that could cause corrosion, discoloration, or staining.

**1.15 PROJECT CONDITIONS**

- A. Contractor shall coordinate the work with other trades.
- B. Contractor shall fit carpentry work to other work. Scribe and cope as required for accurate fitting.
- C. Contractor shall be responsible to correlate location of furring, interior stripping, blocking and supports to allow for attachment of other work.

**1.16 CERTIFICATIONS**

- A. The bidder’s proposal must include evidence that the material specifications will be met.
  - 1. Provide written certification letter that prefinished metal panels will meet all requirements of Sections 2.03 and 2.04.
- B. The bidder’s proposal must include a sample warranty identical to the warranty to be issued at completion of the project.
  - 1. The sample warranty shall verify that the warranty specification described in Section 1.17 will be met.

**1.17 WARRANTY**

- A. The building manufacturer shall supply a warranty to the Owner which shall provide the manufacturer will meet the following requirements...

Period of Coverage	Material	Claim Conditions
50 Years	Preservative Treated Lumber	Failure due to decay or insect attack
50 Years	Building Framework Including Roofing and/or Siding Panels	Direct damage by snow loads
35 Years	Roofing and Siding Panels	Paint separation from panels
35 Years	Roofing and Siding Panels	Chalk rating less than rating of 8 (ASTM D4212) under normal weathering
35 Years	Roofing and Siding Panels	Color change greater than 5 units (ASTM D2244) under normal weathering
10 Years	Roofing and Siding Panels	Red rust corrosion greater than 1/2 inch from a sheared edge, visible in casual observation under normal weathering
5 Years	Building Framework Including Roofing and/or Siding Panels	Direct damage by wind loads unless damage is caused by flying or falling objects
5 Years	Roof Leaks	Leaks due to material or workmanship defects
1 Year	Any building part	Proven defect in material or workmanship

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**PART 2 PRODUCTS**

**2.01 MANUFACTURERS - BUILDING SYSTEM**

- A. Morton Buildings, Inc., Morton, Illinois
- B. Other manufacturers offering similar systems
  - 1. As approved by project architect
  - 2. See certification requirements Section 1.16.
- C. Substitutions to or deviations from these specifications
  - 1. None

**2.02 MATERIALS - FRAMING**

- A. Pre-Cast Concrete Pier Foundation Columns
  - 1. Post frame building column consisting of a pre-cast concrete embedded portion with exposed rebar dowels for embedment in cast-in-place concrete footing
  - 2. Column to have an integrated bracket for attachment to an upper wood column.
  - 3. Column to have attachment points allowing perimeter baseboards to be structurally connected to the column.
- B. Wood Column
  - 1. Factory fabricated from minimum 3-ply No. 1 (or better) southern yellow pine lumber
  - 2. Attach wood column to concrete column bracket with appropriate number and size of mechanically driven fasteners
  - 3. Provide factory or field installed blocking on outside face of column between nailers
- C. Wood Trusses
  - 1. Lumber
    - a. Top Chord: southern yellow pine of size and grade to meet design requirements
    - b. Bottom Chord: southern yellow pine of size and grade to meet design requirements
    - c. Webs: southern yellow pine of size and grade to meet design requirements
  - 2. Trusses shall be constructed of surfaced lumber (S4S) and compliant with SPIB visual and structural grade requirements
  - 3. Plates: Connector plates shall meet design requirements and shall be compliant with applicable ICC-ES Report specifications
  - 4. Design and fabricate trusses and connections to withstand snow, wind, dead, and all other loads indicated.
  - 5. Fabricate trusses in plant, using mechanical or hydraulic fixtures as required to bring members into contact. Install plates in accordance with Truss Plate Institute TPI-1 - XXXX.

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D. Baseboards

1. 2"x8" nominal No. 1 southern yellow pine with 1.2" x 7/16" notch to accommodate OSB protective liner as may be required.
2. Pressure treated with wood preservative to a retention in compliance with applicable AWPA or ICC-ESR standards and specifications, and kiln dried after treatment to 19% maximum moisture content.
3. Preservative shall penetrate sapwood in compliance with AWPA or ICC-ESR standards and specifications.

E. Wall girts (nailers)

1. As required on building plans.

F. Purlins and Truss Ties

1. 2"x4" nominal No. 2 or machine stress rated spruce-pine-fir as required on building plans

G. Overhang Framing

1. Provide factory fabricated rafter frames
2. Provide 2"x6" No. 2 spruce-pine-fir factory beveled fascia boards

H. Lateral Bracing

1. 2"x6" No. 2 spruce-pine-fir factory or field cut boards to brace end wall columns with nearest available intermediate truss.

I. Framing around openings

1. 2"x4" No. 2 spruce-pine-fir around personnel doors and windows, according to building plans.
2. 2"x6" No. 2 spruce-pine-fir around overhead door openings, according to building plans.

J. Headers

1. Provide headers as required on building plans

K. Incidental Framing

1. 2"x4" and/or 2"x6" No. 2 spruce-pine-fir

L. Interior Framing

1. 2"x4" No. 2 spruce-pine-fir

**2.03 MATERIALS - PREFINISHED METALS**

A. Roofing / Siding / Wainscot Ribbed Building Panels

1. Panel substrate shall be 0.019" minimum thickness commercial steel sheet with G90 (zinc) metallic coating per ASTM A653 or AZ55 (aluminum / zinc alloy) metallic coating per ASTM A792.
2. The weather side of the panel shall receive a nominal two tenths (0.2) mil polyurethane primer and a nominal nine tenths (0.9) mil topcoat of 70% polyvinylidene difluoride (PVDF) resin to achieve a total nominal dry film thickness of one (1) mil.
3. The non-weather side paint system shall consist of a two coat finish with a total nominal dry film thickness of one-half (0.5) mil.

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4. Color selection of roofing / siding / wainscot panels shall be from the manufacturer's standard color chart.

**B. Interior Liner Ribbed Building Panels**

1. Panel substrate shall be 0.019" minimum thickness commercial steel sheet with G40 (zinc) metallic coating per ASTM A653.

2. The side of the panel facing the interior of the building shall receive a nominal two tenths (0.2) mil polyurethane primer and a nominal nine tenths (0.9) mil topcoat of polyester resin to achieve a total nominal dry film thickness of one (1) mil.

3. The wall cavity or attic facing side paint system shall consist of a two coat finish with a total nominal dry film thickness of one-half (0.5) mil.

4. Color selection of interior liner panels shall be standard white, or panels may be selected from the manufacturer's standard color chart of exterior quality ribbed building panels.

**C. Metal Trim Items**

1. Die-formed steel from the same quality material as the siding panels. Steel substrate thickness may vary from that of ribbed building panels.

**C. Gutters and Downspouts**

**1. Gutters**

a. K-Style rollformed gutters in 5" or 6" open widths formed from 0.030" aluminum prefinished with color-matched nominal one (1) mil 70% PVDF coating system (including primer) on exposed critical visual surfaces.

b. Interior of gutter to be coated with nominal one-half (0.5) mil paint wash coat

**2. Downspouts**

a. Rollformed steel from the same quality as siding panels. Steel substrate thickness may vary from that of ribbed building panels.

b. Downspouts to match standard colors

c. Downspouts to be sized to match gutter size

**2.04 MATERIALS - OTHER**

**A. Corner bracing**

1. Provide 1-1/4" wide high tensile steel strapping to be installed in all unobstructed corners in a "X" configuration

**B. Roofing / Siding / Wainscot fasteners**

1. Center-drive stainless steel screws with EPDM-gasketed washers for ribbed steel panels

2. Fasteners shall be painted to match selected colors

**C. Interior liner fasteners**

1. Center-drive carbon steel pan-head screws for ribbed steel panels, painted in standard white color, or

2. Center-drive stainless steel screws with EPDM-gasketed washers for optional exterior ribbed steel panels

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D. Closure strips

1. Strips shall be made from closed cell foam

E. Sealant

1. 100% neutral curing silicone sealants shall be applied where required.
2. Paintable sealant shall be applied where required.

F. Insulation

1. Minimum 6" thick, R-19 fiberglass blankets in wall cavity
2. Minimum R38 blown-in fiberglass insulation above ceiling

G. Vapor Retarder

1. 4 mil thickness polyethylene sheets.

**PART 3 EXECUTION**

**3.01 EXAMINATION**

- A. Verify site conditions under provisions of Division 01

**3.02 ERECTION - FRAMING - GENERAL**

- A. Erect framing in accordance with manufacturer's established construction procedures
- B. Make all components and building plumb, square, straight, and true to lines in accordance with National Frame Building Association's Accepted Practices documents and specific tolerances identified in Section 3.06
- C. Provide adequate temporary bracing to assure structure remains plumb and square until permanent bracing is installed
- D. Altering of structural members is not permitted

**3.03 ERECTION - FRAMING**

A. Pre-Cast Concrete Pier Foundation Columns

1. Auger each hole to depth with diameter as required on building plans.
2. Accurately position concrete lower column in each hole
3. Place ready-mix concrete in hole to footing size and thickness indicated on building plans.
4. Backfill with dry soil, compacted in 8" lifts

B. Wood Column

1. Set wood column to interlock with concrete column connection bracket.
2. Install manufacturer's recommended quantity and size of mechanically driven fasteners and bolts

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C. Baseboards

1. Install 2"x8" treated planks at grade using builder's recommended fasteners and brackets to attach to concrete column

D. Wall girts (nailers)

1. Install nailers as required on building plans according to manufacturer's established construction procedures.

E. Trusses

1. Set trusses in plane with the center member of the wood column using lifting methods as approved by the manufacturer.
2. When properly positioned, install two 1/2" diameter machine bolts and manufacturer-recommended 4" structural screws through two of the wood column laminates and the truss heel.
3. Brace trusses as recommended by the manufacturer.

F. Purlins

1. Install 2"x4" purlins by attaching them to trusses according to manufacturer's established construction procedures.

G. Lateral Bracing

1. Install 2"x6" angled bracing at locations recommended by the manufacturer according to the manufacturer's established construction procedures.

H. Incidental Framing

1. Install 2"x4" or 2"x6" blocking as required according to building manufacturer's recommendations.

I. Interior Framing (Stripping)

1. Install 2"x4" baseboard at 4 inch above grade and case in metal trims
2. Install 2"x4" horizontal stripping at 36" (maximum) on-center spacing in wall areas to support ribbed steel panels
3. Install 2"x4" horizontal stripping at 16" (maximum) on-center spacing in wall areas to support gypsum board

**3.04 ERECTION - INSULATION**

A. Wall Insulation

1. Install fiberglass batt insulation blankets to fill wall cavity between columns.
2. Install vapor retarder between insulation blankets and interior stripping.

B. Ceiling Insulation

1. Install vapor retarder between lower truss chords and ceiling panels
2. Install blown-in fiberglass in attic space

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**3.05 ERECTION - PREFINISHED METALS - GENERAL**

**A. Roofing Panels**

1. Install panels perpendicular to purlins, aligned straight with end fascia.
2. Fasten panels to purlins with screw fasteners.

**B. Siding and Wainscot Panels**

1. Install panels perpendicular to nailers, aligned level and plumb (see Section 3.06).
2. Fasten panels to nailers with screw fasteners.

**C. Interior Panels**

1. Install panels perpendicular to supports, aligned level and plumb
2. Fasten wall panels to wall stripping with 1" painted screws.
3. Fasten ceiling panels to truss lower chords with 1" painted screws.

**D. Trim Items**

1. Install trim items at the base, at wainscot / siding panel transition, corners, top of steel siding, fascia, gables and ridge using appropriate fasteners

**E. Ridge Treatments**

1. Install over ridge trim using screw fasteners

**F. Soffit**

1. Install soffit to interlock with trim items at top of steel siding and at fascia.
2. Use solid soffit at each end overhang per building plans
3. Use combination of solid and vented soffit to provide balanced ventilation at side overhangs per building plans.

**G. Gutter and Downspouts**

1. Install gutters with supporting hangers spaced 24" on-center
2. Silicone sealant and silicone rubber gaskets shall be used at laps to maintain leak prevention and to relieve stress due to thermal movements.
3. Install drop outlets and downspouts to allow drainage from gutter at locations specified on building plans.
4. Secure downspout to vertical wall panels or trims with conductor bands and screws.

**H. Filler Strips**

1. Provide filler strips at the top and bottom of roofing panels.

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**3.06 TOLERANCES**

A. Framing Members

1. 1/4" from level

2. 1/8" from plumb

B. Siding and Roofing Panels

1. 1/8" from true position

**End of Section 13 3418**