

GUIDE SPECIFICATIONS FOR POST-FRAME BUILDING SYSTEMS

DIVISION 13 – SPECIAL CONSTRUCTION – FIRST EDITION (May, 2008)

SECTION 133420 – POST-FRAME BUILDING SYSTEMS

This Guide Specification is intended to be used for the development of an office master specification or in the preparation of specifications for a particular project. In either case, the Guide Specification must be edited to fit the conditions of use. Particular attention should be given to the deletion of inapplicable provisions, choosing appropriate options where indicated, and including necessary requirements where blank spaces are provided. Include necessary items related to a particular project.

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DISCLAIMER: Use of this Specification is totally voluntary. Each building designer retains the prerogative to choose their own design and commercial practices and has the responsibility to design and specify building systems to comply with applicable state and local codes, specifications and safety considerations.

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Specifier: *The notation [Specifier Note:] means that the following text is a specifier's note or sample.*

Guidespecification Scope and Terminology

- A. *This specification is for post-frame building systems designed by the designer of record. The post-frame building system includes building foundations, wall and roof structural framing and sheathing.*

Specifications for doors, trim, windows and fenestration may be supplied by other specifiers under sections of this specification. This specification does not include floor slab, plumbing, electrical, HVAC, or interior finishing.

- B. *This document includes performance and prescriptive specifications. Select appropriate choices to avoid conflicting requirements.*
- C. *This specification covers the design, materials, fabrication, shipment and erection for post-frame building systems.*
- D. ***This document is not a design tool; it is to be used as a specification development guide by the designer of record.***
- E. *Definitions:*
 - a. *Specifier: The party selecting the specifications for the project bid; A person or firm acting for a client who desires a bid letting.*
 - b. *Designer of Record: A licensed professional who takes overall responsibility for the project.*
 - c. *Bid Specification Drawings: Original drawings prepared by the specifier to accompany the written specifications to additionally explain the scope of the project.*
 - d. *Shop Drawings: Drawings prepared by the successful bidder to enumerate the structural details required to meet the intent of the project specification.*
 - e. *Submittals: Component drawings, system drawings and other specifications for components that may be provided by their producers.*
 - f. *Post-Frame Terminology: Definitions of many post-frame terms used in this document are defined at the NFBA website (www.nfba.org/post-frameterminology).*

GENERAL

1.1 GENERAL DESCRIPTION OF BUILDING SYSTEM

[Specifier Note: Use this Section carefully; restrict statements to describe components used to assemble the system].

A. Primary Framing:

[Posts embedded below grade to depth per designer of record]

[Posts attached above grade to precast concrete pier; pier embedment depth per designer of record]

[Posts attached above grade to cast-in-place concrete pier; pier embedment depth per designer of record]

[Posts attached to reinforced concrete grade beam; grade beam details and embedment depth per designer of record]

[Posts attached to cast-in-place concrete wall; concrete wall details and embedment depth per designer of record]

[Posts attached to masonry wall; masonry wall details and embedment depth per designer of record]

[Posts attached to cast-in-place concrete post and beam; post and beam details and embedment depth per designer of record]

[other, describe here]

[and]

[Intermediate posts embedded below grade to depth per designer of record]

[Intermediate posts attached above grade to precast concrete pier; pier embedment depth per designer of record]

[Intermediate posts attached above grade to cast-in-place concrete pier; pier embedment depth per designer of record]

[Intermediate posts attached to reinforced concrete grade beam; grade beam details and embedment depth per designer of record]

[Intermediate posts attached to cast-in-place concrete wall; concrete wall details and embedment depth per designer of record]

[Intermediate posts attached to masonry wall; masonry wall details and embedment depth per designer of record]

[Intermediate posts attached to cast-in-place concrete post and beam; post and beam details and embedment depth per designer of record]

[other, describe here]

and

[Roof trusses in main span]

[Roof rafters in main span]

[Roof trusses in outer spans]

[Roof rafters in outer spans]

[other, describe here]

B. Post Frame Type

[Clear span post-frame with trusses connected directly to posts]

[Clear span post-frame with trusses attached to headers]

[Clear span post-frame with rafters attached to headers]

[Post-frame with multiple spans and with trusses attached directly to posts]

[Post-frame with multiple spans and with trusses attached to headers]

[Post-frame with multiple spans and with rafters attached to header beams]

[Post-frame with multiple spans and with trusses in main span attached directly to posts and with rafters in outside spans attached to headers]

[Post-frame with multiple spans and with trusses in main span attached to headers and with rafters in outside spans attached to headers]

[other, describe here]

C. Primary dimensions

[Specifier Note: *If scissors trusses are used, the lower chord pitch should be specified in this section. Lower chord roof pitch to be input in Section 1.1E.]*

Preliminary bid specification drawings with these corresponding critical dimensions shall be provided to further clarify the following specifications:

1. For clear span post-frame buildings with single slope roof trusses.

[ft. ___ in.] inside clearance from finished floor surface at low eave.

[ft. ___ in.] building width out-to-out of [posts] [girts]

[___/12] lower chord pitch

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2. For clear span post – frame buildings with roof trusses with two equal slopes

[ft. ___ in.] inside clearance from finished floor surface at low eave.

[ft. ___ in.] building width out-to-out of [posts] [girts]

[___/12] lower chord pitch on left side of truss

[___/12] lower chord pitch on right side of truss

3. For clear span post – frame buildings with roof trusses with two unequal slopes.

[ft. ___ in.] inside clearance from finished floor surface at low eave.

[ft. ___ in.] building width out-to-out of [posts] [girts]

[___/12] lower chord pitch on left side of truss

[___/12] lower chord pitch on right side of truss

4. For clear span monoslope post-frame building with roof rafters

[ft. ___ in.] inside clearance from finished floor surface at low eave.

[ft. ___ in.] building width out-to-out of [posts] [girts]

[___/12] rafter pitch.

5. For clear span post frame building with roof rafters-two equal slopes.

[ft. ___ in.] inside clearance from finished floor surface at low eave.

[ft. ___ in.] building width out-to-out of [posts] [girts]

[___/12] rafter pitch

6. For clear span post frame building with roof rafters-two unequal slopes

[ft. ___ in.] inside clearance from finished floor surface at low eave on left side.

[ft. ___ in.] inside clearance from finished floor surface at low eave on right side.

[ft. ___ in.] building width out-to-out of [posts] [girts]

[___/12] rafter pitch on left side

[___/12] rafter pitch on right side

7. For post-frame buildings with multiple spans and with roof trusses and equal upper chord pitch in each span
[___ ft. ___ in.] inside clearance from finished floor surface at low eave in main(center) span.
[___ ft.] building width out-to-out of posts in main (center) span.
[___/12] lower chord pitch in main (center) span]

[___ ft. ___ in.] inside clearance from finished floor surface at low eave in left outer span].
[___ ft. ___ in.] inside clearance from finished floor surface at low eave in right outer span].
[___ ft.] width out-to-out of [posts] [*other, describe here*] in left outer span
[___ ft.] width out-to-out of [posts] [*other, describe here*] in right outer span
[___/12] lower chord pitch in left outer span
[___/12] lower chord pitch in right outer span

8. For post-frame buildings with multiple spans and with gable roof trusses in main (center) span and rafters in outer spans and equal roof pitch in all spans.

[___ ft. ___ in.] inside clearance from finished floor surface at low eave in main (center) span.
[___ ft. ___ in.] width out-to-out of posts in main (center) span.
[___/12] lower chord pitch in main (center) span

[___ ft. ___ in.] inside clearance from finished floor surface at low eave in outer left span.
[___ ft. ___ in.] inside clearance from finished floor surface at low eave in outer right span.

[___ ft. ___ in.] width out-to-out of [posts] [*other, describe here*] in left outer span.
[___ ft. ___ in.] width out-to-out of [posts] [*other, describe here*] in right outer span.
[___/12] rafter pitch in outer span

9. Post-frame with multiple spans and with rafters attached to header beams in all spans and equal roof pitch in all spans.

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[ft. ___ in.] inside clearance from finished floor surface at low eave in main (center) span.
[ft. ___ in.] width out-to-out of posts in main (center) span.
[___/12] rafter pitch in main (center) span

[ft. ___ in.] inside clearance from finished floor surface at low eave in left outer span.
[ft. ___ in.] inside clearance from finished floor surface at low eave in right outer span.
[ft. ___ in.] width out-to-out of [posts] **[other, describe here]** in left outer span.
[ft. ___ in.] width out-to-out of [posts] **[other, describe here]** in right outer span.
[___/12] rafter pitch in outer spans

10. **[Other, specifier describe primary framing criteria if not included in 1.B.1 to 9]**

D. Primary Spacings

[Specifier's Note: Interior post spacing shall be on center, except for end bays which shall be from center of first interior bay post to the outside of endwall framing. Total building length is specified from outside of end wall framing to outside of end wall framing.]

End bay post: [ft. in]
Interior post : [ft. in.] on center
[Truss spacing: [ft. in.] on center in main span]
[Truss spacing: [ft. in.] on center in outer spans]
[Rafter spacing: [ft. in.] on center in main span]
[Rafter spacing: [_____ in.] on center in outer spans]
Total Building Length: [ft. in.]

E. Roof Pitch: [1] [2] [3] [4] [5] [6][] in 12 in main span.
 [1] [2] [3] [4] [5] [6][] in 12 in left outer span
 [1] [2] [3] [4] [5] [6][] in 12 in right outer span
 [other, describe here]

F. Secondary Framing: [Purlins], [girts], [], and other items as detailed.

G. Lateral Bracing if required and so noted on bid specification drawings for resisting and distributing lateral forces.

H. Wall Details:

1. General: [Open one side] [Open two sides] [Open three sides] [Open four sides] [*other, describe here*]
2. Exterior Sheathing: [Preformed steel panels] [plywood panels] [OSB panels] [*other, describe here*]
3. Interior Sheathing: [None] [Preformed steel panels] [plywood panels] [OSB panels] [Gypsum wallboard] [Fiberglass Reinforced panels (FRP)] [*other, describe here*]
4. Insulated: [Yes] [No]
5. Other [*list*]:

I. Roof Details:

1. General: [Closed ridge] [Open ridge] [Solar panels] [Light panels] [*other, describe here*]
2. Exterior sheathing: [Preformed steel panels] [plywood panels] [OSB panels] [*other, describe here*]
3. Ceiling sheathing: [None] [Preformed steel panels] [plywood panels] [OSB panels] [Gypsum wallboard] [Fiberglass Reinforced panels (FRP)] [*other, describe here*]
4. Insulated: [Yes] [No]
5. Other [*list*]: _____ .

- J. Accessories: [Ventilators], [louvers] [hardware],[gutters], [downspouts], [lightning protection] [*other, describe here*].

1.2 RELATED SECTIONS

[Specifier Note: List the related sections that specify the installation of products specified in this specification and indicate the specific items.]

- A. Section 011000: Summary of Work
- B. Section 033000: Cast In-Place Concrete
- C. Section 033053: Miscellaneous Cast In-Place Concrete (Footings)
- D. Section 034100: Precast Structural Concrete
- E. Section 051200: Structural Steel Framing
- F. Section 052100: Steel Joist Framing

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- G. Section 054000: Cold-Formed Metal Framing
- H. Section 06100: Rough Carpentry
- I. Section 061053: Miscellaneous Rough Carpentry
- J. Section 061063: Exterior Rough Carpentry
- K. Section 061600: Sheathing
- L. Section 061800: Glued-Laminated Construction
- M. Section 061753: Shop-Fabricated Wood Trusses
- N. Section 066400: Plastic Paneling
- O. Section 072100: Thermal Insulation
- P. Section 072700: Air Barriers
- Q. Section 073113: Asphalt Shingles
- R. Section 074113: Metal Roof Panels
- S. Section 074213: Metal Wall Panels
- T. Section 076100: Sheet Metal Roofing
- U. Section 076200: Sheet Metal Flashing and Trim
- V. Section 077100: Roof Specialties
- W. Section 077200: Roof Accessories
- X. Section 079200: Joint Sealants
- Y. Section 079500: Expansion Control
- Z. Sections 081113 through 083613: Doors
- AA. Sections 085000 through 085313: Windows
- AB. Section 086200 and 087100: Skylights
- AC. Section 087100: Door Hardware

- AD. Section 088000: Glazing
- AE. Section 089000: Louvers and Vents
- AF. Section 099100: Painting
- AG. Section 099113: Exterior Painting
- AH. Section 099123: Interior Painting
- AI. Section 221423: Stormwater Drainage Piping Specialties
- AJ. Section 311000: Site Clearing
- AK. Section 312000: Earth Moving
- AL. Section 334100: Storm Utility Drainage Piping
- AM. *[other, identify here]*

1.3 REFERENCES

[Specifier Note: List reference standards and guides that are included within the text of this Specification. [Edit the following as required for project conditions.] Use the latest edition of the specification adopted/referenced by the township, county, municipality or state in which building is located .

- A. AWC (NDS)- National Design Specification for Wood Construction
- B. IBC-International Building Code.
- C. ANSI/ASCE 7 – Minimum Loads for Buildings and Other Structures.
- D. ANSI/TPI 1 - National Design Standard for Metal Plate Connected Wood Truss Construction.
- E. APA- Engineered Wood Construction Guide.
- F. APA PDS 04-Panel Design Specification.
- G. APA-Roof Sheathing Fastening Schedules for Wind Uplift.
- H. ASAE EP 484 Diaphragm Design of Metal-Clad, Post-Frame Rectangular Buildings. ASABE Standards. St. Joseph, MI.
- I. ASAE EP 486. Post and Pole Foundation Design: Shallow Post Foundation Design. ASABE Standards. St. Joseph, MI.
- J. ASAE EP 559. Design Requirements and Bending Properties for Mechanically Laminated Columns. ASABE Standards. St. Joseph, MI.

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- K. ASCE 32- Design and Construction of Frost Protected Shallow Foundations.
- L. ASTM A 123-Specification for Zinc (Hot-dip Galvanized) Coating on Iron and Steel Products
- M. ASTM A 153-Specification for Zinc (Hot-dip Galvanized) Coating on Iron and Steel Hardware.
- N. ASTM A 653/A 653M –Specification for Steel Sheet, Zinc-coated Galvanized or Zinc-iron alloy-coated Galvanealed by the Hot-dip Process.
- O. ASTM C665 - Specification for Mineral-Fiber Blanket Thermal Insulation
- P. ASTM D 1494 - Test Method for Diffused Light Transmission Factor of Reinforced Plastic panels, 1997.
- Q. ASTM F 1667 – Specification for Driven Fasteners: Nails, Spikes and Staples.
- R. AWPA U1- USE CATEGORY SYSTEM: User Specification for Treated Wood Products.
- S. BCSI. Building Component Safety Information. Guide for Good Practice for Handling, Installing, Restraining & Bracing of Metal Plate Connected Wood Trusses.
- T. Climate Atlas of the U. S. 1968. Department of Commerce.-ESSA and Technical Papers 25, 37, 41 and 49. U.S. Department of Commerce.
- U. [Dipper.NWS.NOAA.gov/hdsc/pfds/orb/two letter state abbreviation_pfds.html](http://Dipper.NWS.NOAA.gov/hdsc/pfds/orb/two_letter_state_abbreviation_pfds.html). National Weather Service Rainfall Data Website.
- V. ANSI/AITC A 190.1 – Structural Glued Laminated Timber
- W. EWS X450 – Product Guide – Glulam for Light Frame Construction and Manufactured Housing .
- X. NFBA - Accepted Practices for Post Frame Building Construction: Framing Tolerances.
- Y. NFBA - Accepted Practices for Post-Frame Building Construction: Metal Panel and Trim Installation Tolerances.
- Z. SSPC - Paint 15 – Steel Joist Shop Primer; Society for Protective Coatings; 1999 (Part of Steel Structures Painting Manual, Vol. Two)
- AA. SSPC – Paint 20 – Zinc-Rich Primers (Type I, “Inorganic”, and Type II, “Organic”); Society for Protective Coatings; 1991 (Part of Steel Structures Painting Manual, Vol. Two).
- AB.ACI 318- Building Code Requirements for Structural Concrete.
- AC. AISI S214-07 – North American Standard for Cold-Formed Steel Framing – Truss Design

1.4 DESIGN REQUIREMENTS

[Specifier Note: Use this Article carefully; restrict statements to identify system design requirements only. For example, refer to Section 2.10 and 2.11 for specification of insulation thickness.]

- A. The building shall be designed by the Designer of Record as a complete system. All structural members and connections shall be the responsibility of the Designer of Record. All components of the system shall be specified by the Designer of Record. This includes, but is not limited to, components such as foundations, primary framing, secondary framing, and lateral bracing.

- B. Design Code:

Design load application shall be in accordance with [**Specifier Note:** Choose one]

[edition] of [IBC]

[edition] of [ASCE-7]

[Applicable national or local building code, **specify the code and edition**].

- C. Building Category:

For purposes of design load calculation, the building shall be classified as type [1], [2], [3], [4] in accordance with the [] edition of ASCE 7.

- D. Dead Loads:

The dead load shall be the weight of the post-frame building system materials as determined by the Designer of Record.

- E. Collateral Loads:

The collateral load shall be [___psf] or as shown on the bid specification drawings. Collateral Loads shall not be carried by the roof sheathing.

[Specifier Note: Collateral Loads consist of Sprinklers, Mechanical and Electrical Systems, and Ceilings.]

- F. Live Loads:

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The building roof structural members shall be capable of supporting a minimum uniform gravity live load of [20 psf] [psf reduced in accordance with code], but not less than 12 psf.

All floors shall be capable of supporting the minimum uniform gravity loads of [psf] and minimum concentrated loads of [lbs] per the [edition] of [ASCE 7], [IBC] per the designer of record.

G. Snow Loads:

The design snow load shall be based on a design ground snow load of [psf] using an exposure factor of [], slope factor of [], and temperature factor of [] per [] edition of [ASCE 7] [IBC] per the designer of record.

[Specifier Note: All sources of snow drifting should be clearly identified in the contract documents, i.e. adjacent structures, roof height changes, etc. The building components must resist the subsequent increases in the design snow loads.]

H. Wind Load:

The design wind speed for the post-frame building system shall be [mph], based on the 3-second gust, an importance factor of [], and an exposure category of [] for an [enclosed], [partially enclosed], [open] building per the [] edition of [ASCE 7], [IBC] and the designer of record.

I. Seismic Loads:

The seismic load shall be [psf] based on seismic design category [A] [B] [C] [D], seismic site class [A] [B] [C] [D] [E] [F], spectral acceleration parameters [$S_s =$] and [$S_1 =$], occupancy category [I] [II] [III] [IV] and building type response modification coefficient, R, of [] per the [] edition of [ASCE 7] [IBC] per the designer of record.

J. Rainfall Intensity:

[All exterior gutters and downspouts shall be designed for rainfall intensity based upon a 5-year recurrence interval for a five-minute duration.] [Other, specify:] per designer of record.

[All interior gutters, valleys and downspouts shall be designed

for rainfall intensity based upon a 25-year recurrence interval for a five-minute duration.] [Other, specify:] per designer of record.

[Specifier Note: *Rainfall intensity can be found in the Climate Atlas of the U.S. or at [dipper.NWS.gov/hdsc/pfds/orb/two letter state abbreviation_pfds.html](http://dipper.NWS.gov/hdsc/pfds/orb/two%20letter%20state%20abbreviation_pfds.html).*

- K. Deflection requirements shall be in accordance with the applicable provisions of the [] edition of [IBC] [***other, describe here***].

[Specifiers Note: *L is the span of the element between support points, and H is the eave height of the building.*

-OR-

Deflections shall be limited as follows:

Primary Framing:

L/[180] [] for roof snow load.

H/[120] [] for wind load.

Secondary Framing:

L/[150] [] for roof dead load + roof snow load; but not less than that required to maintain positive drainage for the greater of dead load + 1/2 roof snow load or dead load + 5 psf.

L/[150] [] for wind load on walls and roof.

L/[180] [] for roof snow load (but not less than 20 psf) on sheeting.

- L. Site Conditions:

The following site features and adjacent structures must be considered in the design. Building is [] ft. away from a [] wide x [] ft. long x [] ft. high adjacent building, as shown on specification drawings.

1.5 SUBMITTALS (From the Designer of Record to the Specifier)

Note: All design drawings [and design calculations] shall bear the seal and signature of a licensed design professional registered in the state of [].

- A. Design Drawings: Indicate assembly dimensions, locations of structural members, connections, attachments, openings, cambers, loads, and [***other, describe here***]; wall and roof system

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dimensions, panel layout, general construction details, anchorages and method of anchorage, installation [and]; framing anchor bolt settings, sizes, and locations from datum, foundation loads and [*other, describe here*].

- B. Product Data: Provide data on [profiles], [component dimensions], [fasteners], [color selection], [*other, describe here*]
- C. Vendor/Supplier's Installation Instructions: Indicate preparation requirements, assembly sequence, [*other, describe here*]

1.6 QUALITY ASSURANCE

- A. Structural framing and sheathing shall be the design of a licensed Professional Engineer/Architect.
- B. The builder shall have specialized experience in the construction of post-frame building systems for a period of at least [] years.

1.7 WARRANTY

- A. The post-frame contractor shall provide a workmanship warranty of [] year(s) for prevention of roof leaks, and other water infiltration.
- B. Component installation shall be warranted by the installer for [] year(s).
- C. Material suppliers shall provide manufacturers' standard material warranties.
- D. Corrosion warranty terms for sheathing fasteners and sheathing [shall] [are not required to] be of equivalent duration.

PRODUCTS

[Specifier Note: Edit the following descriptive specifications to identify project requirements.]

[Specifiers Note: See www.nfba.org for a listing of suppliers of pre-engineered post-frame building systems and components]

2.1 MATERIALS – POST FOUNDATION

- A. Post foundation materials shall be:

[Pressure preservative treated wood posts and concrete footer pads]
[Precast concrete piers]
[Cast-in-place concrete piers]
[Cast-in-place reinforced concrete grade beams]
[Cast-in-place concrete foundation wall]
[Cast-in-place concrete post and beam]
[Masonry block foundation wall]
[other, describe/

B. Concrete in all post foundation components shall have minimum compressive strength of 2500 psi per IBC.

C. Wood products used in foundations must be::

[Protected with pressure preservative chemical treatments to retention levels for Use Category UC4B or better per AWWA-U1]

-OR-

[Covered with a protective PVC cover per designer of record and protected with preservative chemical treatments to retention levels for Use Category [UC3A] [UC3B] [UC4A] [UC4B] [UC4C] **[other, specify]** per AWWA-U1]

D. Backfill around below grade portions of post foundations shall be [native material] **[other, describe here]**

E. Suppliers of post foundation products for post-frame building systems are listed on the NFBA website: www.nfba.org under Foundation Options.

2.2 MATERIALS – POSTS

A. Wall posts are [Solid sawn] [Glued-laminated] [Nail-laminated] [Structural Composite Lumber] [**other, describe here**] structural wood products identified in the [] edition of [NDS] [**other, describe here**].

OR

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Wall posts are [steel] [*other, describe here*] products identified in the [] edition of [AISC] [*other, describe here*]

- B. Portions of wood posts below grade and less than 8 in. above grade must be:

[Protected with pressure preservative chemical treatments to retention levels for Use Category UC4B or better per AWP-U1]

-OR-

[Covered with a protective wood cover per designer of record and protected with preservative chemical treatments to retention levels for Use Category [UC3A] [UC3B] [UC4A] [UC4B] [UC4C] [*other, specify*] per AWP-U1]

-OR-

[*Other, describe here*]

- C. All in place structural performance required connection hardware in the portion of the post below grade and 8 in. or less above grade shall be [hot dipped galvanized per ASTM 153] [stainless steel type 304 as designated by the American Institute of Iron and Steel(AISI)] [stainless steel type 316 as designated by the American Institute of Iron and Steel(AISI)] [*other, describe here*] per designer of record.
- D. Suppliers of post products for post-frame building systems are listed on the NFBA website: www.nfba.org.

2.3 MATERIALS – SKIRTBOARDS

- A. Skirtboards are [Solid sawn] [Glued-laminated] [Structural Composite Lumber] [*other, describe here*] products identified in the [] edition of NDS [*other, describe here*].
- B. Wood skirtboards must be pressure preservative treated with preservative chemical treatments and to retention levels per [AWPA-UC4A or better]
- C. All connection hardware used to attach the skirtboards shall be hot dipped galvanized per ASTM 153] [stainless steel type 304 as designated by the American Institute of Iron and Steel(AISI)] [stainless steel type 316 as designated by the American Institute of Iron and Steel(AISI)] [*other, describe here*] per designer of record.

- D. Suppliers of girt products for post-frame building systems are listed on the NFBA website: www.nfba.org.

2.4 MATERIALS – WALL GIRTS

- A. Wall girts are [Solid sawn] [Glued-laminated] [Structural Composite Lumber] [*other, describe here*] structural wood products identified in the [] edition of [NDS] [*other, describe here*].

OR

Wall girts are [steel] [*other, describe here*] products identified in the [] edition of [AISC] [*other, describe here*]

- B. Wall girts shall satisfy the wind load requirements of Section 1.4.H plus any additional lateral loadings exerted by stored materials acting directly on the wall sheathing.
- C. All wall girts less than 8 in. above grade must be pressure preservative treated with preservative chemical treatments and to retention levels for Use Category UC4B or better per AWP-U1]
- D. Wall girts are [placed directly on the outside face of wall columns] [inset between wall columns with outside edge flush with outside edge of wall column] [*other, describe here*] per the designer of record.
- E. Wall girts are attached to the posts with fastener schedules specified by the designer of record.
- F. All in place structural performance required connection hardware in the girts 8 in. or less above grade shall be [hot dipped galvanized per ASTM 153] [stainless steel type 304 as designated by the American Institute of Iron and Steel(AISI)] [stainless steel type 316 as designated by the American Institute of Iron and Steel(AISI)] [*other, describe here*] per designer of record.
- G. All in place structural performance required connection hardware in the portion of copper-based pressure-treated girts 8 in. or more above grade shall be [hot dipped galvanized per ASTM 153] [stainless steel type 304 as designated by the American Institute of Iron and Steel(AISI)] [stainless steel type 316 as designated by the

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American Institute of Iron and Steel(AISI) [*other, describe here*] per designer of record.

- H. All in place structural performance required connection hardware in the portion of untreated girts 8 in. or more above grade shall be [bright] [Electro-plated] [coated] [hot dipped galvanized per ASTM 153] [stainless steel type 304 as designated by the American Institute of Iron and Steel(AISI)] [stainless steel type 316 as designated by the American Institute of Iron and Steel(AISI)] [*other, describe here*] per designer of record.
- I. Suppliers of girt products for post-frame building systems are listed on the NFBA website: www.nfba.org.

2.5 MATERIALS – POST HEADERS

- A. Post Headers are [Solid sawn] [Glued-laminated] [structural composite lumber] wood products identified in the [] edition of [NDS] [*other, describe here*].

OR

[Parallel chord plate connected trusses designed in accordance with the [] edition of [NDS] [*other, describe here*]].

OR

[Wide flange] [*other, identify here*] steel girders identified in the [] edition of [AISC] [*other, describe here*]

- B. Post headers are attached to [the outside face of the post] [the inside face of the post] [both the inside and outside faces of the post] [the inside face of a top post notch][the outside face of a top post notch] [both the inside and outside faces of top post notches] [*other, describe here*] with connector hardware per the designer of record.
- C. Suppliers of girt products for post-frame building systems are listed on the NFBA website: www.nfba.org.

2.6 MATERIALS - WALL SHEATHING

- A. Wall sheathing shall satisfy the wind load requirements of Section 1.4.H plus any additional lateral loadings exerted by materials acting directly on the wall sheathing.

- B. Wall sheathing consists of [Ribbed steel panels] [Ribbed aluminum alloy panels] [Structural plywood panels] [Oriented strand board structural panels] [T&G planking] [*other, describe here*] attached to outside edge of wall [girts] [posts] in accordance with [manufacturer's specifications] [supplier's specifications] [design drawings] [designer of record] [*other, describe here*].
- C. [Metal sheathing substrate shall be [G-60] [G-90] [G-100] [Galvalume Az-55] [*other, describe here*] per [ASTM 653/A 653M] per designer of record. Fasteners used to through-fasten painted corrugated steel panels [shall] [are not required to] match the color of adjacent cladding.].

OR

[Structural plywood or OSB sheathing panels shall be of the grade and type per the designer of record and fabricated in accordance with APA PDS 04]

OR

[other, describe here]

- D. Exterior Surfaces: The exterior wall finish is:

[Pre-painted metal: Precoated steel with [polyester] [silicone polyester] [polyvinylidene fluoride (PVDF)] [*other, describe here*] finish with color [from manufacturer's standard colors] [selected by designer of record] [*other, describe here*]]

OR

[Painted wood: [paint] [*other, describe here*] in color [selected from manufacturer's standard colors] [selected by designer of record] [*other, describe here*]]

OR

[Pre-finished vinyl panels per designer of record]
[Pre-finished mortarless masonry per designer of record]
[Painted mortarless masonry per designer of record]
[Pre-finished mortared masonry per designer of record]
[Painted mortared masonry per designer of record]
[Pre-finished masonry per designer of record]

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[Painted masonry per designer of record]
[*other, describe here*]

E. Interior Surfaces:

[Metal wall panels: Precoated steel with wash coat of
[(polyester) acrylic] [silicone polyester] [*other, describe here*] per
[manufacturer] [designer of record]

OR

[Wood wall panels: [Unfinished] [Painted] per specifier].

OR

[Gypsum wall board: [Unfinished] [Painted] per specifier]

[*other, describe here*]

F. Suppliers of wall sheathing products for post-frame building systems are listed on the NFBA website: www.nfba.org.

2.7 MATERIALS – WALL INSULATION

A. Type and Quantity

[Wall insulation shall be ASTM C665 conforming [semi-rigid],
[batt] [blanket] [*other, describe here*] glass fiber type, [unfaced]
[faced with reinforced [foil] [white vinyl] with UL flame spread
classification of [25 or less] [*other, describe here*] where exposed
and shall have a material R-value of [] hr-ft²-F/Btu per
designer of record.]

-OR-

[Wall insulation shall be [blown-in cellulose] [foamed-in-place]
[*other, describe here*] with exposed surfaces protected with a liner
with UL flame spread classification of [25 or less] [*other, describe
here*] and shall have a material R-value of [] hr-ft²-F/Btu per
designer of record.]

-OR-

[Wall insulation shall be ASTM E84 conforming rigid board type
with a flame spread index of not more than 75 and a smoke-
development index of not more than 450 when tested in the

maximum thickness and shall have a material R-value of [] hr-ft²-F/Btu [other board insulation system: describe.] per designer of record.]

-OR-

[Insulate walls to overall U-value of [] Btu/hr-ft²-F/ to be verified by designer of record.]

- B. Reflective insulation [shall] [shall not] be installed in the wall [and shall be installed relative to the other insulation materials] per the designer of record.
- C. Suppliers of wall insulation products for post-frame building systems are listed on the NFBA website: www.nfba.org.

2.8 MATERIALS – PRIMARY ROOF FRAMING

- A. All roof framing shall satisfy the load requirements of Section 1.4.C through 1.4.I except dead load for purlins only includes contributions from the purlins and sheathing and other roof coverings.

- B. The primary roof framing shall consist of:

[[Metal plate connected wood] [Glued-laminated wood][Structural composite lumber wood][Parallel chord metal plate connected wood] [structural steel] [*other, describe here*] trusses designed and fabricated in accordance with the [] edition of [TPI1] [NDS] [AISI S214] [AISC *Steel Construction Manual*] [*other, describe here*] per the designer of record.]

OR

[[Solid sawn wood] [Glued-laminated wood] [_____ structural composite lumber] [structural steel] [light gauge structural steel] rafters designed and fabricated in accordance with the [] edition of [TPI1] [NDS] [AISI S214] [AISC *Steel Construction Manual*] [*other, describe here*] per the designer of record.].

- C. Suppliers of primary roof framing products for post-frame building systems are listed on the NFBA website: www.nfba.org.

2.9 MATERIALS – ROOF PURLINS

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- A. Roof purlins shall satisfy the load requirements of Section 1.4.C through 1.4.H except dead load for purlins includes only the contributions from the purlins, sheathing, and other roof coverings.
- B. Roof purlins shall be [Solid sawn] [Glued-laminated] [Structural Composite Lumber] [*other, describe here*] structural wood products identified in the [] edition of [NDS] [*other, describe here*] per the designer of record.

OR

Roof purlins shall be [light gauge structural steel] [*other, describe here*] products identified in the [] edition of [AISC] [*other, describe here*] per the designer of record.

- C. Roof purlins shall be placed [directly on the top of trusses] [directly on top of rafters] [inset between trusses with top edge flush with top edge of truss] [inset between each rafter with top edge flush with top edge of rafter] [*other, describe here*] with strong axis oriented per shop drawings.
- D. Roof purlins shall be attached to the [truss] [rafter] with fastener types and schedules per the designer of record.
- E. Suppliers of purlin products for post-frame building systems are listed on the NFBA website: www.nfba.org.

2.10 MATERIALS – ROOF SHEATHING

- A. All roof sheathing shall satisfy the load requirements of Section 1.4.C through 1.4.H except dead load only includes contributions from the sheathing and other sheathing coverings.
- B. Roof sheathing consists of [Ribbed steel panels] [Ribbed aluminum alloy panels] [Structural plywood panels] [Oriented strand board structural panels][Standing seam roof panels] [*other, describe here*] to top edge of roof [purlins] [trusses] [rafters] in accordance with [manufacturer's specifications] [supplier's specifications] [shop drawings] [designer of record] [*other, describe here*]. Fasteners used to through-fasten painted corrugated steel panels [shall] [are not required to] match the color of adjacent cladding.

- C. [Metal roof sheathing substrate shall be [G-60] [G-90] [G-100] [Galvalume Az - 55] [*other, describe here*] per [ASTM 653/A 653M] [*other, describe here*] per designer of record].

OR

[Structural plywood or OSB roof sheathing panels shall be of the grade, thickness, size and type per the designer of record and fabricated in accordance with APA PDS 04]

OR

[*other, describe here*]

- D. Exterior Surfaces: The exterior roof finish is:

[Pre-painted metal: Precoated steel of [polyester] [silicone polyester] [polyvinylidene fluoride (PVDF)] [*other, describe here*] finish with color [from manufacturer's standard colors] [selected by designer of record] [*other, describe here*]]

OR

[Asphalt shingles of grade [] and color [] [selected from manufacturer's standard colors] [selected by designer of record] [*other, describe here*]]

OR

[Metal shingles of grade [] and color [] [selected from manufacturer's standard colors] [selected by designer of record] [*other, describe here*]]

-OR-

[Wood shingles of grade [] and color [] [selected from manufacturer's standard colors] [selected by designer of record] [*other, describe here*]]

-OR-

[[Ceramic tile] [Concrete tile] of grade [] and color [] [selected from manufacturer's standard colors] [selected by designer of record] [*other, describe here*]]

-OR-

[Slate of grade [] and color [] [selected from manufacturer's standard colors] [selected by designer of record] *[other, describe here]*]

-OR-

[Other, describe here]

E. Interior Surfaces:

[Metal panels: Precoated steel with wash coat of [(polyester) acrylic)] [silicone polyester] *[other, describe here]* per [manufacturer] [designer of record]]

OR

[Wood panels: [Unfinished] [Painted] per designer of record].

OR

[other, describe here]

F. Suppliers of roof sheathing products for post-frame building systems are listed on the NFBA website: www.nfba.org.

2.11 MATERIALS – [ATTIC] [ROOF] INSULATION

[Specifiers note: If insulation specified in both attic and roof areas, insert this section twice, once for the roof insulation and once for the attic insulation.]

A. Type and Quantity

[[Attic] [Roof] insulation shall be ASTM C665 conforming [semi-rigid], [batt] [blanket] *[other, describe here]* glass fiber type, [unfaced] [faced with reinforced [foil] [white vinyl] with UL flame spread classification of [25 or less] *[other, describe here]* where exposed and shall have a material R-value of [] hr- ft²-F/Btu per designer of record.]

-OR-

[[Attic] [Roof] insulation shall be ASTM E84 conforming rigid board type with a flame spread index of not more than 75 and

a smoke-development index of not more than 450 when tested in the maximum thickness and shall have a material R-value of [] hr-ft²-F/Btu [*other board insulation system: describe.*] per designer of record.]

-OR-

[[Attic] [Roof] insulation shall be [blown-in cellulose] [foamed-in-place] [*other, describe here*] with exposed surfaces protected with a liner with UL flame spread classification of [25 or less] [*other, describe here*] and shall have a material R-value of [] hr-ft²-F/Btu per designer of record.]

-OR-

[Insulate [attic] [roof] to overall U-value of [] Btu/hr-ft²-F per designer of record.]

- B. Reflective insulation [shall] [shall not] be installed in the [roof] [attic] [and shall be installed relative to the other insulation materials] per the designer of record.
- C. Suppliers of attic/roof insulation products for post-frame building systems are listed on the NFBA website: www.nfba.org

2.12 MATERIALS – TRIM

- A. Trim materials include flashings, internal and external corners, closure pieces, [fascia], [infills], [caps], and [*other, describe here*] All trim shall be compatible with the wall/roofing sheathing and sheathing finish materials per product supplier.
- B. Suppliers of trim products for post-frame building systems are listed on the NFBA website: www.nfba.org.

2.13 PERSONNEL DOORS AND FRAMES

- A. Doors and frames shall be designed by the manufacturer to meet the wind load provisions as specified in Section 1.4.H.

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[Specifier Note: Select one of the specifying methods indicated below. If the first method is used, ensure manufacturer's product criteria are accurately described]

B. [Door and frame type as shown on [shop drawings] [schedules]]

-OR-

[Pre-manufactured doors supplied by component manufacturers:]

<u>No</u>	<u>Supplier</u>	<u>Door Type</u>	<u>Size</u>	<u>Model No.</u>
1.	[]	[]	[]	[]
2.	[]	[]	[]	[]
3.	[]	[]	[]	[]

-OR-

[Other, [*describe here*]:]

C. Suppliers of personnel door products for post-frame building systems are listed on the NFBA website: www.nfba.org.

2.14 MATERIALS - DOORS AND FRAMES, OTHER THAN PERSONNEL

A. Doors and frames shall be designed by the manufacturer to meet the wind load provisions as specified in Section 1.4H.

[Specifier Note: Select one of the specifying methods indicated below. If the first method is used, ensure manufacturer's product criteria are accurately described]

B. [Building system manufacturer's standard door and frame type as shown on [shop drawings], [schedules].]

OR

[Pre-manufactured doors supplied by component manufacturers:]

<u>No</u>	<u>Supplier</u>	<u>Door Type</u>	<u>Size</u>	<u>Model No.</u>
1.	[]	[]	[]	[]
2.	[]	[]	[]	[]
3.	[]	[]	[]	[]

-OR-

[Other, [*describe here*]:] _____

- C. Suppliers of non-personnel door products for post-frame building systems are listed on the NFBA website: www.nfba.org.

2.15 MATERIALS - WINDOWS

- A. Windows shall be designed by the manufacturer to meet the wind load provisions as specified in Section 1.4H.

[Specifiers Note: Select one of the specifying methods indicated below. If the first method is used, ensure manufacturer's product criteria are accurately described.]

- B. [Building system manufacturer's standard window and frame type as shown on [shop drawings], [schedules].]

OR

- . [Pre-manufactured windows supplied by component manufacturers:]

No	Supplier	Window Type ^a	Size	Model No.
1.	[]	[]	[]	[]
2.	[]	[]	[]	[]
3.	[]	[]	[]	[]

-OR-

[Other, [*describe here*]:]

- C. Suppliers of window products for post-frame building systems are listed on the NFBA website: www.nfba.org.

2.16 MATERIALS – TRANSLUCENT PANELS

- A. Translucent roof panels shall be [] [clear] [white] translucent [insulated] panels capable of sustaining a 200 pound concentrated load on a one foot square located anywhere on the panel without rupture. Translucent panels shall be compatible with the roof panels. Panel weight shall be [8] [*other, describe here*] oz. per

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square foot surface area per the designer of record. The minimum variable light transmission shall be [60%] [*other, describe here*] per designer of record when measured in accordance with ASTM D1494.

- B. Translucent wall panels shall be [clear] [white] [*other, describe here*] translucent [insulated] panels and be compatible with the wall panels. Panel weight shall be [8] [*other, describe here*] oz. per square foot surface area and shall have a minimum fire retardant rating of [] per designer of record. The minimum variable light transmission shall be [60%] [*other, describe here*] per designer of record when measured in accordance with ASTM D1494.
- C. Translucent wall and roof panels shall have a self-ignition temperature of 650°F or greater when tested in accordance with ASTM D1929’
- D. Translucent wall and roof panels shall have [a smoke-development index not greater than 450 when testing in accordance with ASTM E84] [a smoke-development index not greater than 75 when tested in the thickness intended for the use in accordance with ASTM D2843] and shall conform to combustibility classification [Class CC1] [Class CC2].
- E.. Suppliers of translucent panel products for post-frame building systems are listed on the NFBA website: www.nfba.org

2.17 MATERIALS - ACCESSORIES

[*Specifier Note: Describe ventilator type to be used; continuous ridge type, intermittent ridge type, end wall type, damped, exhaust grilles, gravity vent, screens, operators.*]

- A. Ridge Ventilator: [Open ridge] [linear ridge] [continuous ridge] [round stationary] [*other, describe here*] with [screens] dampers] operators].
- B. Eave Ventilators: [Open eaves] [Linear ridge vents] [Intermittent ridge vents] per designer of record.
- C. Wall Louvers: Wall louver type and details per [manufacturer] [designer of record]. Louvers shall be designed by the manufacturer to meet the wind load provisions as specified in Section 1.4.I.

- D. Provide framing for all door, window, and other openings in building envelop per [manufacturer's specifications] [designer of record].
- E. Curbs for HVAC equipment, skylights, hatches, etc. shall be compatible with roof panel and sealed against water penetration in accordance with building manufacturer's instructions. Curbs shall accommodate the expansion and contraction movement of roof sheathing.
- F. Select rain gutters and downspouts to meet requirements of Section 1.4.J from [manufacturer's] [supplier's] specifications or as per the designer of record.
- G. Provide lightning protection per designer of record.
- H. [*other, describe here*]

2.18 FABRICATION [*Specifier note: Select from this list as appropriate*]

- A. [Built-up wood post headers: Fabricate using wood grade and numbers and type fasteners per the designer of record.]
- B. [Nail-laminated wood posts: Fabricate per [ASAE EP 559] [designer of record].]
- C. [Roof trusses: Fabricate per [TPI 1] [AISC] [*other, describe here*].]
- D. [Glued-laminated products: Fabricate per [] edition of [EWS X440] [ANSI/AITC A 190.1] [*other, describe here*].]

EXECUTION

3.1 EXAMINATION

A. Inspection:

1. Before start of installation, contractor shall carefully inspect installed Work of other trades affecting construction of the post frame building. Verify that all such work is complete to the point where installation of the post-frame building may properly commence.
2. Verify that the work of this section may be installed in accordance with all applicable codes and regulations, and with original design as shown and indicated on the shop drawings approved by the designer of record.
3. Discrepancies: In the event of a discrepancy, installer shall immediately notify the designer of record. Installation shall not proceed until discrepancies and/or unsatisfactory conditions have been fully resolved and/or approved as agreed by the designer of record and the installer.

3.2 ERECTION

A. General: Work shall proceed in accordance with contractors current, written instructions and as per approved design specifications and approved shop drawings for erection of post-frame building systems.

- a.1. Install all foundations, roof and wall structural elements, building components, and accessories as shown in the approved design shop drawings or in component supplier instruction sheets.
- a.2. Install all connections between indicated structural components per design drawings:

[footer and post]

[footer and concrete pier]

[post and concrete pier]

[post and concrete floor slab]

[post and concrete foundation wall]

[post and masonry foundation wall]

[post and grade beam]

[post and concrete post and beam foundation]

[post and roof truss]

[post and post header]

[roof truss and post header]
[roof rafter and post header]

[purlin and truss]
[purlin and rafter]

[wall girt and post]

[sheathing and purlin]
[sheathing and wall girt]

[sheathing and roof rafter]
[sheathing and roof truss]

[roof diaphragm to top of endwall]

[*other, describe here*]

3. Install purlins and wall girts in the orientation shown in the shop drawings.
 4. Handle, install and brace all trusses during construction according to TPI's, HIB-Post Frame document.
 - 5.. Install required roof bracing as shown on the shop drawings.
 6. If applicable, install individual web member permanent lateral restraint at the locations shown on the sealed truss shop drawings.
 7. If applicable, install diagonal bracing to appropriate individual web members for permanent lateral restraint as specified by [the designer of record] [section B3 of BCSI for metal plate connected wood trusses] [CFSBCSI for cold-formed steel trusses] [*other, describe here*].
 8. Install permanent wind bracing in the wall system as shown on the shop drawings.
- B. Adjust all operating components as required to ensure that they operate in accordance with manufacturer's or supplier's recommendations.

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- C. Install all framing components to within tolerances recommended in the NFBA Framing Tolerances standard, “Accepted Practices for Post Frame Building Construction: Framing Tolerances.”
 - D. Install all metal panel and metal trim components to within tolerances recommended in NFBA’s Cladding Tolerances standard, “Accepted Practices for Post-Frame Building Construction: Metal Panel and Trim Installation Tolerances.”
 - E. Install all wood structural panels to within tolerances recommended in [APA PDS] [*other, describe here*].
 - F. Provide temporary restraint and bracing for the roof trusses during construction as recommended by [the post-frame contractor] [BCSI (for wood trusses)] [CFSBCSI (for cold-formed steel trusses)] [the designer of record][*other, describe here*].
 - G. Provide temporary wall bracing during construction as recommended by the [building contractor] [designer of record] [*other, describe here*].
 - H. Do not field cut or modify structural members without approval of the [designer of record] [post-frame contractor] [*other, describe here*].
 - I. All roof and wall accessories to be installed weathertight.
 - J. Translucent panels:
 - 1. Install in accordance with manufacturer's instructions and details to assure weathertightness..
 - 2. Coordinate panel installation with installation of roofing and wall systems and related flashings and trims.
 - K. Gutter, downspout, flashings and trim
 - 1. Install gutters and downspouts, flashings and trim in accordance with manufacturer's instructions.
 - 2. [Connect downspout to [storm sewer system.] [*other, describe here*] by plumbing contractor.]
- OR-
- [Install downspouts to utilize splash [pans.] [pads.] [*other, describe here*] furnished by others.]

-OR-

L. [*Other, describe here*]

3.3 CLEANING AND PROTECTION

- A. Cleaning: Contractor shall clean all building elements, components and/or surfaces in areas with “more than normal constuction amount “of foreign matter such as dirt, dust or other surface debris. “More than normal” dirt, debris and other blemishes are defined as being visible by a majority of normal-sighted individuals when viewed under natural noonday lighting from an at-grade position no closer than fifteen feet to the blemish in question.
1. Touch up all marred, abraded, or otherwise damaged finishes as deemed necessary and [in accordance with the definition for “More than normal” above] [*other, describe here*], so that evidence of such damage is eliminated.
 2. At the completion of Work, remove trash, debris, and all excess materials, cartons and/or items so that all areas of work are clean.
- B. Protection: Provide protective measures, as required, so the wood post-frame building is without damage or deterioration at the time of Substantial Completion.

END OF SECTION 133420