**Guide Specification for Post-Frame Building Systems**

DISCLAIMER: This guide specification is intended to provide a base format specification for projects built using Post Frame Construction techniques. Modifications may be required for specific project conditions and to correctly represent the materials and designs used on any specific project. Review and comply with any local building regulations including applicable state and local codes, specifications, and safety considerations that may apply to any specific project.

Although every effort has been made to present accurate and sound information, the National Frame Building Association (NFBA) assumes no responsibility for the application of this information to the design, specification, or construction of any specific building. NFBA expressly disclaims all liability for damages of any sort whether direct, indirect, or consequential, arising out of the use, reference to, or reliance on this specification guide of any of its contents. NFBA makes no warranty, express or implied, as to any building system or this specification. NFBA specifically disclaims any warranties of merchantability or fitness for a particular purpose.

**DIVISION 13 3400 - PRE-ENGINEERED POST FRAME STRUCTURES**

**PART 1 GENERAL**

* 1. **GENERAL STRUCTURE SPECIFICS**
1. **Width:** \_\_\_\_\_\_ feet \_\_\_\_\_\_ inches, outside to outside of primary or secondary wall posts.
2. **Length:** \_\_\_\_\_\_ feet \_\_\_\_\_\_ inches, outside to outside of primary or secondary wall posts.
3. **Height:** \_\_\_\_\_\_ feet \_\_\_\_\_\_ inches, clearance from top of finished floor to underside of truss or rafter.
4. **Roof Slope:** \_\_\_\_\_\_:12 (units of rise per 12 units of run).
5. **Ceiling Slope:** \_\_\_\_\_\_:12 (units of rise per 12 units of run).
	1. **RELATED DOCUMENTS**
6. Drawings and General Provisions of Contract, including General and Supplementary Conditions and Division 1 Specification Sections apply to this Section.
	1. **SUMMARY**
7. **Definitions:**
8. **Specifier** – The party selecting the specifications for the project bid; A person or firm acting for a client who desires a bid letting
9. **Designer of Record** – A licensed design professional that takes overall responsibility for the project
10. **Bid Specification Drawings** – Original drawings prepared by the specifier to accompany the written specifications
11. **Shop Drawings** – Drawings prepared by the successful bidder to enumerate the structural details required to meet the requirements of the project specification
12. **Submittals** – Component drawings, system drawings and other specifications for components that may be provided by their producers
13. **Post-Frame Terminology** – Definitions of many post-frame terms are contained in ANSI/ASABE/NFBA S618 (DEC2010) (R2020)
14. **Section Includes**: Post Frame pre-engineered building systems, including but not limited to post foundation, primary and secondary structural framing systems, roofing, siding, roof and wall insulation, personnel doors, windows, and accessories.
15. **Related Sections**
16. Section 03 30 00 – Cast-in-Place Concrete
17. Section 03 30 53 – Miscellaneous Cast In-Place Concrete (Footings)
18. Section 03 41 00 – Precast Structural Concrete
19. Section 05 12 00 – Structural Steel Framing
20. Section 05 40 00 – Cold-Formed Metal Framing
21. Section 06 10 00 – Rough Carpentry
22. Section 06 10 53 – Miscellaneous Rough Carpentry
23. Section 06 10 63 – Exterior Rough Carpentry
24. Section 06 16 00 – Sheathing
25. Section 06 17 53 – Shop-Fabricated Wood Trusses
26. Section 06 18 00 – Glued-Laminated Construction
27. Section 06 64 00 – Plastic Paneling
28. Section 07 21 00 – Thermal Insulation
29. Section 07 27 00 – Air Barriers
30. Section 07 31 13 – Asphalt Shingles
31. Section 07 41 13 – Metal Roof Panels
32. Section 07 42 13 – Metal Wall Panels
33. Section 07 61 00 – Sheet Metal Roofing
34. Section 07 62 00 – Sheet Metal Flashing and Trim
35. Section 07 71 00 – Roof Specialties
36. Section 07 72 00 – Roof Accessories
37. Section 07 92 00 – Joint Sealants
38. Section 07 95 00 – Expansion Control
39. Section 08 11 13 through 08 36 13 – Doors
40. Section 08 50 00 through 08 53 13 – Windows
41. Section 08 62 00 and 08 71 00 – Skylights
42. Section 08 70 00 – Hardware
43. Section 08 80 00 – Glazing
44. Section 08 90 00 – Louvers and Vents
45. Section 09 91 00 – Painting
46. Section 22 14 23 – Storm water Drainage Piping Specialties
47. Section 31 10 00 – Site Clearing
48. Section 31 20 00 – Earth Moving
49. Section 33 41 00 – Storm Utility Drainage Piping
	1. **REFERENCES**
50. General: Standards and guides listed by reference 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.

1. ACI 318 – Building Code Requirements for Structural Concrete
2. ASCE 7 – Minimum Loads for Buildings and Other Structures
3. ANSI/TPI 1 – National Design Standard for Metal Plate Connected Wood Truss Construction
4. APA PDS 04 – Panel Design Specification
5. ASAE EP 484 – Diaphragm Design of Metal-Clad, Post-Frame Rectangular Buildings. ASABE Standards. St. Joseph, MI.
6. ASAE EP 486 – Post and Pole Foundation Design: Shallow Post Foundation Design. ASABE Standards. St. Joseph, MI.
7. ASAE EP 559 – Design Requirements and Bending Properties for Mechanically Laminated Columns. ASABE Standards. St. Joseph, MI.
8. ASCE 32 – Design and Construction of Frost Protected Shallow Foundations.
9. ASTM International (ASTM):
	1. ASTM A153 – Standard Specification for Zinc Coating (Hot-Dip) on Iron and Steel Hardware
	2. ASTM A653 – Standard Specification for Steel Sheet, Zinc-Coated (Galvanized) or Zinc-Iron Alloy-Coated (Galvannealed) by the Hot-Dip Process
	3. ASTM A792 – Standard Specification for Steel Sheet, 55% Aluminum-Zinc Alloy-Coated by the Hot-Dip Process
	4. ASTM C39/C39M – Compressive Strength of Cylindrical Concrete Specimens
	5. ASTM C665 – Standard Specification for Mineral-Fiber Blanket Thermal Insulation for Light Frame Construction and Manufactured Housing
	6. ASTM C991 – Standard Specification for Flexible Glass Fiber Insulation for Metal Buildings
	7. ASTM D3841 – Standard Specification for Glass-Fiber-Reinforced Polyester Plastic Panels
	8. ASTM E84 – Standard Test Method for Surface Burning Characteristics of Building Materials
	9. ASTM E96 – Standard Test Methods for Water Vapor Transmission of Materials
	10. ASTM F1667 – Specification for Driven Fasteners: Nails, Spikes and Staples
10. AWC (NDS) – National Design Specification for Wood Construction
11. AWPA U1 – USE CATEGORY SYSTEM: User Specification for Treated Wood Products
12. IBC – International Building Code
13. NFBA – Accepted Practices for Post Frame Building Construction: Framing Tolerances
14. NFBA – Accepted Practices for Post-Frame Building Construction: Metal Panel and Trim Installation Tolerances
15. TPI – Truss Plate Institute
	1. **SYSTEM DESCRIPTION**
16. Performance Requirements:
	1. **Designer of Record** – The building shall be designed by the Designer of Record as a complete system and include design of all structural members and connections. All system components shall be specified, including but not limited to, foundations, primary framing, secondary framing, lateral bracing, roofing, siding, doors and windows, insulation (optional).
	2. **Design Code** – International Building Code and ASCE 7 or applicable editions of the national or local building code. The structure shall be classified by Type.
		1. Provide calculations using diaphragm and/or frame analysis. Incorporate bracing as required.
	3. **Design Standards** – Utilize the following engineering practices and design standards as appropriate:
		* + 1. ASAE EP 484 – Diaphragm Design of Metal-Clad, Post-Frame Rectangular Buildings. ASABE Standards. St. Joseph, MI.
				2. ASAE EP 486 – Post and Pole Foundation Design: Shallow Post Foundation Design. ASABE Standards. St. Joseph, MI.
				3. ASAE EP 559 – Design Requirements and Bending Properties for Mechanically Laminated Columns. ASABE Standards. St. Joseph, MI.
				4. Comply with AWC "National Design Specification for Wood Construction (NDS)"
				5. Plywood or Oriented Strand Board Sheathing: Comply with APA "Plywood Design Specification" or equal.
				6. Expansion/Contraction Provisions: Design roof attachment system to allow for expansion/contraction of metal roofing due to temperature variations without detrimental effect to the roof assembly.
	4. **Design Loading** – Structure designed as defined in ASCE 7 or local codes.
		1. Ground Snow Load: \_\_\_\_ psf
		2. Exposure Factor (Ce): \_\_\_\_\_\_
		3. Thermal Factor (Ct): \_\_\_\_\_\_
		4. Risk/Category/Importance Factor (Is)
		5. Roof Load, Live load: \_\_\_\_ psf
		6. Roof Dead Load: \_\_\_\_ psf
		7. Ceiling Dead Load: \_\_\_\_ psf
		8. Wind Speed: \_\_\_\_ mph
		9. Wind Exposure Category: \_\_\_\_\_
		10. Maximum Considered Earthquake 0.2 Second Spectral Response Acceleration as defined in ASCE 7
		11. Maximum Considered Earthquake 1.0 Second Spectral Response Acceleration as defined in ASCE 7.
		12. Collateral Loads: Additional loads that may be imposed by contract documents other than building system weight such as, but not limited to sprinklers, mechanical and electrical systems, and ceilings. Collateral Loads shall not be carried by the roof sheathing.
	5. **Deflection Criteria** - Trusses
		1. Limit deflection for live or snow loads to L/240 for trusses supporting steel ceilings and to L/180 for overhangs and trusses not supporting ceilings
		2. Limit deflection for live or snow loads to L/360 for trusses supporting GWB or plaster ceilings and to L/180 for overhangs and trusses not supporting ceilings
		3. Comply with appropriate IBC, NDS and Truss Plate Institute (TPI) standards
	6. **Primary Framing**
		1. L/180 for roof snow load
		2. L/120 for wind load
	7. **Secondary Framing**
		1. 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 +5psf
		2. L/150 for wind load on walls and roof.
		3. L/180 for roof snow load, but not less than 20psf on sheeting
	8. **Deflection Criteria** - Metal Wall and Roof 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.

**1.06 SUBMITTALS**

* + 1. Design Drawings:
			1. All design drawings shall bear the seal and signature of a licensed design professional registered in the jurisdiction where the project is located.
			2. Design drawings shall indicate assembly dimensions, locations of structural members, connections, attachments, openings, cambers, and loads
			3. Design drawings shall indicate wall and roof system dimensions, panel layout, general construction details, anchorage types and method of anchorage installation.
			4. Design drawings shall include showing roof framing, cross sections, roof and wall covering, and trim details and accessory and component details clearly indicating proper assembly.
			5. Design drawings shall indicate framing anchor bolt settings, sizes, and locations from datum and foundation loads.
		2. Design Calculations

1. Design calculations shall bear the seal and signature of a licensed design professional registered in the jurisdiction where the project is located.

2. Design calculations shall clearly identify Snow Design Requirements, specific dead loads, live loads, wind loads, tributary area load reductions (if applicable) collateral loads, seismic loads, end use categories as defined by the governing code and compliance documents.

3. Design drawings shall indicate wall and roof system dimensions, panel layout, general construction details, anchorages, and method of anchorage installation.

* + 1. Product Data: Manufacturer's data sheets on each product to be used, including:
			1. Manufacturer's specifications and installation instructions for building components and accessories
			2. Preparation instructions and recommendations
			3. Storage and handling requirements and recommendations
		2. Selection Samples: For each finish product specified, two complete sets of color chips representing manufacturer's full range of available colors and patterns
		3. Verification Samples: For each finish product specified, two samples, minimum size 6 inches (150 mm) square, representing actual product, color, and patterns.
	1. **QUALITY ASSURANCE**
1. Manufacturer Qualifications: Experienced in producing pre-engineered wood buildings of the type specified.
2. Installer Qualifications: Installer Qualifications: Experienced in the erection of pre-engineered wood buildings of the type specified.
	1. Installer shall follow the installation guidelines defined in NFBA – Accepted Practices for Post Frame Building Construction: Framing Tolerances.
	2. Installer shall follow the installation guidelines defined in NFBA – Accepted Practices for Post-Frame Building Construction: Metal Panel and Trim Installation Tolerances.
	3. Designer of Record Qualifications: Experienced in designing Post Frame structures registered in the jurisdiction of the project.
	4. **PROJECT CONDITIONS**
3. Anticipate environmental conditions (temperature, humidity, and ventilation) within limits recommended by manufacturer for optimum results. Do not install products under environmental conditions outside manufacturer's absolute limits.
	1. **WARRANTY**
4. **Preservative Treated Materials** –Preservative treated lumber, including structural posts, are warranted by the original materials manufacturer against failures due to fungal decay and termite infestation.
5. **Roofing and Siding Base Metal** – Metal materials are as warranted by the original material manufacturer against failure
6. **Roofing and Siding Finish** – Steel panel warranted by the original materials manufacturer from the date of shipment.
7. **Individual Building Products** – Manufacturer's standard warranty.

**PART 2 – PRODUCTS**

**2.01 ACCEPTABLE BUILDING MANUFACTURERS**

1. Basis of Design: Subject to compliance with requirements, provide product by the following (or pre-approved equal):
2. Alternate Building Product/Manufacturers may be submitted for approval prior to bid date. Bidder shall be responsible for providing information showing compliance to bid specifications and drawings.
3. Alternate Post-Frame Builder/Product/Manufacturer – Submit information, specifications, and installation instructions for building, building components and accessories for review.
4. Provide a resume of the alternate post-frame builder’s most recent projects of similar size and scope for reference.
5. Provide proof that the alternate post-frame company (a company not on the original bidders list) has experience in the Post Frame manufacturing and/or building construction industry.

**2.02 STRUCTURAL FRAMING**

* + 1. Post Foundation
			1. Shall be designed in general accordance with
				1. ASAE EP 486 – Post and Pole Foundation Design: Shallow Post Foundation Design. ASABE Standards. St. Joseph, MI.
				2. ASCE 32 – Design and Construction of Frost Protected Shallow Foundations.
			2. Shall be defined in the design calculations as one of the following:
				1. Pressure preservative treated wood posts and concrete footer pads
				2. Precast concrete piers
				3. Cast-in-place concrete piers
				4. Cast-in-place reinforced concrete grade beams
				5. Cast-in-place concrete foundation wall
				6. Cast-in-place concrete post and beam
				7. Masonry block foundation wall
			3. Concrete in all post foundation components shall have minimum compressive strength of 2500 psi (ASTM C39/C39M) and in accordance with ACI 318.
			4. Wood products used in foundations:
				1. Must be Protected with pressure preservative chemical treatments to retention levels for Use Category UC4B or better in accordance with AWPA-U1 or
				2. Covered with a protective cover and protected with preservative chemical treatments to retention levels defined in accordance with AWPA-U1
			5. Backfill around below grade portions of post foundations shall be compacted excavated material, coarse grained soil, concrete, or controlled low-strength material (CLSM)
		2. Posts (Columns)
			1. Posts shall be solid sawn, glued-laminated, nail-laminated, or structural composite wood products as identified in the design calculations and in accordance with the NDS.
			2. Shall be designed in general accordance with
				1. ASAE EP 559 – Design Requirements and Bending Properties for Mechanically Laminated Columns. ASABE Standards. St. Joseph, MI.
			3. Portions of wood posts below grade and less than 8 in. above grade must be:
				1. Protected with pressure preservative chemical treatments to retention levels for Use Category UC4B or better per AWPA-U1 or
				2. Covered with a protective cover and protected with preservative chemical treatments to retention levels defined in accordance with AWPA-U1
				3. Individual layers of mechanically laminated posts shall be connected using ring shank feed nails as defined in the design calculations or per manufacturer's engineered nailing pattern. Fasteners shall be either galvanized in accordance with ASTM A153 or Stainless Steel (Type 304 or 316)
			4. Untreated Lumber Section:
				1. Lumber: No. 2 or Better. Species and grade to be determined by Designer of Record.
				2. Fabrication: Laminate individual pieces using glue or connectors as defined in the design calculations or per manufacturer's engineered connecting pattern.
				3. Grade and size shall be selected to support imposed loads within deflection limits as defined in the design calculations.
				4. End Joint Connection of Treated and Untreated Sections: Fabricated finger or butt joints as determined by Designer of Record.
			5. Trusses: Comply with the following "Structural Design" and "Quality Assurance" requirements:
				1. Comply with ANSI/TPI 1-2014 "National Design Standard for Metal Plate Connected Wood Truss Construction"
				2. Manufacturer shall have a third-party inspection program to verify compliance with requirements of TPI.

\*\* NOTE TO SPECIFIER \*\* Delete following if inspection agency stamp is not required.

* + - * 1. Stamp trusses with inspection agency identification.
		1. Wall Girts
			1. Wall Girts shall be solid sawn, glued-laminated, nail-laminated, or structural composite wood products identified in the design calculations and in accordance with the NDS.
			2. Wall girts shall satisfy the wind load requirements defined in the design calculations, including any additional lateral loadings exerted by stored materials acting directly on the wall sheathing.
			3. 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 UC4A or better per AWPA-U1]
			4. Wall girts shall be connected using fasteners as defined in the design calculations or per manufacturer's engineered nailing pattern. Fasteners shall be either galvanized in accordance with ASTM A153 or Stainless Steel (Type 304 or 316)
			5. Wall girts may be placed directly on the outside face of wall posts or inset between wall posts with outside edge flush with outside edge of wall post in accordance with the design calculations.
			6. Wall girts are attached to the posts with fastener schedules defined in the design calculations.
			7. All in place structural performance required connection hardware shall be either galvanized in accordance with ASTM A153 or Stainless Steel (Type 304 or 316) when located:
				1. 8 in. or less above grade
				2. in areas where copper-based pressure-treated wood is one or both connected elements
		2. Post Headers (Beams)
			1. Post Headers (beams) shall be solid sawn, glued-laminated, nail-laminated, parallel chord plate connected trusses, or structural composite wood products identified in the design calculations and in accordance with the NDS.
			2. Post headers are attached with connector hardware defined in the design calculations
		3. Primary Roof Framing
			1. Primary roof framing shall be solid sawn, glued-laminated, nail-laminated, or structural composite wood products as identified in the design calculations and in accordance with the NDS.
			2. Primary roof framing shall satisfy the load requirements of the design calculations except dead load for purlins only includes contributions from the purlins, sheathing, and other roof coverings.
		4. Purlins
			1. Purlins shall be solid sawn, glued-laminated, nail-laminated, parallel chord plate connected trusses, or structural composite wood products identified in the design calculations and in accordance with the NDS.
			2. Primary roof framing shall satisfy the load requirements of the design calculations except dead load for purlins only includes contributions from the purlins, sheathing, and other roof coverings.
		5. Roof Sheathing (Deck)
			1. Shall be designed in general accordance with
				1. ASAE EP 484 – Diaphragm Design of Metal-Clad, Post-Frame Rectangular Buildings. ASABE Standards. St. Joseph, MI.
			2. Roof sheathing shall consist of materials capable of carrying the loading as identified in the design calculations.
			3. Roof sheathing shall be connected to the roof framing in accordance with the design calculations
				1. Metal roof sheathing substrate shall be Galvalume AZ 55, G90, or equivalent in accordance with ASTM 653/A 653M and ASTM A792. Roof sheathing may be painted as defined elsewhere in this specification.
				2. Structural plywood or OSB roof sheathing panels shall be of the grade, thickness, size, and type as identified in the design calculations and fabricated in accordance with APA PDS 04 or equal
			4. Fasteners used to through-fasten painted corrugated steel panels shall be as identified in the design calculations
				1. Fasteners shall match the color of adjacent roof sheathing.
			5. Alternate exterior roof surfaces include:
				1. Pre-painted metal finish with color from manufacturer's standard colors.

Finishes and colors to be determined

* + - * 1. Asphalt shingles of grade \_\_\_ and color \_\_\_
				2. Metal shingles of grade \_\_\_ and color \_\_\_
				3. Wood shingles of grade \_\_\_ and color \_\_\_
				4. Ceramic tile of grade \_\_\_ and color \_\_\_
				5. Slate of grade \_\_\_ and color \_\_\_
		1. Wall Sheathing (Siding)
			1. Wall sheathing shall consist of the following materials and be capable of carrying the loading as identified in the design calculations
			2. Wall sheathing shall be connected to the posts and wall girts in accordance with the design calculations.
				1. Metal wall sheathing substrate shall be Galvalume AZ 55, G90, or equivalent in accordance with ASTM 653/A 653M. Wall sheathing may be painted as defined elsewhere in this specification.
				2. Structural plywood or OSB roof sheathing panels shall be of the grade, thickness, size, and type as identified in the design calculations and fabricated in accordance with APA PDS 04 or equal
			3. Fasteners used to through-fasten painted corrugated steel panels shall be as identified in the design calculations.
				1. Fasteners shall match the color of adjacent wall sheathing.

4. Alternate exterior wall surfaces include:

a. Pre-painted metal finish with color from manufacturer's standard colors.

* + - 1. Alternate interior surfaces include:
				1. Pre-painted metal finish with color from manufacturer's standard colors.

Finishes and colors to be selected

* + 1. Skirtboards (Splash Boards)
			1. Skirtboards shall be solid sawn, glued-laminated, nail-laminated, or structural composite wood products in accordance with the NDS.
			2. Skirtboards shall be protected with pressure preservative chemical treatments to retention levels for Use Category UC4A or better per AWPA-U1.
			3. Skirtboards shall be connected per Designer of Record.
		2. Trim
			1. Trim materials include flashings, internal and external corners, closure pieces, and other elements to complete the exterior envelope of the structure.
			2. All trim shall be compatible with the wall/roof sheathing and sheathing finish materials per product supplier.
		3. Insulation (Roof & Wall)
			1. Insulation shall be glass fiber type, either faced or unfaced, that performs in accordance with ASTM C991.
				1. Mineral fiber-based insulation shall conform with the performance requirements of ASTM C665.
				2. Blown-in cellulose insulation shall conform with the performance requirements of ASTM C739.
				3. Foamed in place insulation shall conform with the performance requirements of ASTM C16.
				4. Flame spread classification shall be 25 or less when tested in accordance with ASTM E84
				5. Total R-value of the roof insulation shall be \_\_\_\_
				6. Total R-value of the wall insulation shall be \_\_\_\_
		4. Doors & Windows
			1. Door, door frames, and windows shall be designed to withstand the wind loading identified for the project and as identified in the design calculations provided for this project.
		5. Materials - Accessories
			1. Ridge Cap
				1. The cap materials and construction shall match the roof steel materials and construction.
			2. Translucent Ridge Light
				1. Acrylit, or equivalent, standard ridge profile, acrylic and polyester resins with gel coat UV protective layer in conformance with the performance requirements of ASTM D3841,
				2. Minimum 8 ounces per square foot, 65 percent visible light transmission.
			3. Vents
				1. Ridge vent, and/or low-profile ridge ventilator as identified on Drawings.
			4. Wall Louvers
				1. Shall be designed to withstand the wind loading identified for the project and as identified in the design calculations provided for this project.
			5. Cupola
				1. Provide manufacturer's standard cupola or cupola and weathervane as shown on Drawings.
			6. Curbs for HVAC and Mechanical Equipment
				1. Shall be compatible with roof panel and sealed against water penetration in accordance with building manufacturer's instructions.
				2. Curbs shall accommodate the expansion/contraction movement of roof sheathing

**PART 3 EXECUTION**

* 1. **EXAMINATION**
	2. 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.
	3. 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 sealed design drawings.
	4. 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.
	5. Commencement of work by erector/installer is acceptance of site conditions.
	6. **ERECTION – STRUCTURAL FRAMING**
1. Work shall proceed in accordance with contractor’s current, written instructions and as per approved design specifications and approved construction drawings for erection of post-frame building systems.
2. Where specific direction is not provided by the construction documents, erection shall be completed in accordance with the NFBA document “Accepted Practices for Post Frame Construction – Framing Tolerances
3. 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.
4. Do not field cut or alter structural members without approval from the Designer of Record and manufacturer.

**3.03 INSTALLATION**

1. Install all foundations, roof, and wall structural elements, building components, and accessories as shown in the approved design construction drawings or in component supplier instruction sheets.
2. Install all connections between indicated structural components per design drawings:
3. Provide and properly connect all temporary and permanent bracing (wall, truss, and roof) as defined on the construction drawings and design calculations as well as all bracing required to provide a safe working environment.
4. Adjust all operating components as required to ensure that they operate in accordance with manufacturer or supplier recommendations.
5. Install all roof and wall accessories as permanent and weathertight elements.
6. Coordinate panel installation with installation of roofing and wall systems and related flashings and trims.
7. Install gutters and downspouts, flashings, and trim in accordance with manufacturer's instructions.
	1. **CLEANING & PROTECTION**
8. Contractor shall clean all building elements, components and/or surfaces in areas with “more than normal construction 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.
9. Touch up all marred, abraded, or otherwise damaged finishes as deemed necessary and in accordance with the definition for “more than normal” above so that evidence of such damage is eliminated.