

Specifications

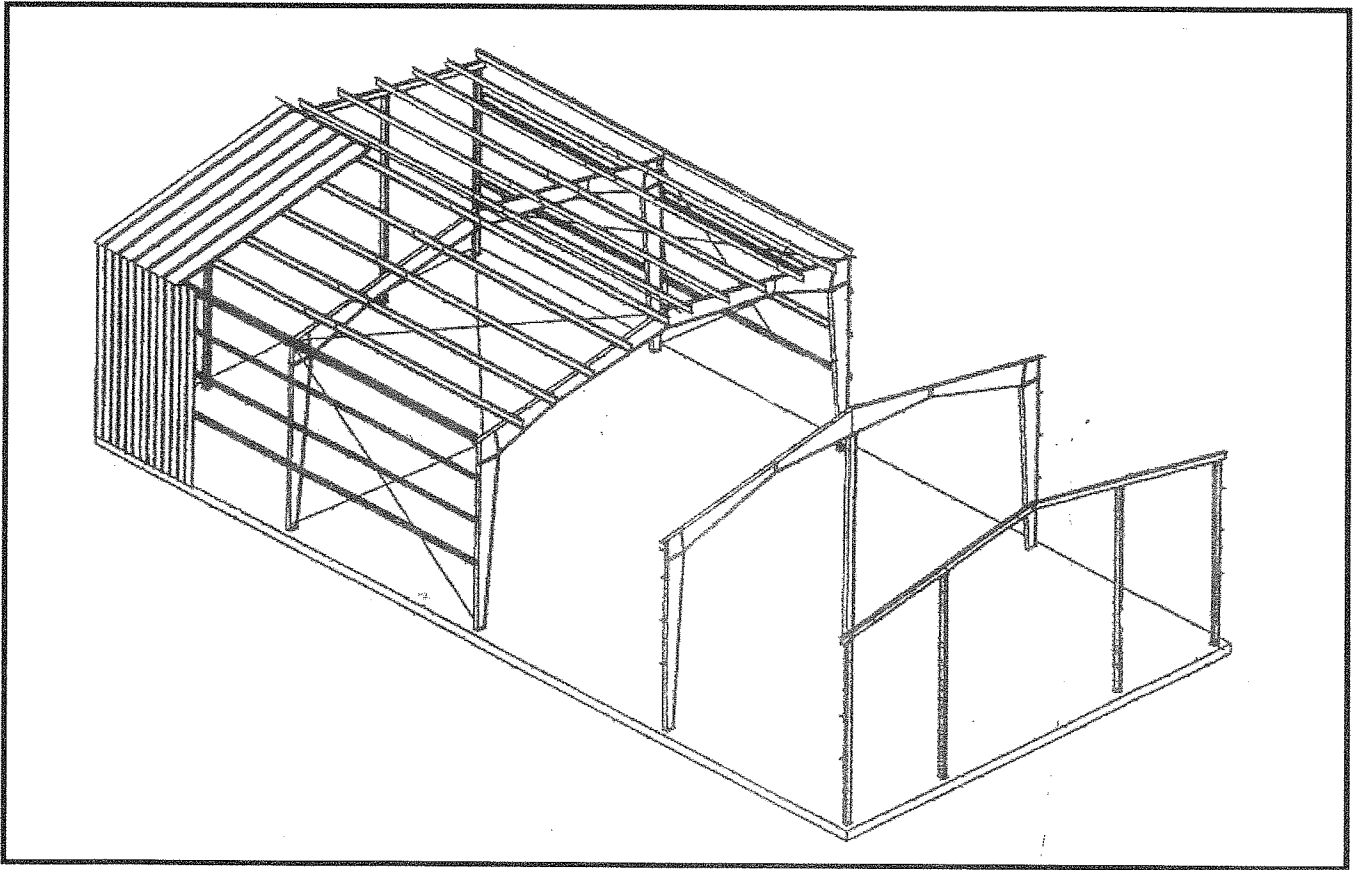


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SECTION 13121

METAL BUILDING SYSTEMS

PART 1 GENERAL

1.1 SECTION OVERVIEW

- A. Structural steel frame.
- B. Complete roof covering system consisting of the exterior roof panels, panel attachments, sealants, mastics, trim and flashings as required.
- C. Complete wall covering system consisting of the exterior wall panels, panel attachments, sealants, mastics, trim and flashings as required for a weathertight assembly.
- D. Field seaming machine.
- E. Wall accessories, including:
 - 1. Service doors.
 - 2. Windows.
 - 3. Louvers.
- F. Roof accessories, including:
 - 1. Facade systems.
 - 2. Translucent roof panels.
 - 3. Gravity ventilators.
 - 4. Ridge ventilators.
 - 5. Roof curbs.
 - 6. Roof walkways.

1.2 RELATED SECTIONS

- A. Section 03300 - Cast-in-Place Concrete: Foundations and anchor bolts.
- B. Section 09900 - Paints and Coatings: Finish painting of structural members, doors, roof curbs, etc.

1.3 REFERENCES

- A. AAMA 101 - Voluntary Specification for Aluminum and Poly (Vinyl Chloride) (PVC) Prime Windows and Glass Doors; American Architectural Manufacturers Association.
- B. ASTM A 36/ASTM A36M - Standard Specification for Carbon Structural Steel.
- C. ASTM A 307 - Standard Specification for Carbon Steel Bolts and Studs, 60,000 PSI Tensile Strength.
- D. ASTM A 325 - Standard Specification for Structural Bolts, Steel, Heat Treated, 120/105 ksi Minimum Tensile Strength.
- E. ASTM A 475 - Specification for Zinc-Coated Steel Wire Strand.
- F. ASTM A 500 - Specification for Cold-Formed Welded and Seamless Carbon Steel Structural Tubing in Rounds and Shapes.
- G. ASTM A529/A 529M - Standard Specification for High-Strength Carbon-Manganese Steel of Structural Quality.
- H. ASTM A 536 - Specification for Ductile Iron Castings.
- I. ASTM A 572/A 572M - Standard Specification for High-Strength Low-Alloy Columbium-Vanadium Steel.
- J. ASTM A 653/A 653M - Standard Specification for Steel Sheets, Zinc-Coated (Galvanized) or Zinc-Iron Alloy-Coated (Galvannealed) by the Hot-Dip Process.
- K. ASTM A 792/A 792M - Standard Specification for Steel Sheets, 55% Aluminum-Zinc Alloy-Coated by the Hot-Dip Process.
- L. ASTM A 1011 - Standard Specification for Steel, Sheet and Strip, Hot-Rolled, Carbon, Structural, High-Strength Low-Alloy and High-Strength Low Alloy with Improved Formability.
- M. ASTM D 635 - Standard Test Method for Rate of Burning and/or Extent and Time of Burning of Self-Supporting Plastics in a Horizontal Position.
- N. ASTM D 1929 - Standard Test Method for Ignition Properties of Plastics.
- O. ASTM D 2843 - Standard Test Method for Smoke from the Burning or Decomposition of Plastics.
- P. ASTM E 84 - Standard Test Method for Surface Burning Characteristics of Building Materials.
- Q. ASTM E 774 - Standard Specification for Sealed Insulating Glass Units.
- R. ASTM E 1592 - Standard Test Method for Structural Performance of Sheet Metal Roof and Siding Systems by Uniform Static Air Pressure difference.
- S. SDI 100 - Recommended Specifications for Standard Steel Doors and Frames; Steel Door Institute.
- T. UL 580 - Tests for Wind Uplift Resistance of Roof Assemblies; Underwriters Laboratories, Inc.

1.4 DEFINITIONS

- A. Building Width: Measured from outside to outside of sidewall girts.
- B. Building Length: Measured from outside to outside of endwall girts.
- C. Building Line: Outside face of horizontal steel girt.
- D. Building Eave Height: Measured from the intersection of the top of the roof framing and the outside of the wall framing to the bottom of the sidewall column base plate.
- E. Bay Spacing: Measured from centerline to centerline of primary frames for interior bays and from centerline of the first interior frame to outside of endwall girts for endbays.
- F. Roof Pitch: The ratio of the vertical rise to the horizontal run.

1.5 DESIGN REQUIREMENTS

- A. Design structural systems according to professionally recognized methods and standards, and legally adopted building codes.
- B. Design under supervision of professional engineer licensed in _____.
- C. Manufacturer must be certified by AISC in the Metal Building category.
- D. Supplier must be a primary manufacturer of frames, secondary steel, roof and wall sheeting and trim.
- E. Design Loads:
 - 1. Applicable Building Code: _____.
 - 2. Roof Live Load: _____ psf (_____ MPa), reducible.
 - 3. Roof Live Load: _____ psf (_____ MPa), non-reducible.
 - 4. Roof Snow Load: _____ psf (_____ MPa).
 - 5. Roof Wind Load: Calculate in accordance with applicable code, using _____ mph (_____ km/h) Basic Wind Speed, Exposure Category _____, and Importance Factor of _____.
 - 6. Collateral Loads: _____ psf (_____ MPa).
 - 7. Seismic Loads: Calculate and apply seismic loads in accordance with the requirements of applicable building code based on the following project specific values as applicable:
 - a. Seismic Zone or Hazard Gp: _____
 - b. Importance Factor: _____
 - c. Soil Profile Coefficient (S): _____
 - d. Effective peak velocity related acceleration Coefficient (Av): _____
 - e. Effective peak acceleration coefficient (Aa) _____
 - f. Include _____% of the roof snow load in seismic load calculations.
 - g. Design spectral acceleration at short period SDS _____
 - h. Design spectral acceleration at 1-second period SDI _____
 - 8. Floor Load:
 - a. Floor Live Load: _____ psf (Mpa)
 - b. Floor Dead Load: _____ psf (Mpa)
 - c. Floor Collateral Load: _____ psf (Mpa)
 - d. Floor Partition Load: _____ psf (Mpa)
 - 9. Dead loads, including the weight of all indicated permanent construction.
- F. Serviceability Criteria: Deflection limits for major components will be based on VP Buildings' standards unless noted otherwise. (Appropriate deflection criteria for non-metal wall systems or other deflection sensitive components are dependent on various criteria including the required interface details. Serviceability requirements of this type must be specified separately by responsible design professional.)
- G. Design wall and roof panel system to withstand specified loads with deflection of _____ of span, maximum.
- H. Anchor Bolts: Furnish anchor bolt diameters, calculated on the basis of stress in the steel bolt, to resist the column reactions induced by the design loads on the structure. Anchor bolts and embedment requirements furnished by others.

1.6 SUBMITTALS

- A. Design Data: Provide design criteria and structural calculations.
- B. Certification: Manufacturer certification that the building conforms to the contract documents and manufacturer's standard design procedures.
- C. Shop Drawings: Show building layout, primary and secondary framing member sizes and locations, cross-sections, and product and connection details.
- D. Product Data: Information on manufactured products to be incorporated into the project.

- E. Color Charts: For selection of colors.
- F. Anchor Bolt Drawings: Layouts with bolt diameters.
- G. Specimen Warranty

1.7 WARRANTY

- A. Provide manufacturer's standard warranty for:
 1. Standard warranty on materials and workmanship: 3 years.
 2. Panel finish: 10 years (standard on SP finish).
 3. Panel finish: 20 years (standard on Galvalume & KXL finish, optional on SP).
 4. Weathertightness: 20 years (optional)

PART 2 PRODUCTS

2.1 METAL MATERIALS

- A. Select materials and material yield strengths based on building design requirements; use the following unless required otherwise.
- B. Structural Steel Plate, Bar, Sheet, and Strip for Use in Bolted and Welded Constructions: ASTM A 572, A 1011, A 529, ASTM A 1008 with minimum yield strength of 50,000 psi (345 MPa).
- C. Structural Steel Material for Use in Roll Formed or Press Broken Secondary Structural Members: ASTM A 1011, or A 1008 with minimum yield strength of 55,000 psi (380 MPa).
- D. Galvanized Steel Sheet for Roll Formed or Press Broken Roof and Wall Coverings, Trim and Flashing: ASTM A 653, with minimum yield strength of 50,000 psi (345 MPa). Coating Designation G-90.
- E. Galvalume Steel Sheet Used in Roll Formed or Press Broken Roof Covering: Aluminum-zinc alloy-coated steel sheet, ASTM A 792, with minimum yield strength of 50,000 psi (345 MPa); Coating designation AZ50 for painted panels and AZ55 for unpainted panels.
- F. Hot Rolled Steel Shapes: W, M and S shapes, angles, rods, channels and other shapes; ASTM A 572/A 529/A 500 or ASTM A 36 as applicable; with minimum yield strengths required for the design.
- G. Structural Bolts and Nuts Used with Primary Framing: High strength, ASTM A 325.
- H. Bolts and Nuts Used with Secondary Framing Members: ASTM A 325.
- I. Shop Coat: Manufacturer's standard rust inhibitive primer paint; manufacturer's standard color.
- J. SP Pre-Painted Finish: 0.8 mil baked on silicone polyester exterior surface.
 1. Color: As selected from manufacturer's full line.
 2. Color: _____.
 3. Interior finish: Off white 0.5 mil (0.01 mm) washcoat.
- K. KXL Pre-Painted Finish: 1 mil (0.025 mm) Kynar 500 coating on exterior surface.
 1. Color: As selected from manufacturer's full line.
 2. Color: _____.
 3. Interior Finish: Off white 0.5 mil (0.01 mm) washcoat as required by manufacturer.

2.2 FRAMING COMPONENTS

- A. Primary Framing: Rigid Frame (RF Series) solid web framing consisting of tapered or uniform depth rafters rigidly connected to tapered or uniform depth columns. Provide a clear span that supports the loads at bay spacings indicated.
- B. Primary Framing: Continuous Beam (CB Series) solid web framing utilizing tapered or uniform depth beams or girders supported on tapered or uniform depth columns. Locate interior columns where indicated and design to support loads at bay spacings indicated.
- C. Primary Framing: Truss Beam (TB Series) open web framing utilizing roof trusses supported on uniform depth columns. Provide a clear span that supports the loads at bay spacings indicated.
- D. Primary Framing: Continuous Truss (CT Series) open web framing utilizing continuous trusses supported by exterior and interior uniform depth columns that support the loads at bay spacings indicated.
- E. Primary Framing: Unibeam (UB and UBL Series) solid web framing consisting of tapered beams supported by uniform depth columns. Provide a clear span that supports the loads at bay spacings indicated.
- F. Deck Frame: Standard pre-engineered, primary framing used in conjunction with metal decking.
- G. Hybrid: Standard pre-engineered framing used in conjunction with structural steel.
- H. Endwall Framing: Corner posts, endposts and rake beams.
- I. Endwall Framing: Half-loaded frames (non-expandable).
- J. Endwall Framing: Full frames with endposts, for future expansion.

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- K. Purlins: Zee-shaped; 6 ½", 8 ½" and 11 ½" depth as required; with minimum yield strength of 55,000 psi (345 MPa); simple span or continuous span as required for design.
- L. Girts: Zee- or Cee-shaped; 6 ½", 8 ½" and depth as required, with minimum yield strength of 55,000 psi (345 MPa); simple span or continuous span as required for design.
- M. Transbay Members: Open web, parallel chord, secondary joists; simple span, utilizing materials, sizes and yield strength as required.
- N. Wind Bracing: Portal, torsional, diaphragm diagonal bracing in accordance with manufacturer's standard design practices; utilizing rods, cables, angles, and other members, with minimum yield strengths as required for design.
- O. Primary Frame Flange Bracing: Attached from purlins or girts to the primary framing, minimum yield strength as required for design.
- P. Base Angles: 2"x3"x0.059" (50 mmx75 mmx1.5 mm) steel angles, with minimum yield strength of 55,000 psi (38 MPa), anchored to the floor slab or grade beam with power driven fasteners or equivalent at a maximum spacing of 2' (1220 mm) on center and not more than 6" (150 mm) from the end of any angle member.
- Q. Door Headers and Jambs: Zee- or Cee-shaped; depth as required; with minimum yield strength of 55,000 psi (380 MPa).
- R. Sag Angles and Bridging: Steel angles, with minimum yield strength of 36,000 psi (250 MPa).
- S. Fabrication: Fabricate according to manufacturer's standard practice.
 - 1. Fabricate structural members made of welded plate sections by joining the flanges and webs by continuous automatic submerged arc welding process.
 - 2. All welding operators and processes shall be qualified in accordance with the American Welding Society "Structural Welding Code", AWS D1.1.
 - 3. Field connections. Prepare members for bolted field connections by making punched, drilled, or reamed holes in the shop.
- T. Component Identification: Mark all fabricated parts, either individually or by lot or group, using an identification marking corresponding to the marking shown on the shop drawings, using a method that remains visible after shop coating.
- U. Shop Coating: Finish all structural steel members using one coat of manufacturer's standard shop coat, after cleaning of oil, dirt, loose scale and foreign matter.
- V. Package building components for shipping by common carrier.

2.3 ROOF AND WALL PANEL COMPONENTS

- A. Roof Panels: Panel Rib; 36" (915 mm) wide net coverage, with 1-3/16" (30 mm) high major ribs at 12" (305 mm) on center with minor ribs spaced between the major ribs.
 - 1. Material: Galvalume steel.
 - 2. Material: Galvanized steel, with G90/Z275 coating.
 - 3. Thickness: 0.0184" design base metal (0.47 mm).
 - 4. Thickness: 0.022 design base metal (0.56 mm).
 - 5. Side laps: At least one full major rib, with a supporting member bearing edge on the lower panel and an anti-capillary groove on the upper panel.
 - 6. Length: Continuous from eave to ridge up to 41' (12.5 m) in length.
 - 7. Endlaps, Where Required: 4" (150 mm) wide, located at a support member.
 - 8. Finish: SP pre-painted finish.
 - 9. Finish: KXL pre-painted finish.
 - 10. The Panel Rib Roof shall be tested and certified to meet Underwriters Laboratory uplift rating:
 - a. UL 60
 - b. UL 90The design of the Panel Rib Roof for this project shall meet _____ (Select a OR b, if required) UL design.
 - 11. The Panel Rib panel is accepted by the Dade County Building Department Product Control Division.
 - 12. Tested per ASTM E 283 (Air Infiltration).
 - 13. Tested per ASTM E 331 (Water Penetration).
- B. Roof Panels: SSR Standing Seam Roof Panels; 24" (610 mm) wide net coverage, with 3" (76.2 mm) high major ribs formed at the panel side laps, formed for field seaming using electrically operated seaming machine.

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1. Side Joints: Factory applied sealant for field seaming.
 2. Material: Galvalume steel.
 3. Thickness: 0.022" design base metal (0.56 mm).
 4. Thickness: 0.0273 design base metal (0.69 mm).
 5. Side laps: Two factory-formed interlocking ribs, with one weather sealed joint, mechanically field-seamed into place to form a double-fold 360 degree seam.
 6. Length: Continuous from eave to ridge up to 50' (15.24 m) in length.
 7. Endlaps, Where Required: 4" (102 mm) wide, located near a support member. Staggered at least one purlin space.
 8. Finish: KXL pre-painted finish, standard color.
 9. Finish: KXL pre-painted finish, premium color.
 10. Panel-to-roof purlin structural attachments: SSR clips with movable tabs which interlock with seamed SSR panel ribs and provide for 1-5/8"(37mm) of panel movement in either direction from center of clip to compensate for thermal effects.
 11. The SSR Roof System shall be tested and certified by Factory Mutual to meet the following wind resistance criteria:
 - a. FM 1-60
 - b. FM 1-90
 - c. FM 1-120The design of the SSR Roof for this project shall meet _____ (Select a, b, or c, if required) Factory Mutual design.
 12. The SSR Roof System shall be tested and certified to meet Underwriters Laboratory UL 90 wind uplift rating. The UL 90 _____ (is OR is not) a requirement for this project.
 13. Panels shall have been tested in accordance to ASTM E-1592 and results used in the building design according to the AISI Specification.
 14. Panel fastening to meet uplift requirements shall be based on tested fastener values with appropriate Safety Factors as defined in the AISI Specification.
 15. Purlin strength with the SSR roof panel shall be determined and tested in accordance with AISI procedures.
 16. The SSR Panel is accepted by the Dade County Building Department Product Control Division.
- C. Ridge Assembly for High End of Slopes: SSR Ridge; draw-formed aluminum seam caps factory-attached to SSR ridge panels that are mechanically field-seamed together along the center of the ridge, utilizing only one weather sealed joint and providing a true expansion joint for panel movement.
- D. Roof Panels: SLR Architectural Standing Seam Roof Panels; 16" (406 mm) wide net coverage with major ribs formed at the panel side laps, for field seaming using electrically operated seaming machine.
1. Material: Galvalume steel.
 2. Thickness: 0.022"(24 ga.) design base metal (0.56 mm), with 2" (50 mm) standing seam.
 3. Thickness: 0.0273" (22 ga.) design base metal (0.69 mm), with 3" (75 mm) standing seam.
 4. Side Joints: Factory applied sealant for field seaming.
 5. Length: Continuous from eave to ridge up to 41' (12.5 m) in length.
 6. Endlaps, Where Required: 5"(150 mm) wide, staggered at least one purlin space.
 7. Finish: KXL pre-painted finish, standard color.
 8. Finish: KXL pre-painted finish, premium color.
 9. Panel-to-roof purlin structural attachments: SLR clips, with movable tabs that interlock with seamed SLR panel ribs and provide 1" (25 mm) of panel movement in either direction from center of clip to compensate for thermal effects.
 10. The SLR Roof System shall be tested and certified to meet Underwriters Laboratory UL 90 wind uplift rating with supports 5'-0" on center. The UL 90 _____ (is, OR is not) a requirement for this project.
- E. Roof Panels: Snap Seal Architectural Standing Seam Roof Panels; 18" wide net coverage with major ribs formed at the panel interlocking side laps. Panels do not require field seaming or batten covers.
1. Material: Galvalume steel.
 2. Thickness: 0.022" (24 ga.) design base metal (0.56 mm), with 2" (50 mm) standing seam.
 3. Thickness: 0.0273" (22 ga.) design base metal (0.69 mm), with 3" (75 mm) standing seam.
 4. Side Joints: Factory applied sealant with interlocking joint design.
 5. Length: Continuous from eave to ridge up to 41' (12.5 m) in length.
 6. Endlaps, Where Required: 6" (150 mm) wide, located at a support member.
 7. Finish: KXL pre-painted finish, standard color.

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8. Finish: KXL pre-painted finish, premium color.
 9. Panel-to-roof purlin structural attachments: Snap Seal clips, with movable tabs that interlock with Snap Seal panel ribs and provide 1" (25 mm) of panel movement in either direction from center of clip to compensate for thermal effects.
 10. The Snap Seal Roof System shall be tested and certified to meet Underwriters Laboratory UL 90 wind uplift rating with supports 4'-0 on center. The UL 90 _____ (is, OR is not) a requirement for this project.
- F. Wall Panels: Panel Rib; 36" (915 mm) wide net coverage, with 1-3/16" (30 mm) high major ribs at 12" (305 mm) on center with minor ribs spaced between the major ribs.
1. Material: Galvalume steel, unpainted with AZ55 coating.
 2. Material: Galvanized steel, with G90/Z275 coating.
 3. Thickness: 0.0184" (26 ga.) design base metal (0.47 mm).
 4. Thickness: 0.022" (24 ga.) design base metal (0.56 mm).
 5. Side laps: At least one full major rib, with a supporting member bearing edge on the lower panel and an anti-capillary groove on the upper panel.
 6. Length: Continuous from sill to eave up to 41' (12.5 m) in length.
 7. Endlaps, Where Required: 4" (100 mm) wide, located at a support member.
 8. Crimp panels at the base and notch to match roof panel configuration at the eave.
 9. Cut panels square at each end.
 10. Cut panels square at each end; provide base trim at sill.
 11. Finish: SP pre-painted finish.
 12. Finish: KXL pre-painted finish.
 13. The Panel Rib panel is accepted for use by the Dade County Building Department Product Control Division.
 14. Tested per ASTM E 283 (Air Infiltration).
 15. Tested per ASTM E 331 (Water Penetration).
- G. Wall Panels: Vee Rib; 36" (915 mm) wide net coverage, with reverse ribs 12" (305 mm) on center 1-3/16" (32 mm) deep, sculptured profile with textured embossed finish.
1. Material: Galvalume steel, unpainted.
 2. Material: Galvanized steel, with G90/Z275 coating.
 3. Thickness: 0.0184" (26 ga.) design base metal (0.47 mm).
 4. Thickness: 0.022" (24 ga.) design base metal (0.56 mm).
 5. Side laps: At least one full major rib, with a supporting member bearing edge on the lower panel and an anti-capillary groove on the upper panel.
 6. Length: Continuous from sill to eave up to 41' (12.5 m) in length.
 7. Endlaps, Where Required: 4" Located at a support member.
 8. Cut panels square at ends; provide base trim at sill.
 9. Finish: SP pre-painted finish.
 10. Finish: KXL pre-painted finish.
 11. The Vee Rib Panel is accepted for use by the Dade County Building Department Product Control Division.
 12. Tested per ASTM E 283 (Air Filtration).
 13. Tested per ASTM E 331 (Water Penetration).
- H. Wall Panels: Span Loc Wall Panels; deep fluted panels, with 16" (406 mm) wide net coverage, 3" (75 mm) deep interlocking ribs for concealed fasteners. Panels shall have a textured embossed finish.
1. Material: Galvalume steel.
 2. Thickness: 0.022" (24 ga.) design base metal (0.56 mm).
 3. Side laps: At least one full major rib, with interlocking ribs for concealed fasteners.
 4. Length: Continuous from sill to eave up to 40' (12.19 m) in length.
 5. Endlaps, Where Required: Located at a support member.
 6. Finish: KXL pre-painted finish.
 7. Tested per ASTM E 283 (Air Filtration).
 8. Tested per ASTM E 331 (Water Penetration).
- I. Mansard Panels: SS-12 Panels; 12" (305 mm) Wide standing seam profile, with 1" (25 mm) high interlocking seam and concealed fasteners.
1. Material: Galvalume steel.
 2. Thickness: 0.022" design base metal (0.56 mm).
 3. Side laps: Interlocking standing seam for concealed fasteners.

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4. Length: From 2'-0" to 45'-0" available.
 5. Finish: KXL pre-painted finish.
- J. Mansard Panels: SB-12 Panels; 12" (305 mm) Wide profile, with 1" (25 mm)X1-1/2" (38 mm) wide square batten seam and concealed fasteners.
1. Material: Galvalume steel.
 2. Thickness: 0.022" design base metal (0.56 mm).
 3. Side laps: Interlocking batten seam for concealed fasteners.
 4. Length: From 2'-0 to 45'-0 available.
 5. Finish: KXL pre-painted finish.
- K. Liner Panels: Panel Rib Liner Panels; 36" (915 mm) wide net coverage, with 1-3/16" (30 mm) high major ribs with minor ribs spaced between the major ribs.
1. Material: Galvalume steel, unpainted.
 2. Material: Galvanized steel, with G90/Z275 coating.
 3. Thickness: 0.015" (28 ga.) design base metal (0.381 ga.)
 4. Thickness: .0184" (26 ga.) design base metal (0.47 mm).
 5. Thickness: 0.022" (24 ga.) design base metal (0.56 mm).
 6. Length: Continuous from sill to eave up to 41' (12.5 m) in length.
 7. Finish: SP pre-painted finish.
 8. Finish: KXL pre-painted finish.
 9. Finish: Polyester Washcoat (not for exterior use)
 10. Provide partial height wall liner panels, to _____ high.
 11. Provide eave height liner panels.
 12. Provide full height liner panels.
 13. Provide liner panel wainscot.
- L. Soffit Panels: Panel Rib; 36" (915 mm) wide net coverage, with 1-3/16" (30 mm) high major ribs at 12" (305 mm) on center with minor ribs spaced between the major ribs.
1. Material: Galvalume steel, unpainted with AZ55 coating.
 2. Material: Galvanized steel, with G90/Z275 coating.
 3. Thickness: 0.0184" (26 ga.) design base metal (0.47 mm).
 4. Thickness: 0.022" (24 ga.) design base metal (0.56 mm).
 5. Side laps: At least one full major rib, with a supporting member bearing edge on the lower panel and an anti-capillary groove on the upper panel.
 6. Length: Continuous from sill to eave up to 41' (12.5 m) in length.
 7. Endlaps, Where Required: 4" (100 mm) wide, located at a support member.
 8. Crimp panels at the base and notch to match roof panel configuration at the eave.
 9. Cut panels square at each end.
 10. Cut panels square at each end; provide base trim at sill.
 11. Finish: SP pre-painted finish.
 12. Finish: KXL pre-painted finish.
 13. Tested per ASTM E 283 (Air Infiltration).
 14. Tested per ASTM E 331 (Water Penetration).
- M. Soffit Panels: Vee Rib; 36" (915 mm) wide net coverage, with reverse ribs 12" (305 mm) on center 1-3/16" (32 mm) deep, sculptured profile with textured embossed finish.
1. Material: Galvalume steel, unpainted.
 2. Material: Galvanized steel, with G90/Z275 coating.
 3. Thickness: 0.0184" (26 ga.) design base metal (0.47 mm).
 4. Thickness: 0.022" (24 ga.) design base metal (0.56 mm).
 5. Side laps: At least one full major rib, with a supporting member bearing edge on the lower panel and an anti-capillary groove on the upper panel.
 6. Length: Continuous from sill to eave up to 41' (12.5 m) in length.
 7. Endlaps, Where Required: 4" Located at a support member.
 8. Cut panels square at ends; provide base trim at sill.
 9. Finish: SP pre-painted finish.
 10. Finish: KXL pre-painted finish.
 11. The Vee Rib Panel is accepted for use by the Dade County Building Department Product Control Division.
 12. Tested per ASTM E 283 (Air Filtration).

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13. Tested per ASTM E 331 (Water Penetration).
- N. Soffit Panels: VP002 Architectural Soffit Panels; 12" (305 mm) wide net coverage, with two 6" (150 mm) wide flat surfaces in the same plane separated by a V-groove at 6" (150 mm) on center after adjacent panels have been installed.
1. Material: Galvanized steel with G90/Z275 coating.
 2. Thickness: 0.022" design base metal (0.56 mm).
 3. Side Joints: Optional factors applied sealant; tongue-in-groove connection with adjacent panels, with the connection reinforced by clips.
 4. Panel Length: 10' (3048 mm), maximum.
 5. Finish: KXL pre-painted finish.
- O. Soffit Panels: FP-12 Architectural Soffit Panels; 12" (305 mm) wide net coverage, 7/8" deep profile. Panels over 15'-0" shall include a center stiffening bead.
1. Material: Prefinished Galvalume sheet as described in ASTM specification A792.
 2. Thickness: 0.022" design base metal (0.56 mm) – (24 ga.).
 3. Thickness: 0.0273" design base metal (0.69 mm) – (22 ga.).
 4. Side Joints: Continuous interlocking side joints with concealed fasteners.
 5. Panel Length: 2' to 30', maximum.
 6. Finish: KXL pre-painted finish.
- P. Panel Fasteners:
1. For Galvalume and KXL finished PR roof panels: Stainless steel-capped carbon steel fasteners with integral sealing washer.
 2. For wall panels: Coated carbon steel.
 3. Color of exposed fastener heads to match the wall panel finish.
 4. Concealed Fasteners: Self-drilling type, of size as required.
 5. Provide fasteners in quantities and location as required by the manufacturer.
- Q. Flashing and Trim: Match material and color of adjacent components. Provide trim at rakes, including peak and corner assemblies, high and low eaves, corners, bases, framed openings and as required or specified to provide weathertightness and a finished appearance.
- R. Plastic Parts: Glass fiber reinforced resin or thermoformed ABS (Acrylonitrile-Butidene-Styrene).
1. ABS: Minimum 1/8" (3 mm) thick.
 2. Color: Manufacturer's standard color.
- S. Sealants, Mastics and Closures: Manufacturer's standard type.
1. Provide at roof panel endlaps, sidelaps, rake, eave, transitions and accessories as required to provide a weather tight roof system; use tape mastic or gunnable sealant at sidelaps and endlaps.
 2. Provide at wall panel rakes, eaves, transitions and accessories.
 3. Closures: Formed to match panel profiles; closed cell elastic material, manufacturer's standard color.
 4. Tape Mastic: Pre-formed butyl rubber-based, non-hardening, non-corrosive to metal; white or light gray.
 5. Gunnable Sealant: Non-skinning synthetic elastomer based material; gray or bronze.
- T. Blanket Insulation: Glass fiber, with factory laminated facing material.
1. Glass fiber: Odorless, neutral colored, long filament, flexible resilient, produced in compliance with the NAIMA 202 specifications.
 2. Thermal Resistance: to meet R=10, 11,13, 16, 19, 25, or 30 @ 75 degrees F mean temperature.
 3. Flame spread Index: 25 or less, when tested in accordance with UL 723.
 4. Smoke Developed Index: 50 or less, when tested in accordance with UL 723.
 5. UL Classified.
 6. Facing: White vinyl; embossed, 0.0032" (0.08 mm) +/- 10%thick; permeance in compliance with ASTM E96 1.00 perm (57 ng/Pa s sq m). Composite fiberglass and facing to meet Flame Spread of 25 or less, Smoke Developed of 50 or less, when tested in accordance with UL 723.
 7. Facing: Foil scrim kraft; 0.0003" (0.013 mm) thick aluminum foil, glass fiber scrim reinforcing, 30 lb. kraft paper; permeance 0.02 perms (1.1 ng/Pa s sq m). Composite fiberglass and facing to meet Flame Spread of 25 or less, Smoke Developed of 50 or less, when tested in accordance with UL 723.
8. Facing: White vinyl scrim foil; 0.0016" (0.02 mm) thick vinyl film, glass fiber scrim reinforcing, 0.0005" (0.013 mm) aluminum foil; permeance 0.02 perms (1.1 ng/Pa sq m). Composite fiberglass and facing to meet Flame Spread of 25 or less, Smoke Developed of 50 or less, when tested in accordance with UL 723.

9. Facing: Heavy duty white vinyl scrim foil; 0.002" (0.02 mm) thick vinyl film, glass fiber scrim reinforcing, 0.0005" (0.013 mm) aluminum foil; permeance 0.02 perms (1.1 ng/Pa s sq m). Composite fiberglass and facing to meet Flame Spread of 25 or less, Smoke Developed of 50 or less, when tested in accordance with UL 723.
 10. Facing: White vinyl scrim polyester; 0.0025" (0.076 mm) thick PVC film, glass fiber scrim reinforcing, 0.0005" (0.013 mm) thick polyester film; permeance 0.02 perms (1.1 ng/Pa s sq m). Composite fiberglass and facing to meet Flame Spread of 25 or less, Smoke Developed of 50 or less, when tested in accordance with UL 723.
 11. Facing: White polypropylene scrim kraft; 0.0015" (0.04 mm) thick polypropylene film, glass fiber scrim reinforcing, 11 lb. kraft paper; permeance 0.02 perms (1.1 ng/Pa s sq m). Composite fiberglass and facing to meet Flame Spread of 25 or less, Smoke Developed of 50 or less, when tested in accordance with UL 723.
 12. Facing: Heavy duty white polypropylene scrim kraft; 0.0015" (0.04 mm) thick polypropylene film, glass fiber scrim reinforcing, 14 lb. kraft paper; permeance 0.02 perms (1.1 ng/Pa s sq m). Composite fiberglass and facing to meet Flame Spread of 25 or less, Smoke Developed of 50 or less, when tested in accordance with UL 723
 13. Provide facing 3" (75 mm) wider on both edges than blanket.
 14. Width: As required for installation.
 15. Use blanket insulation at walls.
 16. Use blanket insulation at roof.
 17. Use blanket insulation at roof and walls.
- U. Rigid Board Insulation: Glass-fiber-reinforced polyisocyanurate foam plastic core, nominal density of 2 pcf (32 kg/cu m), with aluminum foil facers on both sides.
1. Facing Finish: _____.
 2. Width: 4' (1220 mm).
 3. Use rigid board insulation at walls.
 4. Use rigid board insulation at roof.
 5. Use rigid board insulation at roof and walls.
 6. Thickness: 1-1/4" (32 mm); R-value: 11.27.
 7. Thickness: 1-1/2" (38 mm); R-value: 13.27.
 8. Thickness: 1-3/4" (44 mm); R-value: 15.27.
 9. Thickness: 2" (50 mm); R-value: 17.27.
 10. Thickness: 2-1/4" (57 mm); R-value: 19.27.
 11. Thickness: 2-1/2" (63 mm); R-value: 21.27.
- V. Thermal Blocks: High density, 3/4" (19 mm) thick expanded polystyrene, for installation over the purlin.
- W. Superblock: 1"x3-1/2" (25x89 mm) extruded polystyrene thermal spacer strips capped by 22 ga. (0.76 mm) galvanized channels, with swaged end for interconnection along the purlin run, metal tabs at 2' (610 mm) on center at SSR clip locations, and pre-punched fastener holes.
- X. Span-Loc Blanket Insulation: Glass fiber insulation, cut to width for applications between or outside of Span-Loc interior ribs.
1. Thermal Resistance R=10 @ 75 degree F mean temperature.

2.4 WALL ACCESSORIES

- A. Windows: Extruded aluminum frames with extruded aluminum sash of 6063-T5 alloy, complying with AAMA 101 performance and testing requirements for Grade _____.
1. Screens: 18 by 16 fiberglass mesh.
 2. Finish on all exposed areas of aluminum windows and fins: Baked enamel complying with AAMA 603.8.
 3. Color: Manufacturer's standard bronze.
 4. Type: Horizontally sliding.
 5. Type: Single hung.
 6. Type: Fixed.
 7. Glass: Sealed insulating units, ASTM E 774, CBA rated with a 5 year warranty against seal failure; polysulfide sealant; overall unit thickness not less than 5/8" (16 mm).
 8. Provide fully tempered glass.
 9. Provide _____ tinted glass.
 10. Provide obscure glass at _____ locations.

B. Service Doors:

1. Doors for Cylindrical Locks: SDI 100, Type 1, Style 2 (1-3/4" (44 mm) thick minimum 20 ga. (0.91 mm) steel face sheets).
2. Doors for Mortise Locks or Panic Devices: SDI 100, Type 2, Style 2 (1-3/4" (44 mm) thick minimum 18 ga. (1.22 mm) steel face sheets).
3. Type: Full flush.
4. Type: Half glass.
5. Type: Narrow lite style.
6. Frames: SDI 100, modified drywall type, 4-3/4" (120 mm) jamb depth minimum 16 ga. (1.52 mm) steel; self-framing and self-flashing.
7. Hardware Reinforcements: Comply with SDI 100; locate so that door and frame are non-handed.
8. Finish: Two coat baked on paint on all exposed surfaces, apply after cleaning and chemical treatment for corrosion resistance and paint adhesion; manufacturer's standard bronze color.
9. Weatherstripping: At jambs, head and sill, complying with water and air resistance requirements of SDI 115 and SDI 116.
10. Hardware:
 - a. One key in-knob lever lockset per opening.
 - b. One mullion and one pair surface bolts per double door opening.
 - c. Three full mortise hinges per leaf, one with non-removable pin.
11. Size: As indicated on drawings.
12. Single Door Size: 3'x7' (915x2135 mm).
13. Single Door Size: 3' 6"x7' (1065x2135 mm).
14. Double Door Size: 6'x7' (1830x2135 mm) overall.

C. Louvers: 18 ga. (1.22 mm) galvanized steel, self-framing, self-flashing with integral head gutter, with paint finish.

1. Type: Fixed blade.
2. Type: Operable blade, with weather-stripped blades and 15' (4575 mm) of pull chain with dogging clip.
3. Screen: Exterior mounted, removable insect screen.
4. Minimum Free Area: 65 percent.
5. Size: 3'x3' (915x915 mm).
6. Size: 4'x3' (1220x915 mm).
7. Color: Manufacturer's standard bronze.

D. Wall Openings: Cold-formed sheet metal framing concealed with manufacturer's standard bronze trim.

2.5 ROOF ACCESSORIES

A. Eave Gutters: Roll-formed 26 ga. (0.45 mm) steel sheet, with gutter straps, fasteners and joint sealant; manufacturer's standard bronze color.

1. Downspouts: 4"x5" (100 mm x125 mm) in 10' (3050 mm) lengths, with downspout elbows and downspout straps; same color as wall panels.

B. Multi-Gutters and Valley Gutters: 0.059" (1.5 mm) thick cold-formed steel sheet.

1. Finish: G90/Z275 galvanized coated.
2. Joints: Field welded or mechanically fastened.

C. Translucent Roof Panels: Tuf-Lite; UV stabilized thermosetting polyester resin reinforced with chopped and woven roving glass fiber; manufacturer's standard configuration.

1. Color: White, with textured exterior surface and minimum 50 percent light transmittance.
2. Self-Ignition Temperature: 650 deg F (343 deg C) or greater, when tested in accordance with ASTM D 1929.
3. Smoke Density Index: 450 or less, when tested in accordance with ASTM E 84, or 75 or less, when tested in accordance with ASTM D 2843.
4. Extent of Burning: 1" (25.4 mm) or less, when tested in accordance with ASTM D 635.
5. Rate of Burning: 2.5" (64 mm) per minute or less, when tested in accordance with ASTM D 635.

Condensation Control Pan: Bonded to interior surface.

Optional UL 90 rating is available.

D. Gravity Ventilators: APEX 20; factory assembled, round, with 20" (510 mm) diameter throat with damper, operating cord and bird screen and base configured to match roof panel.

1. Color: Manufacturer's standard white.
2. Provide insulation retaining grid at interior.

- E. Ridge Ventilators: 10' (3050 mm) long, 26 ga. (0.45 mm) Galvalume, with damper with chain and worm gear operator and bird screen, and base configured to match roof panel.
 - 1. Throat Opening: 9" (229 mm).
 - 2. Throat Opening: 12" (305 mm).
 - 3. Connect individual vents to form continuous ridge vent with one operator for each 5 vents.
- F. Structural Facade System: Facade mounted below the plane of the roof, without roof supports.
 - 1. Face: Panel Rib wall panels.
 - 2. Face: Vee Rib wall panels.
 - 3. Face: VP002 soffit panels.
 - 4. Face: _____.
 - 5. Face Style: Vertical
 - 6. Face Style: Mansard with incline of _____.
 - 7. Height: _____' (_____ m), with bottom edge at 2' (610 mm) below building eave line.
 - 8. Close space between facade and roof with gutter.
 - 9. Provide standard eave gutter on roof with open space between gutter and back side of facade.
 - 10. Back Side: Closed with standard wall panels.
 - 11. Soffit: Matching panels.
- G. Roof Curbs: Welded units fabricated for shingled installation with roof panels; minimum 18 ga. (1.22 mm) Galvalume coated steel, with welds cleaned and treated with protective coating compatible with the Galvalume substrate.
 - 1. Top of curbs horizontal with 1-1/2" (38 mm) perimeter flange.
 - 2. Curb walls insulated with 1-1/2" (38 mm), 3 pcf (48 kg/cu m) density rigid glass fiber insulation.
 - 3. Water Diversion: Integral 4" (100 mm) high by full length cricket on upslope side.
 - 4. Exposed curb flanges pre-drilled for correct fastener locations.
 - 5. Upslope and downslope curb flanges with integral welded inside and outside cell closures compatible with the roof panel profile.
 - 6. Curb Framing: Mounted on secondary structural members and installed from the top; compatible with the thermal expansion and contraction properties of the roof on which it is used.
 - 7. Opening Size: As indicated on drawings.
 - 8. Roof Access Hatch: Manufacturer's standard 30" by 36" (760 by 915 mm) opening, with curb.
 - 9. Curbs for SSR Roof Panels: One-piece type.
 - 10. Curbs for SSR Roof Panels: Three-piece type.
 - 11. Curbs for SSR Roof Panels: Seamed in type.
 - 12. Curbs for SSR Roof Panels: CFR Retrofit type.
- H. Roof Walkways: 18 ga. (1.22 mm) G90/Z275 galvanized planks, supports and hardware; for attachment to top of the SSR rib with no fastener penetrations through roof panel.
 - 1. Planks: Interlocking, with slip resistant die formed tooth pattern on surface.
 - 2. Width: As indicated on drawings.
 - 3. Width: 18" (457 mm).
 - 4. Width: 24" (610 mm).
 - 5. Width: 36" (915 mm).
 - 6. Length: 20' (6.1 m) modules.

PART 3 EXECUTION

3.1 EXAMINATION

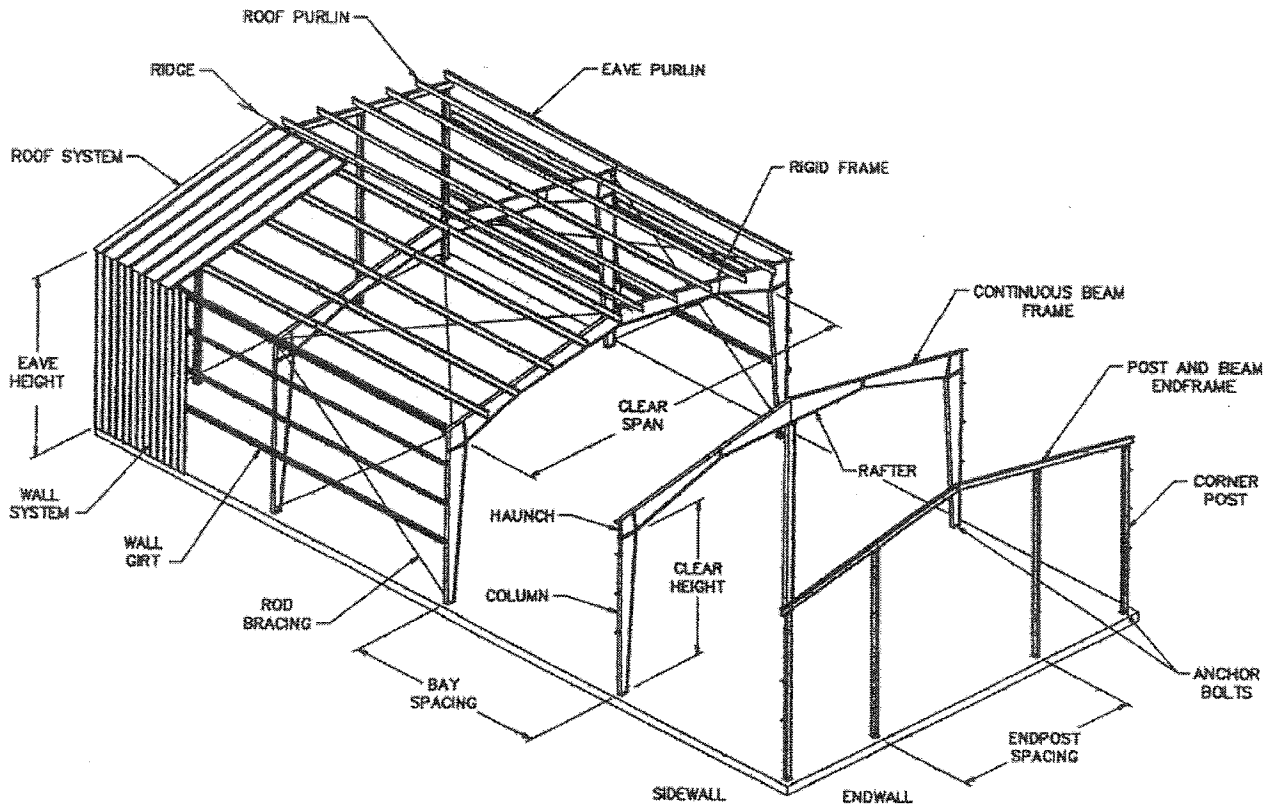
- A. Verify that foundations are installed correctly.
- B. Verify that anchor bolts are installed as indicated on anchor bolt shop drawings.

3.2 ERECTION

- A. Erect building system in accordance manufacturer's instructions, erection drawings, OSHA regulations and all other applicable erection documents.
- B. Provide temporary bracing, shoring, blocking, bridging and securing of components as required during the erection process.

END OF SECTION

BASIC ELEMENTS OF A BUILDING



Anchor Bolts

Bolts utilized to secure building components to the foundation.

Bay Spacing

The distance between primary framing members measured parallel to the ridge or eave. Interior bays are measured from center line of frame to center line of frame.

Exterior Bays

Last frame spacing on either end of the building are measured from the building line (outside face of girt) to the center line of the first interior frame.

Clear Height

Distance from the finished floor to the bottom of the rafter at the lowest point along the rafter.

Clear Span

Clear distance between columns.

Column

Vertical support member for primary framing system.

Continuous Beam Frame

A multiple-span structural frame consisting of straight or tapered solid-web sections whose exterior rafter-to-column moment connection stabilizes the frame. The frame spans across the width of the building utilizing interior columns and supporting secondary framing along with roof and wall coverings. This frame is designed in accordance with AISC Type I construction.

Corner Post

Corner column of post-and-beam frame.

Eave Height

The vertical dimension from finished floor to eave.

Eave Purlin

A roof secondary framing member located at the eave used for attachment of roof and wall panels.

End Post Spacing

Distance between center lines of end posts.

Endwall

An exterior wall which is perpendicular to the ridge and parallel to the gable of the building.

Haunch

The area of increased depth of the column or rafter member which is designed to account for the higher bending moments that occur at such places. Typically this occurs at the rafter-to-column connection.

Post-and-Beam End-frame

A structural framing system utilized at the endwall which is composed of corner post, end post and rake beams.

Rafter

A fabricated member that extends from the haunch member to the frame ridge. Any beam, in general, used in a primary frame. Ridge Apex of building.

Rigid Frame

A clear-span structural frame consisting of straight or tapered sections whose rafter-to-column connection stabilizes the frame with respect to imposed loads. This frame is designed in accordance with AISC Type I construction.

Rod Bracing

Rods are utilized in conjunction with purlins and girts to form a truss-type bracing system located in both roof and wall planes.

Roof Purlin

A roof secondary member which is secured to frame rafters and supports the roof covering.

Roof System

The exterior roof surface consisting of panels, closures and attachments.

Sidewall

An exterior wall which is parallel to the ridge and to main frames.

Wall Girt

A horizontal wall secondary member which is secured to columns and supports the wall covering.

Wall System

The exterior wall surface consisting of panels, closures and attachments.