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Standard Features Technical

PRIMARY FRAMING – MAINFRAMES

Solid “I” Beam construction for increased strength or the Built-up “I” Beam for those locations where strength and versatility are required. Both beams have a tensile strength of 50,000 to 55,000 psi, which exceeds industry requirements of 35,000 psi. The columns or rafters can be either uniform depth or tapered.

End wall columns and roof beams are cold-formed and mill rolled. Depending upon the engineering and/or architectural requirements, hot formed “I” sections may be used.

All base plates, splice plates, cap plates and stiffeners are factory welded into place on the structural members. All base plates, splices and flanges have shop fabricated boltholes as well as the webs of the structural framing. (Connections for secondary structural framing, such as girts and purlins will have welded clips.)

SECONDARY FRAMING

Girts and Purlins: Girts will be located in the end walls and sidewalls unless otherwise engineered. Purlins are top mounted on the roof rafter. Girts and purlins are a cold-formed “Z” section. The size range is 8”, 10” or 12”. The gauge of steel used is 16, 14, 13 or 12. The first girt is located at 7’-4” AFF and the maximum distance apart will be 6’ thereafter. The maximum purlin spacing is 5’.

Eave Strut is a cold-formed C-section designed to match the roof pitch for proper sealing of the roof panel against the purlins. The rake trim is a 2” x 4” angle that is supplied for the attachment of the roof panel at the rake of the building for ease of installation.

Base Angle is a 2” x 4” steel angle that attaches to the foundation by which the base of the wall panel may be attached around the perimeter of the building.



BRACING

Diagonal Bracing supplied will be galvanized steel cable or solid rod and will be used in the roof and sidewalls to remove longitudinal loads (wind, crane, etc.) from the structure.

When diagonal bracing is not permitted in the sidewall a portal frame or fixed base columns will be used.

Flange Bracing is provided for the connection from the primary framing to the web of the girts or purlins to ensure that the allowable compressions are adequate for any combination of loading.

Framed openings have cold-formed C-section jambs and headers to provide for easy installation of overhead doors, etc.

COATINGS

Galvanized steel is generated with a G-90 process that contains 1.25 oz of zinc. The steel goes through a hot dipped process into molten zinc. When finished the galvanized steel is produced and ready for other protective coatings. All Federal Steel Systems coil steel is G-90 galvanized before final finishes.

Galvalume AZ55 consists of 55% aluminum, 43.5% zinc and 1.5% silicon. This is a hot dipped process. The material tensile strength is 80,000 psi.

Our Signature 200 SMP Commercial paint coatings consist of 14 colors and our Signature 300 PVDF, Kynar 500, Hylar 5000 provide additional colors and protection. There are more selections in our Architectural series.

Roof and wall panels are 26 and 24 gauges with a tensile strength of 80,000 psi while the industry minimum requirements are 50,000 psi. Wall panels range from high rib to architectural and roof panels range from high rib to standing seam.



FASTENERS

Structural Bolts used in connections of secondary framing to primary framing are zinc plated ASTM A307 or ASTM 325 as required by design.

Self-drilling and Self-tapping fasteners are pre-assembled with neoprene washers and metal caps to ensure weather tightness.

SEALANTS and CLOSURES

Closure strips match the corrugations of the roof and wall panels. They consist of pre-formed rubber, neoprene or polyethylene and are placed along the eave, ridge, rake and the base when required. The closure strips provide a weather tight condition. They also deter rodent, fowl and insect infiltration.

Sealants for the roof sidelaps, end laps and flashing at the gable are provided to insure weather tightness. The material will have a Butyl base elastic compound with minimum solid content of 99%.

GUTTER, FLASHING and DOWNSPOUTS

Gutters, standard exterior, Downspouts and Flashing are 26 gauge Galvalume Plus steel with painted finish in our standard colors. All Downspouts are rectangular in shape. Flashing and trim at the rake (parallel to the roof panels) and high eave will not compromise the integrity of the roof system by constricting movement due to thermal expansion contraction.

PLANS and DRAWINGS

Engineered Certified Approval Drawings will include roof and wall framing diagrams, elevations, cross sections and flashing details. The drawings provide clear instructions as to the proper erecting procedures and the assembly of all building components.

A part number is assigned to all components (excluding the fasteners). These part numbers will coincide with the detailed list of materials. These same part numbers are used on the illustrations to provide clarity for the assembly process.



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Anchor Bolt Setting Plans will be designed to resist the maximum column reactions resulting from the specified combinations of loadings. Anchor bolts and engineered foundation drawings are NOT supplied by Federal Steel Systems.

Construction Manuals and Drawing Plans will provide instructions for easy and rapid assembly of the building.

Certification will contain the design analysis and will bear the seal of a registered professional engineer upon request.

STRUCTURAL STEEL DESIGN

The building standards, specifications, recommendations, findings and/or interpretations of professionally recognized groups such as AISC, AISI, AAMA, AWS, ASTM, MBMA, Federal Specifications and unpublished research by MBMA as the basis for establishing design, drafting, fabrication, quality criteria, practices and tolerances. One or more sources may be referenced in a particular portion of these specifications. In all instances the design, drafting, fabrication and quality criteria, practices and tolerances shall govern, unless specifically countermanded by the contract documents.

Structural mill sections or welded plate sections will be designed in accordance with the 9th edition of AISC's "Specification for the Design, Fabrication and Erection of the Structural Steel for Buildings", ASD method.

Cold-Formed steel structural members will be designed in accordance with the latest edition of AISI's "Specifications for the Design of Cold-Formed Steel Structural Members".



A Better Way To Build