

1.0 - GENERAL

1.1 Scope

The pre-engineered steel building package shall consist of primary and secondary structure, standing seam metal roof system, roof and wall insulation system, exterior wall cover, fascia panel, trim and flashing, closures, caulking, fasteners and other miscellaneous metal building components or accessory items as shown or called for in the drawings or specifications and as required.

1.2 Related Sections

- A. Division One
- B. Section 07610 – Standing Seam Roof and Sheet Metal System
- C. Section 08110 - Hollow Metal Doors and Frames
- D. Section 08330 - Rolling Service Door
- E. Section 07215 - Pre-engineered Steel Building Insulation

1.3 Qualifications

- A. A complete structural analysis of the design is to be made to demonstrate that requirement of design and load criteria are met.
- B. A copy of manufacturer's calculations and analysis shall be furnished to the Architect.
- C. Metal building manufacturer shall be accredited by the International Accreditation Services' IAS Accreditation for Inspection Programs for Manufacturers of Metal Building Systems (AC472). Metal Building Manufacturer shall be currently enrolled in an IAS accreditation program and shall maintain such throughout the course of the project.
- D. Metal building shall be designed in accordance with "The Metal Building Manufacturers Association's Design Practice Manual."
- E. The metal building design engineer is responsible for the complete design of the metal building system.
- F. The erector shall have attended quality control training that is provided by or approved by the metal building supplier for erection of the metal building that is being supplied for the project

1.4 Submittals

- A. Shop Drawings for approval. Drawings and design analysis shall bear the seal of a registered professional engineer registered in the State of Alabama. Submittal shall include layout of all members, connections, and accessories and associated details for erection.
- B. Documentation of manufacturer's current (up-to-date) IAS certification shall be submitted to the Architect. If accreditation expires during the course of the project renewed certificate shall be

submitted as well.

- C. Record or certificate of erector training for metal building system being erected.
- D. Building exterior components samples.
- E. Color samples for approval.
- F. Minutes of pre-installation meeting.

1.5 Warranties

All materials and workmanship covered by this section shall be guaranteed from date of final acceptance of the Contract, or from occupancy of the building whichever is earlier.

- A. Wall Paint Warranty  
All wall panels shall be guaranteed for a period of twenty (20) years minimum against chalk, fade, crack, check, blister or peel.
- B. Roof Paint Warranty  
The roof system shall be provided under Section 07610.
- C. **Standard manufacturer's roofing guarantees (or warranties) which contain language regarding the governing of the guarantee (or warranty) by any state other than the State of Alabama, must be amended to exclude such language, and substituting the requirement that the Laws of the State of Alabama shall govern all such guarantees (or warranties).**

1.6 General

- A. All components including, but not limited to the following will be furnished and installed for the complete steel structural framework: anchor bolts, wall and roof panels, downspouts, gutters, fascias, insulation, all necessary closures, trims, flashing and fasteners to provide a weather proof building, and miscellaneous accessories as specified.
- B. All steel shall be new, clean and straight. Welding shall be done by qualified operators and the specifications of the American Welding Society adhered to. Workmanship on all parts will be equal to that of best modern shop practices.
- C. Walk-thru doors and hardware furnished and installed under Hollow Metal Doors and Frames - Section 08110 And Finish Hardware - Section 08710.
- D. Rolling Service Doors - Section 08330.
- E. Pre-Installation Conference: Hold conference at Project site. Conference shall be attended by a representative from the metal building supplier, Contractor's Project superintendent, testing and inspection agency, and the metal building erector. Discuss sequencing and process of erection and coordination with other trades. Discuss testing and inspection procedures and coordination of construction activities to facilitate required testing and inspection.
- F. The standing seam metal roofing system shall be provided in conjunction with the Pre-engineered Steel Building under Section 07610.

- G. The roof and wall insulation system shall be provided in conjunction with the Pre-Engineered Steel Building System under Section 07215.

2.0 - PRODUCT

2.1 General

- A. All structural mill sections or welded up plate sections shall be designed in accordance with the AISC "Specification for the Design, Fabrication and Erection of Structural Steel for Buildings", latest edition.
- B. All Cold-formed steel structural members shall be designed in accordance with the AISI "Specification for the Design of Cold-formed Steel Structural Members", latest edition.

2.2 Design Loads

- A. The design loads for the building shall be, in addition to their own dead load, the live, wind, snow and seismic loads required of the following as specified:
  - 1. 2015 International Building Code.
  - 2. Low Rise Building Systems Manual, by the Metal Building Manufacturers Association.
- B. The building components shall be designed to meet the most severe conditions of load combinations set by the specified building code, but in no case be less than that produced by the following load combinations:
  - 1. Building dead load plus roof live load (or snow).
  - 2. Building dead load plus wind load.
  - 3. Building dead load plus wind load plus one-half roof snow load.
  - 4. Building dead load plus roof snow load plus one-half wind load.
- C. Roof live and snow loads shall be applied on the horizontal roof projection. Wind loads shall be assumed to act horizontally and shall be applied as pressure and suction perpendicular to the building surface.
- D. Design load requirements shall be determined by local conditions, applicable codes, building end use, etc. Application of design loads shall be in accordance with the Design Practices sections of the Metal Building Manufacturers Association (MBMA) Building Systems Manual, unless specified otherwise. **NOTE:** See all drawings for additional point loading on the roof structure (including but not limited to roof top mechanical units, hanging equipment loads, continuous heavy piping loads, etc.).
- E. Minimum design collateral loads supported on or hung from the roof structure shall be as follows:

Minimum Design Collateral Load (MDCL) ..... 10 psf

These collateral loads shall be applied in addition to self-weight of building frame, roof decking and roof covering weights.

- F. Deflection Limits:
  - Roof Purlins and Rafters: DL Span/360, LL Span/360, TL Span/240.
  - Girts Supporting Metal Panels: Horizontal deflection Span/120.
  - Overall Building Drift: H/200 where "H" is the building eave height.
  - Note specific deflection requirements and expansion joints noted on drawings.

### 2.3 Primary Framing Steel

- A. Steel for hot-rolled structural sections shall conform to the requirements of ASTM specification A 36.
- B. Steel for all built-up sections shall meet as applicable the physical and chemical properties of ASTM A 572 modified to 55,000 psi minimum yield and 70,000 psi minimum tensile strength, or ASTM A 607-85, Grade 55, or ASTM A 570-88, Grade 55.
- C. Steel for all endwall "C" sections shall meet the physical and chemical properties of ASTM A 570-88, Grade 55.
- D. Rigid Frame: All rigid frames shall be welded, built-up "I" sections. The columns shall be straight or sloped with a minimum depth of 12" for primary frame members. Bases of frames are to be pinned.
- E. Endwall Frames: All endwall roof beams and endwall columns shall be cold-formed "C" sections, mill-rolled sections, or built-up "I" sections as required for future bay addition.
- F. Plates, Stiffeners, etc.: All base plates, splice plates, cap plates, and stiffeners shall be factory welded into place on the structural members.
- G. Bolt Holes, etc: All base plates, splice plates and flanges shall be shop fabricated to include bolt connection holes. Webs shall be shop fabricated to include cable brace or rod brace holes and flange brace holes.

### 2.4 Secondary Framing Steel

- A. Steel used to form purlins, girts, eave struts and "C" sections shall meet the physical and chemical properties of ASTM A 570-88, Grade 55.
- B. Steel used to form zinc-coated (galvanized) rolling service door frames shall meet the physical and chemical properties of ASTM A 446-87, Grade D and G 90 Coating designation as described in ASTM A 525-87.
- C. Purlins and Girts: Purlins and girts shall be cold-formed "Z" or "C" sections with stiffened flanges. They shall be pre-punched at the factory to provide for field bolting to the primary framing. They shall be simple or continuous span as required by design. Coordinate with Section 07610 for roof system attachment requirements for compliance with wind speeds as per 2015 IBC.
- D. Bracing Struts: Provide bracing struts of round HSS or pipe sections sized as required to transfer lateral forces into primary structural frame system.
- E. Eave Struts: Eave Struts shall be unequal flange, cold-formed "C" sections.
- F. Base Angle: A base member will be supplied by which the base of the wall covering may be attached to the perimeter of the slab. This member shall be secured to the concrete slab with concrete anchors.
- G. Provide attachment and support framing for wall mounted equipment.
- H. Provide all additional steel framing as required to achieve intended overhang system as indicated.

2.5 Bracing

- A. Diagonal Bracing: Diagonal bracing in the roof shall be used to resolve horizontal loads (wind, seismic, crane, etc.) from the roof structure into the longitudinal bracing frames or transverse rigid frames. This bracing will be furnished to length and equipped with bevel washers and nuts at each end. It may consist of rods threaded each end or galvanized cable with suitable threaded end anchors.
- B. Flange Braces: The compression flange of all primary framing shall be braced laterally with angles connecting to the webs of purlins or girts so that the flange compressive stress is within allowable limits for any combination of loadings.
- C. Longitudinal and Special Bracing: **Diagonal bracing is not permitted in the sidewall**, a rigid frame type portal with pinned bases must be used. Coordinate load path of sidewall bracing frames with load path of wind/seismic bracing in the roof. Provide additional bracing as required to transfer all horizontal loads into the primary structural system.
- D. Coordinate trades with locations of bracing. Bracing shall not be removed or cut to facilitate installation of other trades unless approved in writing by the metal building design engineer.

2.6 Wall Panel Material

Panel material as specified shall be 24 gauge zinc-coated (galvanized) steel, coating designation G 90, conforming to the requirements of ASTM A 446 Grade D. Minimum yield stress shall be 50,000 psi.

2.7 Connections

- A. All field connections shall be bolted (unless otherwise noted).
- B. All shop connections shall be welded using either submerged or shielded arc process, and welding shall be in accordance with the applicable sections, relating to design requirements and allowable stresses, of the latest editions of the American Welding Society "Structural Welding Code."
- C. Metal building designer shall size anchor rods and provide details for required anchorage to the foundations.

2.8 Roof Covering

- A. The roof system shall be provided under Section 07610.
- B. Purlins shall be insulated so as to eliminate "thermal short circuits" between purlins and roof panels, with continuous thermal spacer blocks.

2.9 Wall Covering

The Exterior wall covering shall be first quality pre-finished 24 gauge galvanized steel architectural type panels (A.S.T.M. Galvanized Specifications). Continuous length panels will be precision roll-formed 36" panels nom. with ribs at 12" o.c. approved equal to MBCI "A" Panel or McElroy Metal Multi-"V" Panel. The interior liner panels shall be minimum 3/4" thick 24 gauge - panel profile and finish to be approved by architect.

2.10 Panel Fasteners

Panel fasteners will be galvanized self-tapping hex head screws. A self sealing washer will be used under the head of all panel fasteners. Galvanized screws will be used on the sidewalls of all colored buildings. Fasteners shall be pre-finished to match wall panel color. Install uniformly.

- 2.11 Weather Sealing
- A. Sealant  
Sealant to be used in all end panel laps on roofs and all other locations recommended by the manufacturer or required for weathertightness.
  - B. Weather Seal Strips  
Sealer strips to be moulded from first grade high quality polyurethane to ensure long life.
- 2.12 Paint
- A. Exterior Paint and Interior Paint (For Exterior Wall Panels and , Interior Liner Panels)  
A 70% minimum Kynar 500 finish shall be applied over galvanized steel and shall be given a chemical conversion treatment prior to painting. See paragraph 1.4 for Warranty requirements. Color shall be approved by the Architect to match existing.
  - B. Structural Paint
    - 1. All fabricated structural steel to be shot blast cleaned to remove loose rust, mill scale, etc. After inspection for accuracy of fabrication, it shall receive one shop coat of manufacturer's standard gray finish.
    - 2. Any field touch-up necessary shall be the responsibility of the erector.
- 2.13 Gutters, Downspouts, and Roof Flashings
- A. Gutters, downspouts and roof flashings to be furnished under Section 07610.
  - B. General Flashings - gables and eaves will be flashed with 26 gauge galvanized fascia trim. Corners of the building will be provided with 26 gauge galvanized steel corner trim. Door, window and sill trim will be provided in 26 gauge galvanized steel. Painted galvanized steel flashings will be fabricated from prefinished steel using the same paint specifications as wall and roof sheets.
- 2.14 Glass Fiber Insulation  
Wall and Roof Glass Fiber Insulation shall be provided under Section 07215. Insulation shall have Underwriter's Label. All insulation shall be protected and maintained dry. Wet Insulation shall be rejected.
- 2.15 Framed Openings This contractor to provide framed openings with pre-finished flashing to accommodate mechanical equipment such as louvers, grilles, piping, conduit furnished by other trades.
- 2.16 Roof and Wall Penetrations  
All roof penetrations shall be flashed by roofing installer under Section 07610. Roof curbs shall be provided by roofing system installer as required to maintain weathertight responsibility.

### 3.0 - EXECUTION

- 3.1 Erection  
All components herein specified and indicated shall be furnished and erected in accordance with details and manufacturer's instructions. Erection shall be performed by a qualified erector who has attended training by the building manufacturer of the system being installed using proper tools

and equipment. It shall be the responsibility of the erector to comply with all applicable legal and safety requirements. It shall further be the responsibility of the erector to determine and provide any and all temporary bracing, bridging, blocking, shoring, and/or securing of components, etc. as required for stability during the entire erection process. Protect the concrete from surface and structural damages.

3.2 Coordination

All components herein specified and indicated shall be coordinated with other trades that effect components including but not limited to the following:

- Concrete – Section 03300
- Pre-engineered Building Insulation - Section 07215
- Standing Seam Metal Roofing – Section 07610
- Hollow Metal Doors and Frames - Section 08110
- Rolling Service Doors - 08330
- Finish Hardware - Section 08710
- Mechanical - Division 15
- Electrical - Division 16

END OF SECTION

