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METAL BUILDING SYSTEM SPECIFICATIONS

1. GENERAL

1.1. SCOPE

- 1.1.1. These specifications apply to metal buildings systems as engineered, designed, and fabricated by Tyler Building Systems, L.P. ("Tyler").
- 1.1.2. These specifications describe Tyler's "standard" metal building system. In the absence of contract requirements or restrictions to the contrary, these specifications accurately describe the product provided by Tyler. However, these specifications are in no way intended to limit the available options associated with Tyler's metal building system.
- 1.1.3. These specifications are intended for use by Tyler's employees, customers, and vendors.
- 1.2. Research & Development: Because of a continuing program of research and development these specifications are subject to change without notice.

2. DRAWINGS

- 2.1. Drawings: Tyler shall furnish the following drawings with all metal building systems for the proper identification and assembly of building components.
 - 2.1.1. Anchor Rod Plan: Shows the diameter, location and projection of all anchor rods for the components of the metal building system. Column reactions and base plate size will also be shown.
 - 2.1.2. Erection Drawings: Roof and wall erection (framing) drawings that identify individual components and accessories furnished by Tyler in sufficient detail to permit proper erection of the metal building system.

3. STRUCTURAL STEEL DESIGN

3.1. GENERAL

- 3.1.1. Tyler shall use standards, specifications, recommendations, findings and/or interpretations of professionally recognized groups such as American Institute of Steel Construction (AISC), American Iron and Steel Institute (AISI), American Welding Society (AWS), ASTM International (formerly the American Society for Testing and Materials, ASTM), Metal Building Manufacturer's Association (MBMA), and the Society for Protective Coatings (SSPC) as the basis for establishing engineering, design, fabrication, and quality criteria, practices, and tolerances. For convenience, one or more sources may be referenced in a particular portion of these specifications. In all instances, however, Tyler's engineering, design, fabrication and quality criteria, practices, and tolerances shall govern, unless specifically stated otherwise in the contract documents.
- 3.1.2. Structural mill, or welded up plate components shall be designed in accordance with AISC's "Specification for Structural Steel for Buildings," Allowable Stress Design and Plastic Design, June 1, 1989.

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

3.2. DESIGN LOADS

- 3.2.1.1. Design loads shall be as specified and set forth in the contract documents.

3.3. DESIGN POLICY

- 3.3.1. Tyler's standard design practices incorporate Serviceability Limits from the International Building Code, indicated in the "Metal Roof & Walls Panels" table below. Owner requirements that exceed Tyler's standards must be included in the building order documents. The applicable building code may also provide deflection limitations. "Flexible Ceiling" schedule will be used for buildings that have suspended or sheet rock ceilings. "Flexible Wall" schedule will be used for buildings that have sheet rock interior walls, or some type of flexible exterior wall material (e.g., wood). "Brittle Ceiling" schedule will be used for buildings that have plaster ceilings. "Brittle Wall" schedule will be used for buildings that have masonry, glass, stucco, EIFS, etc. walls.

Metal Roof & Wall Panels

Endwall Column	L/120
Endwall Rafter (live)	L/180
Endwall Rafter (wind)	L/180
Wall Girt	L/90
Roof Purlin (live)	L/150
Roof Purlin (wind)	L/150
Wall Panel	L/60
Roof Panel (live)	L/60
Roof Panel (wind)	L/60
Rigid Frame (horizontal)	H/90
Rigid Frame (vertical)	L/180
Wind Framing	H/90

Flexible Ceiling

Endwall Column	L/120
Endwall Rafter (live)	L/240
Endwall Rafter (wind)	L/240
Wall Girt	L/90
Roof Purlin (live)	L/240
Roof Purlin (wind)	L/240
Wall Panel	L/60
Roof Panel (live)	L/60
Roof Panel (wind)	L/60
Rigid Frame (horizontal)	H/90
Rigid Frame (vertical)	L/240
Wind Framing	H/90

Flexible Wall

Endwall Column	L/120
Endwall Rafter (live)	L/180
Endwall Rafter (wind)	L/180
Wall Girt	L/120
Roof Purlin (live)	L/150
Roof Purlin (wind)	L/150
Wall Panel	L/60
Roof Panel (live)	L/60
Roof Panel (wind)	L/60
Rigid Frame (horizontal)	H/90
Rigid Frame (vertical)	L/180
Wind Framing	H/90

Brittle Ceiling

Endwall Column	L/120
Endwall Rafter (live)	L/360
Endwall Rafter (wind)	L/360
Wall Girt	L/90
Roof Purlin (live)	L/360
Roof Purlin (wind)	L/360
Wall Panel	L/60
Roof Panel (live)	L/60
Roof Panel (wind)	L/60
Rigid Frame (horizontal)	H/90
Rigid Frame (vertical)	L/360
Wind Framing	H/90

Brittle Wall

Endwall Column	L/240
Endwall Rafter (live)	L/180
Endwall Rafter (wind)	L/180
Wall Girt	L/240
Roof Purlin (live)	L/150
Roof Purlin (wind)	L/150
Wall Panel	L/60*
Roof Panel (live)	L/60
Roof Panel (wind)	L/60
Rigid Frame (horizontal)	H/120
Rigid Frame (vertical)	L/180
Wind Framing	H/120

* If EIFS is attaching to metal panels, use L/240.

4. MATERIAL SPECIFICATIONS

- 4.1. For specifications concerning specific material used for production of Tyler's buildings, see Tyler's Material Specifications.

5. STRUCTURAL FRAMING SPECIFICATIONS

5.1. GENERAL

- 5.1.1. All framing members shall be shop fabricated for field bolted assembly. The surfaces of the bolted connections shall be smooth and free from burrs or distortions.
- 5.1.2. All shop-welded connections shall be in accordance with the American Welding Society (AWS) Code for Building Construction. Certification of welder qualifications will be furnished when required and specified in advance.
- 5.1.3. All framing members, where necessary, shall have an identifying mark.
- 5.1.4. Visual inspection methods will be used for verification of weld quality as outlined by the AWS Structural Steel Welding Code, *Visual Inspection Acceptance Criteria*, Table 6.1

5.2. PRIMARY FRAMING

- 5.2.1. Rigid Frame: All rigid frames shall be welded built-up sections or mill shapes as required by design specifications. The built-up columns and rafters may be either constant or tapered depth. Flanges shall be connected to webs by means of a continuous fillet weld on one side.
- 5.2.2. Endwall Frames: All endwall roof beams and endwall columns shall be cold-formed "C" sections, mill-rolled sections, or built-up "I" sections depending on design requirements.
- 5.2.3. Plates, Stiffeners, etc.: All base plates, splice plates, cap plates, and stiffeners shall be factory welded into place on the structural members.
- 5.2.4. Bolt Holes: All base plates, splices, and flanges shall be shop fabricated to include bolt connection holes. Webs shall be shop fabricated to include bracing holes.
- 5.2.5. Connections for secondary structural (purlins and girts) shall be by means of shop welded clips.

5.3. SECONDARY FRAMING

- 5.3.1. Purlins and Girts: Purlins and girts shall be cold-formed "Z" sections with stiffened flanges. They shall be prepunched at the factory to provide for field bolting to clips. They shall be flush or by-pass as required by design and the contract documents. Connection bolts will install through the webs.
- 5.3.2. Eave Struts: Eave Struts shall be unequal flange cold-formed "C" sections.
- 5.3.3. 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. Base angle shall be secured to the concrete slab with expansion anchors.

5.4. BRACING

- 5.4.1. Diaphragm Bracing: Additional wind bracing in the walls need not be furnished where it can be shown that the diaphragm strength of the wall covering is adequate to resist the applied wind forces.
- 5.4.2. Diagonal Bracing: Diagonal bracing in the roof and sidewalls shall be used to remove longitudinal loads (wind, crane, etc.) from the structure. This bracing will be furnished to length and equipped with a bevel washer, flat washer, and nut at each end. It may consist of rods threaded at each end or galvanized cable with suitable threaded-end eyebolts. If load requirements so dictate, bracing may be of structural angle and/or pipe, bolted in place.
- 5.4.3. Flange Bracing: 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.
- 5.4.4. Special Bracing: When load requirements, or Tyler Quality Standards, do not allow panel shear bracing and diagonal bracing is not permitted in the sidewall, a wind bent frame, wind column, or fixed base column(s) will be used.

6. ERECTION AND INSTALLATION

- 6.1. Building erection and the installation of accessories shall be performed in accordance with erection drawings by a qualified erector using proper tools and equipment. Erection practices shall conform to MBMA's Metal Building Systems Manual, 2002 ed., part IV Common Industry Practices, Sections 5-6.
- 6.2. There shall be no field modifications to primary structural members except as authorized and specified by Tyler Building Systems, L.P.

7. BUILDING ANCHORAGE AND FOUNDATION

- 7.1. The building anchor rods shall be designed to resist the maximum column reactions resulting from the specified combinations of loadings. The quantity, location, and diameter of these anchor rods and the minimum projection of these anchor rods above the foundation concrete shall be specified by Tyler. Anchor rod embedment into the concrete must be determined by the foundation engineer. Anchor rods are not supplied by Tyler.
- 7.2. Expansion anchors (also referred to as Rawl Studs, Hilti Bolts, Kwik Bolts, etc.) may be provided to anchor miscellaneous doors, field located framed openings, or field located secondary framing members. The foundation engineer must determine if expansion anchors are approved and adequate for the application.
- 7.3. Foundations shall be adequately designed by a qualified foundation engineer to support the building reactions and other loads that may be imposed by the building use. The design shall be based on the specific soil conditions of the building site. The engineering of the foundation is not provided by Tyler. Tyler assumes no responsibility for the integrity of the foundation.

8. WARRANTIES

- 8.1. Material Fabricated by Seller – All products fabricated by Seller are warranted against failure due to defective material or workmanship for a period of one (1) year after shipment. Seller's liability being limited to furnishing (but not dismantling and installing) necessary replacement material f.o.b. factory with freight allowed to destination. Seller reserves the right to determine what

material or workmanship is defective. THIS WARRANTY IS IN LIEU OF OTHER WARRANTIES EXPRESSED OR IMPLIED, AND THERE ARE NO FITNESS WARRANTIES, REPRESENTATIONS OR CONDITIONS OF ANY KIND, EXPRESSED OR IMPLIED, INCLUDING WARRANTY OF MERCHANTABILITY OR OF FITNESS FOR ANY PARTICULAR PURPOSE BEYOND THE WARRANTY STATED HEREIN. IN NO EVENT SHALL SELLER BE LIABLE FOR LOSS OF PROFITS, OR OTHER INCIDENTAL, CONSEQUENTIAL, OR SPECIAL DAMAGES. Material Not Fabricated by Seller – Seller agrees to assign or pass through to Buyer, to the extent that they are assignable, all third-party manufacturer's, vendor's, and supplier's warranties and guaranties, and authorizes Buyer to enforce all such obligations in Buyer's own name. Buyer must make warranty claim for material not fabricated by Seller solely against the third-party manufacturer, vendor or supplier.