

SECTION 13 34 19

METAL BUILDING SYSTEMS

Note: This section must be reviewed and edited by the Architect or Engineer to meet the requirements of the project and local building code. Coordinate this section with other specification sections and the drawings. Delete all "Notes" after editing.

PART 1 GENERAL

1.1 SECTION INCLUDES

- A. Metal Framing Components
- B. Metal Wall Panels and Trim
- C. Metal Roof Panels and Trim
- D. Metal Building Accessories

Note: Please add to this as needed and delete any that do not apply.

1.2 RELATED SECTIONS

- A. Section 03 15 00- Placement of anchor bolt, leveling plates and grout.
- B. Section 03 30 00- Cast-in-place concrete.
- C. Section 05 21 00 - Steel joist framing.
- D. Section 05 31 00 - Steel decking.
- E. Section 08 31 00 - Overhead doors.
- F. Section 08 50 00 - Windows.
- G. Section 08 60 00 - Skylights, Translucent Panels, Wall lights.
- H. Section 09 90 00 - Painting: Finish painting of primed steel surfaces.

1.3 REFERENCE STANDARDS

- A. American Institute of Steel Construction (AISC):
 - 1. AISC Specification for Structural Steel Buildings.
 - 2. AISC Serviceability Design Considerations for Low-Rise Buildings
- B. American Iron and Steel Institute (AISI):
 - 1. AISI North American Specification for the Design of Cold-Formed Steel Structural Members
- C. American Welding Society (AWS):
 - 1. AWS D1.1 / D1.1M – Structural Welding Code – Steel.
 - 2. AWS D1.3 / D1.3M – Structural Welding Code – Sheet Steel
- D. Association for Iron & Steel Technology (AISE):
 - 1. AISE 13 – Specifications for Design and Construction of Mill Buildings.
- E. ASTM International (ASTM):
 - 1. ASTM A 36 – Standard Specification for Carbon Structural Steel
 - 2. ASTM A 48 – Specification for Gray Iron Castings
 - 3. ASTM A 123 – Specification for Zinc (Hot-Dip Galvanized) Coatings on Iron and Steel Products
ASTM A 194 – Specification for Carbon Steel, Alloy Steel, and Stainless Steel Nuts
ASTM A 307 – Specification for Carbon Steel Bolts and Studs, 60 000 psi Tensile Strength
 - 4. ASTM A 354 – Standard Specification for Quenched and Tempered Alloy Steel Bolts, Studs, and Other Externally Threaded Fasteners
ASTM A449 – Standard Specification for Hex Cap Screws, Bolts and Studs, Steel, Heat Treated, 120/105/90 ksi Minimum Tensile Strength, General Use
 - 5. ASTM A 475 – Specification for Zinc-Coated Steel Wire Strand
 - 6. ASTM A 500 – Specification for Cold-Formed Welded and Seamless Carbon Steel Structural Tubing in Rounds and Shapes
 - 7. ASTM A 529 – Standard Specification for High-Strength Carbon-Manganese Steel of Structural Quality.
ASTM A536 Standard Specification for Ductile Iron Castings
 - 8. ASTM A 563 – Specification for Carbon and Alloy Steel Nuts
ASTM A568 Standard Specification for Steel, Sheet. Carbon, Structural, and High-Strength, Low-Alloy, Hot-Rolled and Cold-Rolled, General Requirements for
 - 9. ASTM A 572 – Standard Specification for High-Strength Low-Alloy Columbium-Vanadium Structural Steel.
ASTM A635 – Standard Specification for Steel, Sheet and Strip, Heavy-Thickness Coils, Hot-Rolled, Alloy, Carbon, Structural, High-Strength Low-Alloy, and High-Strength Low Alloy with Improved Formability, General Requirements for
 - 10. ASTM A 653 / A 653M – Standard Specification for Steel Sheet, Zinc-Coated (Galvanized) or Zinc-Iron Alloy-Coated (Galvannealed) by the Hot-Dip Process
ASTM A673 – Standard Specification for Sampling Procedure for Impact Testing of Structural Steel

ASTM A755 – Standard Specification for Steel Sheet, Metallic Coated by the Hot-Dip Process and Prepainted by the Coil-Coating Process for Exterior Exposed Building Products
 - 11. ASTM A 792 / A 792M – Standard Specification for Steel Sheet, 55 % Aluminum-Zinc Alloy-Coated by the Hot-Dip Process
ASTM A924 – Standard Specification for General Requirements for Steel Sheet, Metallic-Coated by the Hot-Dip Process
 - 12. ASTM A 992 – Standard Specification for Structural Steel Shapes.

13. ASTM A 1011 – Standard Specification for Steel, Sheet and Strip, Hot-Rolled, Carbon, Structural, High-Strength Low-Alloy, High-Strength Low-Alloy with Improved Formability, and Ultra-High Strength.
ASTM A1018 – Standard Specification for Steel, Sheet and Strip, Heavy-Thickness Coils, Hot-Rolled, Carbon, Commercial, Drawing, Structural, High-Strength Low-Alloy, High-Strength Low-Alloy with Improved Formability, and Ultra-High Strength
14. ASTM A 1039 – Specification for Steel, Sheet, Hot Rolled, Carbon, Commercial, Structural, and High-Strength Low-Alloy, Produced by Twin-Roll Casting Process
ASTM A1063 – Standard Specification for Steel Sheet, Twin-Roll Cast, Zinc-Coated (Galvanized) by the Hot-Dip Process
ASTM B633 – Standard Specification for Electrodeposited Coatings of Zinc on Iron and Steel
15. ASTM E 96 / E 96M – Standard Test Methods for Water Vapor Transmission of Materials.
16. ASTM E 108—Spread-of Flame Testing: Class 1A Rating.
17. ASTM E 283 – Standard Test Method for Determining the Rate of Air Leakage Through Exterior Windows, Curtain Walls, and Doors Under Specified Pressure Differences Across the Specimen.
18. ASTM E 331 – Standard Test Method for Water Penetration of Exterior Windows, Skylights, Doors, and Curtain Walls by Uniform Static Air Pressure Difference.
19. ASTM E 1592 – Test Method for Structural Performance of Sheet Metal Roof and Siding Systems by Uniform Static Air Pressure Difference
20. ASTM E 1646 – Test Method for Water Penetration of Exterior Metal Roof Panel Systems by Uniform Static Air Pressure Difference
21. ASTM E 1680 – Test Method for Rate of Air Leakage Through Exterior Metal Roof Panel Systems
22. ASTM E 2140 – Test Method for Water Penetration of Metal Roof Panel Systems by Static Water Pressure Head
23. ASTM F 436 – Specification for Hardened Steel Washers
ASTM F 844 – Standard Specification for Washers, Steel, Plain (Flat), Unhardened for General Use
24. ASTM F 1145 – Standard Specification for Turnbuckles, Swaged, Welded, Forged
25. ASTM F 1554 – Specification for Anchor Bolts, Steel, 36, 55, and 105-ksi Yield Strength
26. ASTM F 3125 – Standard Specification for High Strength Structural Bolts, Steel and Alloy Steel, Heat Treated, 120 ksi and 150 ksi Minimum Tensile Strength. (replaces A325 & A490)

F. CSA – Canadian Standards Association

G. CWB – Canadian Welding Bureau

H. IAS – International Accreditation Service

I. LGSI – Light Gauge Steel Institute

J. SJI – Steel Joist Institute

K. Florida Product Approval:

1. American Buildings Company Roof Deck approved under file number FL704, FL7709 & FL6961
2. American Buildings Company Metal Roofing approved under file number FL 4813
3. American Buildings Company Siding approved under file number FL 705

L. FM Global:

1. FMRC Standard 4471 – Approval Standard for Class 1 Roofs for Hail Damage Resistance, Combustibility, and Wind Uplift Resistance.

M. Metal Building Manufacturers Association (MBMA):

1. MBMA Metal Building Systems Manual

- N. Underwriters Laboratories (UL):
1. UL 580 – Standard for Tests for Uplift Resistance of Roof Assemblies

1.4 DEFINITIONS

- A. Metal Building System: A building system that will employ:
- Either continuous or simple-span 'Z' or 'C'-shaped cold-formed purlins or open-web steel joists for support of the roof cladding.
- Simple-span 'Z' or 'C'-shaped cold-formed purlins or open-web steel joists for support of the steel wall cladding.
- Three-plate, built-up rigid space frames and/or cold-formed 'C' or hot-rolled I-shaped post-and-beam framing to support the roof and wall secondary members.
- All systems (cladding, roof and wall secondary, lateral primary framing, and longitudinal bracing) work together to provide resistance to vertical and lateral loading demands.
- B. Gable Symmetrical: A continuous frame building with the ridge in the center of the building, consisting of tapered or straight columns and tapered or straight rafters. The sidewall girts may be continuous (by-passing the columns) or simple span (inset in the column line). The rafters may or may not have interior columns.
- C. Gable Asymmetrical: A continuous frame building with an off-center ridge, consisting of tapered or straight columns and tapered or straight rafters. The eave height and roof slope may differ on each side of the ridge. The sidewall girts may be continuous (by-passing the columns) or simple span (flush in the column line). The rafters may or may not have interior columns.
- D. Single-Slope: A continuous frame building which does not contain a ridge, but consists of one continuous slope from side to side. The building consists of straight or tapered columns and tapered or straight rafters. The sidewall girts may be continuous (by-passing the columns) or simple span (flush in the column line). The rafters may or may not have interior columns.
- E. Lean-To: A building extension, which does not contain a ridge, but consists of one continuous slope from side to side. These units usually have the same roof slope and girt design as the building to which they are attached and supported by.
- F. Roof Slope: Pitch expressed as inches of rise for each 12" of horizontal run.
- G. Building Width: Measured from outside to outside of sidewall secondary structural member (girt) except Shadow Panel which is outside to outside of panel.
- H. Building Eave Height: A nominal dimension measured from the finished floor to top flange of eave strut.
- I. Building Length: Measured from outside to outside of endwall secondary structural member except Shadow Panel which is outside to outside of panels.
- J. Auxiliary Loads: Dynamic loads induced by cranes, conveyors, or other material handling systems.
- K. Collateral Loads: The weight of any non-moving equipment or material, such as ceilings, electrical or mechanical equipment, sprinkler systems, plumbing, or ceilings.
- L. Dead Load: The actual weight of the building system (as provided by the metal building supplier) supported by a given member.
- M. Floor Live Loads: Loads induced on a floor system by occupants of a building and their furniture, equipment, etc.
- N. Roof Live Loads: Loads produced by maintenance activities, rain, erection activities, and other movable or moving loads but not including wind, snow, seismic, crane, or dead loads.

- O. Roof Snow Loads: Gravity load induced by the weight of snow or ice on the roof, assumed to act on the horizontal projection of the roof.
- P. Seismic Loads: Loads acting in any direction on a structural system due to the action of an earthquake.
- Q. Wind Loads: The loads on a structure induced by the forces of wind blowing from any horizontal direction.

1.5 DESIGN REQUIREMENTS

Note: Please fill in information required for this project.

A. General

1. The building manufacturer will use standards, specifications, recommendations, findings and/or interpretations of professionally-recognized groups such as AISC, AISI, AWS, ASTM, CSA, CWB, MBMA, Federal Specifications, and unpublished research by MBMA as the basis for establishing design, drafting, fabrication, and quality criteria, practices, and tolerances. The Manufacturer's design, drafting, fabrication and quality criteria, practices, and tolerances shall govern, unless specifically countermanded by the contract documents.
2. Design structural mill sections and built-up plate sections in accordance with:
 - a. (US) code-appropriate edition of AISC's "Specification for the Design, Fabrication and Erection of Structural Steel for Buildings", ANSI/AISC 360 ASD method.
 - b. (Canada) CSA S16, "Design of Steel Structures", latest edition.
3. Cold-Formed steel structural members and panels will generally be designed in accordance with applicable version of "Specifications for the Design of Cold-Formed Steel Structural Members", ANSI/AISI S-100 or CAN CSA S136
4. Design weldments per the following:
 - a. Structural Welding
 - 1) (US) Design per AWS D1.1, "Structural Welding Code – Steel", Latest Edition.
 - 2) (Canada) Design per CWB W59, "Welded Steel Construction (Metal Arc Welding)", Latest Edition.
 - b. Cold-Formed Welding
 - 1) (US) Design per AWS D1.3, "Structural Welding Code – Sheet Steel", Latest Edition.
 - 2) (Canada) Design per CWB W59, "Welded Steel Construction (Metal Arc Welding)", Latest Edition.

B. Design Code:

1. Structural design for the building structural system shall be provided by the metal building system manufacturer for the following design criteria:
 - a. Governing Building Code: _____.
 - b. Year/Version: _____.
 - c. Occupancy Category: _____.

C. Design Loads:

1. Dead Load – Weight of the building system as determined by manufacturer.
2. Roof Live Load – _____.
3. Collateral Load – _____.
4. Roof Snow Load:
 - a. Ground Snow Load – _____.
 - b. Snow Exposure Coefficient (Ce) – _____.
 - c. Thermal Coefficient (Ct) – _____.
 - d. Roof Snow Load – _____.
5. Wind Load:
 - a. Wind Speed – _____.
 - b. Wind Exposure – _____.
6. Seismic Load:
 - a. Spectral response acceleration for short periods (Ss) – _____.
 - b. Spectral response acceleration for 1-sec. period (S1) – _____.

- c. Site Class – _____.
- 7. Floor Load.
 - a. Live Load – _____.
 - b. Dead Load (Weight of Material by others)– _____.
 - c. Collateral Load – _____.
- 8. Auxiliary Loads: Auxiliary loads shall include dynamic loads, such as cranes and material handling systems, and will be defined in the Contract Documents.
- 9. Crane Loads:
 - a. Crane loads shall be a function of the Service Class as defined by the governing code and Crane Manufacturers Association of America (CMAA) and the rated tonnage (A- Standby or Infrequent service, B- Light service, C- Moderate service, D- Heavy Service, E- Severe Service, F- Continuous Severe Service).
 - b. Cranes in Service Class E or F shall be in accordance with AISE 13.
 - c. Service Class of Crane: _____.
 - d. Deflection Criterion for Crane: _____.
 - e. Crane loads will be obtained from the crane manufacturer and supplied by the Architect to the metal building system manufacturer at the time of bid.
 - f. Building structure shall be designed for the crane loads in accordance with the governing code.
 - g. Multiple cranes in the same bay or aisle shall be designed in accordance with the governing code.
 - h. If the governing code does not address multiple crane design practices, MBMA Metal Building Systems Manual shall be used.

Note: Listed below are the General Serviceability Limits, please adjust if necessary.

- D. General Serviceability Limits:
 - 1 Deflection Limits shall be in accordance with the applicable provisions of the Metal Building Systems Manual (MBMA), latest edition.
 - 2 Vertical deflection Limits
 - a. Roof Secondary (Purlins) - L/150
 - b. Main Frame roof beams - L/180
 - 3. Horizontal Deflection Limits:
 - a. Wall Secondary (Girts) - L/90
 - b. Main Frame - H/60 @ eave height
 - 4. Vertical deflection limits apply for the loads induced by a factored snow load (50-year mean recurrence interval), or the code required live load. The horizontal drift and deflection limits apply for the loads induced by a basic wind speed corresponding to a 10-year mean recurrence interval.

1.6 SUBMITTALS

Note: Please delete all submittals that do not apply to this project

- A. Submit under provisions of Section 01 33 00.
- B. Product Data: Manufacturer's data sheets on each product to be used, including:
 - 1. Preparation instructions and recommendations.
 - 2. Storage and handling requirements and recommendations.
 - 3. Installation methods.

- C. Drawings: American Buildings Company shall furnish complete erection drawings for the proper identification and assembly of all building components. These drawings will show anchor bolt settings, transverse cross sections, sidewall, endwall and roof framing, flashing, and sheeting and accessory installation details.
- D. Certifications: Standard drawings and design analysis shall bear the seal of a registered professional engineer upon request.
- E. Bill of Materials: Bills of material shall be furnished and shall include item weights.
- F. Preventive Maintenance Manual.
- G. Welder's Certifications: Certification of welder qualifications shall be furnished as specified by the Project Engineer.

Note: Specify *any* of the following *three* sentences that apply to this project, delete any or all that do not apply. For Factory Mutual identify the proper classification.

- H. Submit certification verifying that the metal roof system has been tested and approved by Underwriter's Laboratory as Class 90.
- I. Submit certification verifying that the metal roof system has been tested and approved by Factory Mutual as Class _____.
- J. Submit certification verifying that the metal standing seam roof system has been tested in accordance with ASTM E 1592 test protocols.

1.7 QUALITY ASSURANCE

- A. Manufacturer / Fabricator Qualifications:
 1. (US) All primary products specified in this section will be supplied by a IAS AC 472 Accredited Manufacturer /Fabricator with a minimum of five (5) years' experience.
 2. (Canada) All primary products specified in this section will be supplied by a Manufacturer / Fabricator certified by the CAN/CSA A660-10, "Certification of Manufacturers of Steel Building Systems" program.
- B. Weldments/Welder/Weld Inspection Qualifications:
 1. (US) Welding inspection and welding inspector qualification for structural steel shall be in accordance with AWS D1.1, "Structural Welding Code – Steel", latest edition. Welding inspection and welding inspector qualification for cold-formed steel shall be in accordance with AWS D1.3, "Structural Welding Code – Sheet Steel", latest edition.
 2. (Canada) The metal building manufacturer shall be certified per CWB W47.1, "Certification of Companies for Fusion Welding of Steel", latest edition.
- C. Erector Qualifications: All products listed in this section are to be installed by a single installer with a minimum of five (5) years demonstrated experience in installing products of the same type and scope as specified.
- D. Design: Standard drawings and design analysis must bear the seal of a registered professional engineer. Design analysis must be on file and furnished by manufacturer upon request.

1.8 DELIVERY, STORAGE, AND HANDLING

- A. Delivery and Acceptance Requirements: Deliver materials to site in manufacturer's original, unopened containers and packaging, with labels clearly identifying product name and manufacturer.
- B. Storage and Handling Requirements:

1. Store and handle materials in accordance with manufacturer's instructions.
 2. Keep materials in manufacturer's original, unopened containers and packaging until installation.
 3. Do not store materials directly on ground.
 4. Store materials on flat, level surface, raised above ground, with adequate support to prevent sagging.
 5. Protect materials and finish during storage, handling, and installation to prevent damage.
- C. Maintain 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.
- D. Store and dispose of hazardous materials, and materials contaminated by hazardous materials, in accordance with requirements of local authorities having jurisdiction.

1.9 WARRANTY

American Buildings Company offers a variety of competitive warranties for panel coatings, roof systems weathertightness, purchased products, and manufactured material. For specific warranty details and costs contact American Buildings Company at 334-687-2032.

<i>Type</i>	<i>Requirements</i>	<i>Liability / Sq Ft</i>	<i>Eligible Product Lines</i>
Manufacturer's Workmanship	- One year workmanship - Certificates issued upon request	FOB Materials Only	All products provided by the Manufacturer
Exterior Material and Finish	- 25-year roof and wall materials - AZ50/AZ55 and SP-Cool (Silicone Modified Polyester SMP) - 35-year roof and wall materials - PVDF Cool - Valid in the contiguous United States and Canada	AZ50/AZ55 Substrate – FOB Materials only. Silicone Modified Polyester (SMP) Finish – Full repair, repaint or replacement cost. SmartKote Finish – Full repair, repaint or replacement cost.	L3P, A3P, LocSeam, LocSeam 360, HFP, SSII, SS360, and MRP Parts made from embossed substrate are excluded from the material portion of the warranty, the finish portion of the warranty still applies Specifically <u>excluded</u> products are: - Products not manufactured but sold by the Manufacturer - Projects within 1000 ft. of seashore or any other body of salt water
Insulated Panel Exterior Finish	- 25 year roof and wall finish - Valid in the contiguous United States and Canada - Special request for other locations on a job by job basis	SmartKote Finish-Full repair, repaint, or replacement cost	AWIP roof and wall panels with SmartKote Exterior Specifically <u>excluded</u> products are: Products not manufactured by AWIP or ABC/AMS but Sold by the Manufacturer Projects within 1000 ft. of seashore or any other body of saltwater
WeatherSure S10	<i>Includes Exterior Material and Finish</i> - Standard 10-year weather tightness - Valid only in the contiguous United States - No Inspection. Installation is the responsibility of the installer. The Manufacturer shall bear no responsibility for incorrectly installed materials. - Courtesy inspection. Can be purchased upon Contractor's request.	\$0.20/Sq.Ft	L3P on slopes equal to or greater than ¼":12.
WeatherSure Standard Level 2 – SL2	- <i>Includes Exterior Material and Finish</i> - Standard 20-year weather tightness - Valid in the contiguous United States and Canada - No inspection. Installation is the responsibility of the installer. The Manufacturer shall bear no responsibility for incorrectly installed materials.	\$.50 / SqFt	Loc Seam, Loc Seam 360, SSII, SS360 on slopes equal to or greater than ¼" : 12 Specifically excluded are: - Cleated roof systems on slopes less than 3:12

	- Courtesy inspection can be purchased upon Contractor's request.		
WeatherSure Standard Level 3 – SL3	- Includes <i>Exterior Material and Finish</i> - Standard 20-year weather tightness - Valid in the contiguous United States and Canada - Courtesy inspection included upon request. Installation is the responsibility of the installer. The Manufacturer shall bear no responsibility for incorrectly installed materials. - Installation must be supervised by a Manufacturer's CICP Certified Supervisor	\$5.00 / SqFt	Loc Seam, Loc Seam 360, SSII, SS360 on slopes equal to or greater than ¼" : 12 Specifically <u>excluded</u> are: - Cleated roof systems on slopes less than 3:12
WeatherSure S25	- Includes Exterior Material and Finish - Standard 25-year weather tightness - Valid in the contiguous United States and Canada - No inspection. Installation is the responsibility of the installer. The Manufacturer shall bear no responsibility for incorrectly installed materials - Courtesy inspection can be purchased upon Contractor's request	\$0.70 / SqFt	Loc Seam, Loc Seam 360, SSII, SS360 on slopes equal to or greater than ¼" : 12 Specifically excluded are: - Cleated roof systems on slopes less than 3:12
WeatherSure Premium Level 2 – PL2	- Includes <i>Exterior Material and Finish</i> - Premium 20-year weather tightness - Valid only in the contiguous United States - (1) Inspection included - Warranty issued only after inspection and approval by the authorized in-house inspector.	\$.50 / SqFt	Loc Seam, Loc Seam 360, SSII, SS360 on slopes equal to or greater than ¼" : 12 Specifically excluded are: - Cleated roof systems on slopes less than 3:12
WeatherSure Premium Level 3 – PL3	- Includes <i>Exterior Material and Finish</i> - Premium 20-year weather tightness - Valid only in the contiguous United States - Start-up, intermediate & final inspection included upon request - Warranty issued only after inspection and approval by the authorized inspector. - Installation must be supervised by a Manufacturer's CICP Certified Supervisor	\$5.00 / SqFt	Loc Seam, Loc Seam 360, SSII, SS360 on slopes equal to or greater than ¼" : 12 Specifically <u>excluded</u> are: - Cleated roof systems on slopes less than 3:12

PART 2 PRODUCTS

2.1 MANUFACTURERS

- A. Acceptable Manufacturer: American Buildings Company www.americanbuildings.com
- B. Substitutions: Not permitted.

2.2 MATERIALS

- A. Primary Framing Steel:
 1. Steel for mill-rolled structural sections shall conform to the requirements of ASTM specification A 36 or ASTM A 572 Grade 50 or 55 as applicable.
 2. Steel for all built-up sections shall meet as applicable the physical and chemical properties of:
 - a. ASTM A 1011, Grade 55.
 - b. ASTM A 572, Grade 55.

- c. ASTM A 529, Grade 55.
 3. Steel used for endwall "C" sections shall meet the physical and chemical properties of ASTM A 1011, Grade 55. Steel for Cold-Formed Endwall "C" sections must conform to the requirements of ASTM A-1011 or A-1039 Grade 55, or ASTM A-653 Grade 55 with minimum yield strength of 55 ksi.
- B. Secondary Framing Steel:
1. Steel used to form purlins, girts, eave struts and "C" sections shall meet the physical and chemical properties of ASTM A 1011, Grade 55.
 2. Steel used to form zinc-coated (galvanized) purlins and girts shall meet the physical and chemical properties of ASTM A 653, Grade 50, 55 ksi minimum yield and G90 Coating designation as described in ASTM A 924.
- C. Panels: Exterior panels shall conform to one of the following:
1. Panel material as specified shall be 26 gage AZ50 or AZ55 aluminum-zinc alloy-coated steel, conforming to the requirements of ASTM A 792, Grade 80. Minimum yield strength shall be 80,000 psi.
 2. Panel material as specified shall be 24 gage AZ50 or AZ55 aluminum-zinc alloy-coated steel, conforming to the requirements of ASTM A 792, Grade 80. Minimum yield strength shall be 80,000 psi.
 3. Panel material as specified shall be 24 gage AZ50 or AZ55 aluminum-zinc alloy-coated steel, conforming to the requirements of ASTM A 792, Grade 50, Class 2. Minimum yield strength shall be 50,000 psi.
 4. Panel material as specified shall be 22 gage AZ50 or AZ55 aluminum-zinc alloy-coated steel, conforming to the requirements of ASTM A 792, Grade 50, Class 2. Minimum yield strength shall be 50,000 psi.
 5. Panel material as specified shall be 26 gage zinc-coated (galvanized) steel, coating designation G90, conforming to the requirements of ASTM A 653, Grade 80. Minimum yield strength shall be 80,000 psi.
 6. Panel material as specified shall be 24 gage zinc-coated (galvanized) steel, coating designation G90, conforming to the requirements of ASTM A 653, Grade 80. Minimum yield strength shall be 80,000 psi.
 7. Panel material as specified shall be 22 gage zinc-coated (galvanized) steel, coating designation G90, conforming to the requirements of ASTM A 653, Grade 50, Class 3. Minimum yield strength shall be 50,000 psi.
 8. Panel material as specified shall be 0.032", 3105-H14 or equivalent aluminum alloy conforming to ASTM B 209. Minimum yield strength shall be 20,000 psi.
- D. Panel Fasteners:
1. For Galvalume® and Painted finished roof panels: Premium Cast Zinc head.
 2. For wall panels: Coated carbon steel.
 3. Color of exposed fastener heads to match the wall and roof panel finish.
 4. Concealed Fasteners: Self-drilling type, of size required.
- E. Gutter, Flashing and Downspout:
1. Gutters and Flashings: All standard exterior gutters are 26 gage G90 zinc-coated (Galvanized) or AZ50 aluminum-zinc alloy-coated steel with a pre-painted finish. Standard rake flashing is 26 gage G90 zinc-coated (galvanized) or AZ50 aluminum-zinc alloy-coated steel with a pre-painted finish. All other gutter and flashings shall be a minimum 26 gage steel.
 2. Downspouts: All downspouts shall be 29 gage zinc-coated (galvanized) or aluminum-zinc alloy-coated steel with color coordinated, pre-painted finish, rectangular in shape.
- F. Panel Clips:
1. All clips must have factory-applied mastic and designed so that movement between the panel and the clip does not occur.
 2. S3PC Series: Short, Tall or Super Tall Sliding clips: shall be either 3 3/16", 4 5/8", or 5 1/2" inches in height and provide 1 1/2" (3" Max) inches of travel for panel thermal expansion and contraction, depending on clip choice.
 3. LSEC Series: Short or Tall Sliding Clips: shall be either 2 3/8" or 3 1/2" nominal height and provide 1 1/4" (2 1/2" Max) inches of travel for panel thermal expansion and contraction depending on clip choice.
- G. Sealant And Closures:
1. Sidelaps: Factory applied non-skinning Butyl mastic.

2. Endlaps, Eave, Ridge Assembly, and Gable Flashings: Field applied 100% solids butyl-based elastomeric tape sealant, furnished in pre-cut lengths.
3. Outside Closures: Closed-cell, plastic or metal
4. Inside Closures: Closed-cell, plastic or metal

2.3 PRIMARY FRAMING

Note: Please specify the desired configurations for each category; delete all that do not apply.

- A. Rigid Frame: All rigid frames shall be welded, built-up "I" sections or mill-rolled structural sections. The columns and the rafters may be either uniform depth or tapered.
- B. Endwall Frames: All endwall roof beams and endwall columns shall be cold-formed "C" sections, mill-rolled structural sections, or built-up "I" sections as required by design.
- C. Plates, Stiffeners, etc.: All base plates, splice plates, cap plates, and stiffeners shall be factory welded into place on the structural members.
- D. Bolt Holes, etc.: All base plates and flanges shall be shop fabricated to include bolt connections holes. Webs shall be shop fabricated to include cable brace or rod brace holes and flange brace holes.
- E. Shop Applied Primers – All uncoated structural steel members shall be cleaned of all foreign matter and loose mill scale as per requirements of the Structural Steel Painting Council cleaning specification SSPC-SP2 and SSPC- SP1 as required. Structural steel members will then receive a one mil coat of red oxide primer. Primer meets or exceeds the performance requirements of the specification SSPC-15, for Type 1 Red Oxide Paint. Primer is not intended as a finish coat and is compatible only for top coating with aliphatic solvent based alkyd enamels.

2.4 SECONDARY FRAMING

Note: Please specify the desired configurations (Depth and finish) of each type of secondary framing.

- A. 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.
- B. Purlins (Excluding Open Web Joists): Horizontal structural members which support roof coverings.
 1. Depth: To be determined by design (8", 9.5" or 12")
 2. Maximum Length: To be determined by design.
 3. Finish: Red Oxide Primer.
 4. Finish: Gray Primer.
 5. Finish: Pre-Coated Galvanized.
- C. Girts: Horizontal structural members that support vertical panels.
 1. Depth: To be determined by design (8", 9.5", or 12")
 2. Maximum Length: To be determined by design.
 3. Finish: Red Oxide Primer.
 4. Finish: Gray Primer.
 5. Finish: Pre-Coated Galvanized.
- D. Eave Struts: Eave Struts: Eave Struts shall be unequal flange, cold-formed "C" sections.
 1. Depth: To be determined by design (8", 9.5" or 12")
 2. Maximum Length: To be determined by design.
 3. Finish: Red Oxide Primer.

4. Finish: Gray Primer.
 5. Finish: Pre-Coated Galvanized.
- E. Base Framing: Base members to which the base of the wall covering may be attached to the perimeter of the slab. Secured to the concrete slab with mechanical anchors.
1. Formed base sill.
 2. Base channel.
 - a. With flashing.
 - b. Without flashing.
 3. Base angle.
 - a. With flashing.
 - b. Without flashing.
 4. Base girt.
 - a. With flashing.
 - b. Without flashing.
 5. Finish: Red Oxide Primer.
 6. Finish: Gray Primer.
 7. Finish: Pre Coated Galvanized.
- F. American Buildings Company roof joist system.
1. Open web, parallel chord, simple span load carrying members suitable for the direct support of roof systems utilizing material sizes and yield strengths as required.
 2. Bridging
 - a. All Bolted
 - b. Welded
 3. Joist attachment
 - a. Welded
 - b. All Bolted (No welding required)
 - c. Alt. Bolted (Some welding required)
 4. Open web members shall be fabricated of material that conforms to the material specifications designated by the Steel Joist Institute as acceptable for this product.
- G. Pre-painted Cold Formed Materials – At option, cold formed secondary structural framing may use pre-painted coil stock which eliminates the need for shop applied primer. Primer will be applied in a thickness of 0.45 – 0.55 mils. Primer is not intended as a finish coat. Due to lubricants used to aid the roll forming process, the application of a tie coat must be used prior to application of a topcoat.

Note: Please specify the desired roof panel and applicable configurations (gauge, clip, and size/Thermal value). Delete roof panels that are not applicable.

2.5 ROOF PANELS

Roof panels shall be either American Buildings Company's Long Span III Panel (L3P), Standing Seam II Panel (S2P), Standing Seam 360 Panel (S3P) or Loc Seam Panel (LOC).

- A. American Buildings Company's Long Span III Panel (L3P) shall have major ribs 1 1/4" high, spaced 12" on center for an even shadowed appearance. The panels are reinforced between the ribs for added strength. Each panel shall provide 36" net coverage in width. A minimum 1/2:12 roof slope is required. All roof panel side laps shall be at least one major rib and shall have a purlin bearing leg on the bottom section of the lap.
1. Gauge: 26 (std).
 2. Gauge: 24.
 3. Gauge: 22.
 4. Dimensions: 36 inches wide by 1 1/4 inch high.
 5. Finish/Color: As specified in Article 2.8 PANEL FINISH.

- B. American Buildings Company's Standing Seam II (S2P) Roof Panel shall have a configuration consisting of 2" high (3" including seam) by 4 3/4" wide rib, spaced on 24" centers. Panels shall be joined at the side laps with an interlocking seam standing 1" above the major rib. Each panel shall provide 24" net coverage in width. The female panel seam shall have factory applied sealant. This panel shall be interlocked by a specially designed manual seamer.
1. Gauge: 24 (std).
 2. Gauge: 22.
 3. Dimensions: 24 inches wide by 3 inches high.
 4. Clips: Tall Sliding.
 5. Clips: Short Sliding.
 6. Finish/Color: As specified in Article 2.8 PANEL FINISH.
- C. American Buildings Company's Standing Seam 360 (S3P) Roof Panel shall have a configuration consisting of 2" high (3" including seam) by 4 3/4" wide rib, spaced on 24" centers. Panels shall be joined at the side laps with an interlocking seam standing 1" above the major rib. Each panel shall provide 24" net coverage in width. The female panel seam shall have factory applied sealant. This panel seam shall be interlocked by a specially designed electric seaming machine.
1. Gauge: 24 (std).
 2. Gauge: 22.
 3. Dimensions: 24 inches wide by 3 inches high.
 4. Clips: Tall Sliding.
 5. Clips: Super Tall Sliding.
 6. Clips: Short Sliding.
 7. Finish/Color: As specified in Article 2.8 PANEL FINISH.
- D. American Buildings Company's Loc Seam Panel (LOC) shall have a configuration 16" or 12" wide with 2" high vertical male and female ribs offering a flat profile with optional pencil ribs. The female seam shall have factory applied sealant. The panel seam shall be interlocked by a specially designed electric seaming machine.
1. Gauge: 24(std).
 2. Gauge: 22.
 3. Dimensions: 16 or 12 inches wide by 2 inches high.
 4. Clips: Tall Sliding.
 5. Clips: Short Sliding.
 6. Finish/Color: As specified in Article 2.8 PANEL FINISH.
- E. "SR2" Insulated Roof Panel: A mechanically-seamed trapezoidal standing seam roof sandwich panel with concealed clips. Installed directly over purlins. Tested in accordance with ASTM E 283 and E 331 for water penetration and air infiltration.
1. Exterior panel gauge: 26 (std).
 2. Exterior panel gauge: 24.
 3. Exterior panel gauge: 22.
 4. Interior panel gauge: 26 (std).
 5. Interior panel gauge: 24.
 6. Interior panel gauge: 22.
 7. Size / Thermal Value: 40 inches wide by 3.25 inches high (R-26).
 8. Size / Thermal Value: 40 inches wide by 4 inches high (R-33).
 9. Size / Thermal Value: 40 inches wide by 5 inches high (R-42).
 10. Size / Thermal Value: 40 inches wide by 6 inches high (R-50).
 11. Color: As specified in Article 2.8 PANEL FINISHES.
 12. Standard Finish:
 - a. Exterior: Smooth with Mesa profile.
 - b. Interior: Light Emboss with Mesa profile.
- F. "HR3" Insulated Panel: A through-fastened roof sandwich panel with 1 1/4 inch ribs at 12 inches on center. The area between the ribs is reinforced to prevent oil-canning. . Tested in accordance with ASTM E 283 and E 331 for water penetration and air infiltration.

1. Exterior panel gauge: 26 (std).
2. Exterior panel gauge: 24.
3. Exterior panel gauge: 22.
4. Interior panel gauge: 26 (std).
5. Interior panel gauge: 24.
6. Interior panel gauge: 22
7. Size / Thermal Value: 40 inches wide by 2 1/2 inches high (R-21).
8. Size / Thermal Value: 40 inches wide by 4 inches high (R-33).
9. Size / Thermal Value: 40 inches wide by 5 inches high (R-42).
10. Size / Thermal Value: 40 inches wide by 6 inches high (R-50).
11. Color: As specified in Article 2.8 PANEL FINISHES.
12. Standard Finish:
 - a. Exterior: Smooth with Mesa profile.
 - b. Interior: Light Emboss with Mesa profile.

Note: Please specify the desired wall panel and applicable configurations (gauge, and size/Thermal value). Delete wall panels that are not applicable.

2.6 WALL PANELS

Wall panels shall be either American Buildings Company's Long Span III Panel (L3P), Architectural III Panel (A3P), Architectural "V" Rib (AVP) or Shadow Panel (HFP).

- A. American Buildings Company's Long Span III Panel (L3P) shall have major ribs 1 1/4" high, spaced 12" on center for an even shadowed appearance. The panels are reinforced between the ribs for added strength. Each panel shall provide 36" net coverage in width. A minimum 1/2:12 roof slope is required. All roof panel side laps shall be at least one major rib and shall have a purlin bearing leg on the bottom section of the lap.
 1. Gauge: 26 (std).
 2. Gauge: 24.
 3. Gauge: 22.
 4. Dimensions: 36 inches wide by 1 1/4 inch high.
 5. Finish/Color: As specified in Article 2.8 PANEL FINISH.
- B. American Buildings Company's Architectural III Panel (A3P) shall have a configuration consisting of ribs 1 1/4" deep spaced 12" on center producing a decorative smooth shadow-line with semi-concealed fasteners. Architectural III panels shall provide a 36" net coverage in width.
 1. Gauge: 26 (std).
 2. Gauge: 24.
 3. Gauge: 22.
 4. Dimensions: 36 inches wide by 1 1/4 inch high.
 5. Finish/Color: As specified in Article 2.8 PANEL FINISHES.
- C. American Buildings Company's Architectural "V" Panel (AVP) shall have a configuration consisting of ribs 1 5/16" deep spaced 12" on center producing a sculptured appearance with semi-concealed fasteners. Architectural "V" rib panels shall provide a 36" net coverage in width.
 1. Gauge: 26. (std).
 2. Gauge: 24.
 3. Gauge: 22.
 4. Dimensions: 36 inches wide by 1 5/16 inch high.
 5. Finish/Color: As specified in Article 2.8 PANEL FINISHES.
- D. American Buildings Company's Shadow Panel (HFP) shall have a configuration 16" wide and 3" deep with a center rib 6" wide and 1 1/2" deep producing contrasting shadow patterns with concealed fasteners. Each panel shall provide 16" net coverage.
 1. Gauge: 24(std)
 2. Dimensions: 16 inches wide by 3 inch high
 3. Finish/Color: As specified in Article 2.8 PANEL FINISHES.

- E. "HE40" Insulated Panel: A through-fastened wall sandwich panel with concealed fasteners.
1. Exterior panel gauge: 26 (std).
 2. Exterior panel gauge: 24.
 3. Exterior panel gauge: 22.
 4. Interior panel gauge: 26 (std).
 5. Interior panel gauge: 24.
 6. Interior panel gauge: 22
 7. Size / Thermal Value: 40 inches wide by 2 inches high (R-16).
 8. Size / Thermal Value: 40 inches wide by 2 1/2 inches high (R-20).
 9. Size / Thermal Value: 40 inches wide by 3 inches high (R-24).
 10. Size / Thermal Value: 40 inches wide by 4 inches high (R-32).
 11. Color: As specified in Article 2.8 PANEL FINISHES.
 12. Standard Finish:
 - a. Exterior: Heavy Embossed with no profile.
 - b. Interior: Light Emboss with Mesa profile.
- F. "HE40-A" Insulated Panel: A through-fastened wall sandwich panel with concealed fasteners.
1. Exterior panel gauge: 26 (std).
 2. Exterior panel gauge: 24.
 3. Exterior panel gauge: 22.
 4. Interior panel gauge: 26 (std).
 5. Interior panel gauge: 24.
 6. Interior panel gauge: 22
 7. Size / Thermal Value: 40 inches wide by 2 inches high (R-16).
 8. Size / Thermal Value: 40 inches wide by 2 1/2 inches high (R-20).
 9. Size / Thermal Value: 40 inches wide by 3 inches high (R-24).
 10. Size / Thermal Value: 40 inches wide by 4 inches high (R-32).
 11. Color: As specified in Article 2.8 PANEL FINISHES.
 12. Standard Finish:
 - a. Exterior: Adobe Texture™ with no profile.
 - b. Interior: Light Emboss with Mesa profile.
- G. "ST40" Insulated Panel: A through-fastened wall sandwich panel with concealed fasteners.
1. Exterior panel gauge: 26 (std).
 2. Exterior panel gauge: 24.
 3. Exterior panel gauge: 22.
 4. Interior panel gauge: 26 (std).
 5. Interior panel gauge: 24.
 6. Interior panel gauge: 22
 7. Size / Thermal Value: 40 inches wide by 2 inches high (R-16).
 8. Size / Thermal Value: 40 inches wide by 2 1/2 inches high (R-20).
 9. Size / Thermal Value: 40 inches wide by 3 inches high (R-24).
 10. Size / Thermal Value: 40 inches wide by 4 inches high (R-32).
 11. Color: As specified in Article 2.8 PANEL FINISHES.
 12. Standard Finish:
 - a. Exterior: Light Emboss with Striated profile.
 - b. Interior: Light Emboss with Mesa profile.
- H. "DM40" Insulated Panel: A through-fastened wall sandwich panel with concealed fasteners.
1. Exterior panel gauge: 26 (std).
 2. Exterior panel gauge: 24.
 3. Exterior panel gauge: 22.
 4. Interior panel gauge: 26 (std).
 5. Interior panel gauge: 24.
 6. Interior panel gauge: 22
 7. Size / Thermal Value: 40 inches wide by 2 inches high (R-16).
 8. Size / Thermal Value: 40 inches wide by 2 1/2 inches high (R-20).

9. Size / Thermal Value: 40 inches wide by 3 inches high (R-24).
10. Size / Thermal Value: 40 inches wide by 4 inches high (R-32).
11. Color: As specified in Article 2.8 PANEL FINISHES.
12. Standard Finish:
 - a. Exterior: Light Emboss with Mesa profile.
 - b. Interior: Light Emboss with Mesa profile.

Note: Please specify the applicable accessories to be used on this project. Delete all that do not apply.

2.7 ACCESSORIES

- A. Canopies: Overhanging or projecting roof structures off the sidewall or endwall. For aesthetic application or to cover entrance or walkway.
- B. Roof Line Trim:
 1. Trim Type: Simple Eave/Rake Trim.
 2. Trim Type: Sculptured Eave/Rake Trim.
 3. Trim Type: Low-Eave Gutter / Sculptured Rake Trim.
- C. Purlin Extensions: Overhanging or projecting roof structure at the end of a building.
- D. Framed Openings: Used to frame out doors, windows, louvers, and any other openings. Refers to the framing members and flashing which surround an opening and includes jambs, header and or sill, trim, and fasteners.
- E. Overhead door support framing shall be designed to resist applicable horizontal wind loads and shall consist of channel jambs with a channel header at the top of the opening. 26 gage steel, color coordinated flashing shall be provided to conceal panel edges at the opening unless otherwise specified.
- F. Walk Doors
 1. Size: As noted on the Contract Drawings.
 2. Accessories: As noted on the Contract Drawings.
 3. Size: 3'-0" by 7'-0" Single Leaf
 4. Size: 4'-0" by 7'-0" Single Leaf
 5. Size: 6'-0" by 7'-0" Double Leaf
- G. Windows: Self-flashing, self-framing horizontal slide or fixed narrow-lite windows.
 1. Type / Size: As noted on the Contract Drawings.
 2. Type: Fixed Glass
 - a. Size: 2 foot by 6 foot
 - b. Size: 4 foot by 4 foot
 - c. Size: 5 foot by 4 foot
 3. Type: Horizontal Slide
 - a. Size: 3 foot by 3 foot
 - b. Size: 4 foot by 3 foot
 - c. Size: 4 foot by 4 foot
 - d. Size: 5 foot by 3 foot
 - e. Size: 6 foot by 3 foot
- H. Daylighting with Prismatic Skylights:
 - 1.
 2. Curb Mounted Prismatic Skylights
 3. Curb Mounted Smoke & Heat Vent Skylights
- I. Translucent Roof and Wall Panels:

1. Roof skylight panels shall be translucent fiberglass reinforced, gel coated, polyester panels made in the same configuration as the metal panels. They shall be manufactured with a 2 ounce woven fiberglass cloth reinforcement in addition to random strand mat or cut glass fibers (40% min. glass percent by weight) for structural strength.
2. Wall sidelite panels shall be translucent fiberglass panels made in the same configuration as the wall panels. Material weight shall not be less than 6 ounces per square foot.

J. Soffit and Liner Panels:

Soffit and Liner panels shall be either American Buildings Company's Multi-Rib Panel (MRP), Long Span III Panel (L3P), Architectural III Panel (A3P) or Soffit-Liner Panel (SLP).

1. American Buildings Company's Multi-Rib Panel (MRP) shall have a configuration consisting of ribs 3/4" deep spaced 6" on center. Each panel shall provide 36" net coverage in width.
 - a. Gauge: 29.
 - b. Gauge: 26 (std).
 - c. Gauge: 24.
 - d. Gauge: 22.
 - e. Dimensions: 36 inches wide by 15/16 inch high.
 - f. Finish: As specified in Article 2.8 PANEL FINISHES.
2. American Buildings Company's Long Span III Liner Panels (L3P) shall have major ribs 1 1/4" high, spaced 12" on center for an even shadowed appearance. The panels are reinforced between the ribs for added strength. Each panel shall provide 36" net coverage in width.
 - a. Gauge: 29 (std).
 - b. Gauge: 26.
 - c. Gauge: 24.
 - d. Gauge: 22.
 - e. Dimensions: 36 inches wide by 1 1/4 inch high.
 - f. Finish: As specified in Article 2.8 PANEL FINISHES.
3. American Buildings Company's Architectural III Panel (A3P) shall have a configuration consisting of ribs 1 1/4" deep spaced 12" on center producing a decorative smooth shadow-line with semi-concealed fasteners. Architectural III panels shall provide a 36" net coverage in width.
 - a. Gauge: 29.
 - b. Gauge: 26 (std).
 - c. Gauge: 24.
 - d. Gauge: 22.
 - e. Dimensions: 36 inches wide by 1 1/4 inch high.
 - f. Finish: As specified in Article 2.8 PANEL FINISHES.
4. American Buildings Company's Soffit Liner (SLP) shall have a configuration consisting of 1" interlocking ribs. The interlocking ribs are designed to conceal the panel fasteners. The Soffit Liner Panel shall provide a net coverage of 12" in width.
 - a. Gauge: 24 (std).
 - b. Gauge: 0.032" aluminum.
 - c. Dimensions: 12 inches wide by 1 inch high.
 - d. Finish: As specified in Article 2.8 PANEL FINISHES.

L. Facades: Decorative structural and panel system projecting from the face of a wall panel.

M. Partitions: Interior or exterior walls that are inside the building footprint to section off parts of the interior space of a building.

N. Valley Gutter: Gutter used to carry off water from attached buildings or multi-gabled buildings. Standard valley gutter is 14 gauge pre-galvanized 10 foot sections, field welded in place (gutter liner and drainage members by others).

- O. Roof Curbs: Roof curbs shall be manufactured from minimum 18 gage AZ55 aluminum-zinc alloy-coated steel. Curbs shall have an integral cricket type water diverter. The minimum curb height shall be 8".
 - 1. Top of curb to be level, with 1 ½" top flange.
 - 2. Curb walls insulated with 1 ½"-3lb.density fiberglass insulation.
 - 3. Welded cricket on upslope side of curb to divert water.
 - 4. Metal rib covers supplied loose for flexibility when installing curb.
 - 5. Standard sub-frame shall be minimum 16 gauge steel.
 - 6. All fasteners and sealants required for installation shall be furnished by metal building manufacturer.

- P. Roof Vents: Accessories used on the roof to allow air to pass through.
 - 1. Gravity ridge ventilators shall be manufactured from galvanized steel and painted white. The ventilator body shall be 24 gage and the skirt shall be adjustable to match the roof slope. Chain operated damper will be furnished. Ventilators shall be equipped with standard bird screens and riveted end caps. Ventilators shall be 10' long and have a 9" or 12" throat.
 - 2. 20" round ventilators shall be 24 gage and shall have an adjustable base for ridge mounting or a pitched base for on-slope mounting.

- Q. Pipe Flashings: Pipe flashing shall be of a one piece construction and fabricated from an EPDM membrane and shall have an aluminum base that can be field conformed to any panel configuration. Pipe flashings shall be flexible for mounting on any roof slope. Service temperature ranges shall be from -30°F to +250°F. Three standard flashing sizes shall accommodate pipe sizes from 1/4" diameter up to 13" diameter.
 - 1. Size: ¼" to 4" Pipe
 - 2. Size: 4" to 7" Pipe
 - 3. Size: 7" to 13" Pipe

- S. Louvers: Louvers shall be manufactured from 20 gage zinc-coated (galvanized) steel, painted white, and shall be self-framing and self-flashing. They shall be equipped with adjustable dampers unless otherwise specified. Nominal size shall be 3'-0" X 4'-0" for Long Span III (L3P), Architectural III (A3P) and Architectural "V" (AVP) walls and 4'-0" X 4'-0" for Shadow Panel (HFP) walls.

Note: Please specify the desired panel finish for each type of panel. Delete all that do not apply.

2.8 PANEL FINISHES

- A. Roof Panel:
 - 1. Galvalume (AM)

 - 2. American Cool Roof: SP Cool Panel Paint System (Siliconized Polyester Resin, 25-year Finish Warranty):
 - a. Color: Burnished Slate (BS)
 - b. Color: Forest Green (FO)
 - c. Color: Aztec Blue (AB)
 - d. Color: Brick Red (BD)
 - e. Color: Sagebrush Tan (SA)
 - f. Color: Fox Gray (FG)
 - g. Color: Sandstone (SS)
 - h. Color: Polar White (PW)

 - 3. American Cool Roof: PVDF Cool Panel Paint System (PVDF Resin, 30-year Finish Warranty):
 - a. Color: Dark Bronze (DB)
 - b. Color: Cypress Green (CY)
 - c. Color: Royal Blue (RO)
 - d. Color: Terra Cotta (TC)
 - e. Color: Surrey Beige (SU)
 - f. Color: Slate Gray (SG)
 - g. Color: Warm White (WW)
 - h. Color: Regal White (RW)
 - i. Color: Midnight Black (BL)

- j. Color: Brite Red (BT)
- k. Color: Charcoal (CH)
- l. Color: Desert Sand (DS)
- m. Color: Pearl Gray (PG)
- n. Color: Reflective White (RF)

B. Wall Panel:

1. American Cool Wall: SP-Cool Panel Paint System (Siliconized Polyester Resin, 25-year Finish Warranty):
 - a. Color: Burnished Slate (BS)
 - b. Color: Forest Green (FO)
 - c. Color: Aztec Blue (AB)
 - d. Color: Brick Red (BD)
 - e. Color: Sagebrush Tan (SA)
 - f. Color: Fox Gray (FG)
 - g. Color: Sandstone (SS)
 - h. Color: Polar White (PW)

2. American Cool Wall: PVDF Cool Panel Paint System (PVDF Resin, 30-year Finish Warranty):
 - a. Color: Dark Bronze (DB)
 - b. Color: Cypress Green (CY)
 - c. Color: Royal Blue (RO)
 - d. Color: Terra Cotta (TC)
 - e. Color: Surrey Beige (SU)
 - f. Color: Slate Gray (SG)
 - g. Color: Warm White (WW)
 - h. Color: Regal White (RW)
 - i. Color: Midnight Black (BL)
 - j. Color: Brite Red (BT)
 - k. Color: Charcoal (CH)
 - l. Color: Desert Sand (DS)
 - m. Color: Pearl Gray (PG)
 - n. Color: Reflective White (RF)

C. Insulated Roof panel:

1. Exterior panel:
 - a. American Cool Roof: PVDF Cool Panel Paint System (PVDF Resin, 30-year Finish Warranty):
 - 1) Color: Cypress Green (CY)
 - 2) Color: Royal Blue (RO)
 - 3) Color: Surrey Beige (SU)
 - 4) Color: Warm White (WW)
 - 5) Color: Regal White (RW)
 - 6) Color: Pearl Gray (PG)
 - 7) Color: Sandstone (SS)

2. Interior panel:
 - a. American Cool Roof: SP-Cool Panel Paint System (Siliconized Polyester Resin, 25-year Finish Warranty):
 - 1) Imperial White (IW)

D. Insulated Wall panel:

1. Exterior panel:
 - a. American Cool Roof: PVDF Cool Panel Paint System (PVDF Resin, 30-year Finish Warranty):
 - 1) Color: Cypress Green (CY)
 - 2) Color: Royal Blue (RO)
 - 3) Color: Surrey Beige (SU)
 - 4) Color: Warm White (WW)
 - 5) Color: Regal White (RW)
 - 6) Color: Pearl Gray (PG)
 - 7) Color: Sandstone (SS)

2. Interior panel:
 - a. American Cool Roof: SP-Cool Panel Paint System (Siliconized Polyester Resin, 25-year Finish Warranty):
 - 1) Imperial White (IW)

E. Liner Panel:

1. American Cool Roof: SP-Cool Panel Paint System (Siliconized Polyester Resin, 25-year Finish Warranty):
 - a. 29 gauge:
 - 1) Color: Polar White (PW)
 - b. 26 & 24 gauge:
 - 1) Color: Burnished Slate (BS)
 - 2) Color: Cypress Green (CY)
 - 3) Color: Aztec Blue (AB)
 - 4) Color: Brick Red (BD)
 - 5) Color: Sagebrush Tan (SA)
 - 6) Color: Fox Gray (FG)
 - 7) Color: Sandstone (SS)
 - 8) Color: Polar White (PW)

F. Soffit-Liner Panel:

1. American Cool Roof: PVDF Cool Panel Paint System (PVDF Resin, 30-year Finish Warranty):
 - a. .032 Aluminum
 - 1) Color: Regal White RW
 - b. 24 gauge:
 - 1) Color: Dark Bronze (DB)
 - 2) Color: Cypress Green (CY)
 - 3) Color: Royal Blue (RO)
 - 4) Color: Terra Cotta TC
 - 5) Color: Surrey Beige SU
 - 6) Color: Slate Gray (SG)
 - 7) Color: Warm White (WW)
 - 8) Color: Regal White (RW)
 - 9) Color: Midnight Black (BL)
 - 10) Color: Brite Red (BT)
 - 11) Color: Charcoal (CH)
 - 12) Color: Desert Sand (DS)
 - 13) Color: Pearl Gray (PG)
 - 14) Color: Reflective White (RF)
 - 15)

2.9 FABRICATION

A. General:

1. 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.
2. All shop connections shall be in accordance with the American Welding Society (AWS) Code for Building Construction or the Canadian Welding Bureau (CWB), as applicable. Certification of welder qualification shall be furnished when required and specified on the Contract Documents
3. Visual inspection methods will be used for verification of weld quality as outlined by the AWS Structural Steel Welding Code, Visual Inspection Acceptance Criteria, D1.1, Table 6.1.
4. All framing members where necessary shall carry an easily visible identifying mark.

B. Primary Framing:

1. Plates, Stiffeners and Related Members: Shop fabricated base plates splice plates, cap plates, and stiffeners welded into place onto the structural members.

2. Bolt Holes and Related Machining: Shop fabricated base plates, splices and flanges to include bolt connection holes. Shop fabricated webs to include bracing holes.
 3. Secondary structural (purlins and girts) connections onto frames to be ordinary bolted connections, which may include welded clips
 4. Manufacturer is responsible for all welding inspection in accordance with the manufacturer's IAS Accreditation or CAN/CSA A660 Certification. Special inspections by the buyer or owner may be done in the manufacturer's facility and must be noted on the Contract Documents.
 5. Non-Destructive Testing (NDT) - NDT shall be performed and documented as required by the governing building code for this project. Any special NDT requirements must be noted on the Contract Documents.
- C. Open-Web Roof Joists:
1. Purlins for 'long-bay' building layouts shall consist of open-web bar joists designed under Steel Joist Institute (SJI) specifications by an SJI-Certified Joist Manufacturer for the prescribed loads.
 2. Field welding of joist bridging and seats is an alternative method for connection of joists to supporting primary structural members.
- D. Zee Purlins:
1. Fabricate purlins from cold-formed "Z" sections with stiffened flanges. Flange stiffeners shall be designed to comply with the requirements of the latest edition of AISI. Connection bolts will install through the webs, the flanges, or both.
- E. Girts
1. Girts must be simple or continuous span as required by design. Connection bolts will install through the webs, the flanges, or both.
- F. Bracing:
1. Diagonal Bracing: Diagonal bracing in the roof and sidewall shall be used to remove longitudinal loads (wind, crane, etc.) from the structure. This bracing shall be furnished to length and equipped with hillside washers, cut washers and nuts at each end. It may consist of rods threaded at each end or galvanized cable with suitable end anchors.
 2. Special Bracing: When diagonal bracing is not permitted in the sidewall, a rigid frame type portal, fixed base columns, or wall diaphragm must be used. Wind bracing in the roof and/or walls need not be furnished where it can be shown that the diaphragm strength of the roof and/or wall covering is adequate to resist the applied wind forces.
 3. Flange Braces: The inside 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 relevant combination of loadings.
 4. Bridging: Top and bottom chords of open-web bar joists shall be bridged as required by design and as indicated on the building erection drawings.
- G. Standing Seam Panels - General:
1. One side of the panel is configured as female, having factory applied butyl mastic inside the female seam. The female side will hook over the male side and when seamed, create a continuous lock forming a weathertight seam.
 2. Panels are factory notched at both ends so that field installation can commence from either end of the building per slope/plane and proceed in one direction only. Panels cannot start at both ends of the building slope/plane and work towards each other.
 3. Maximum panel length is 50 feet unless otherwise noted on the Contract Documents.
 4. Endlaps:
 - a. Endlaps must have a 16 gauge backup plate and have the endlap joint fasteners installed in four factory applied dimples.
 - b. Apply mastic between the panels and secure with #14-14x1 inch self-drilling fasteners through the panels, and backup plate to form a compression joint.
 - c. "Through-the-Roof" fasteners may only be used at endlaps and eaves.

Part 3 EXECUTION

3.1 EXAMINATION

- A. Examine substrates, areas, and conditions, with erector present, for compliance with requirements for installation tolerances and other conditions affecting performance of work.
- B. Before erection proceeds, survey elevations and locations of concrete and masonry bearing surfaces and locations of anchor rods, bearing plates and other embedment's to receive structural framing, with Erector present, for compliance with requirements and metal building system manufacturer's tolerances.
- C. Proceed with erection only after unsatisfactory conditions have been corrected.

3.2 PREPARATION

- A. Clean surfaces thoroughly prior to installation.
- B. Provide temporary shores, guys, braces, and other supports during erection to keep structural framing secure, plumb, and in alignment against temporary construction loads equal in intensity to design loads. Remove temporary supports when permanent structural framing connections and bracing are in place, unless otherwise indicated.

3.3 INSTALLATION

- A. The erection of the metal building and the installation of accessories shall be performed in accordance with the American Buildings Company's erection manuals and the building erection drawings. The erection shall be performed by a qualified erector using proper tools and equipment. In addition, erection practices shall conform to Section 4, Common Industry Practices found in the most current version of the Metal Building Systems Manual. There shall be no field modifications to primary structural members except as authorized and specified by American Buildings

3.4 PROTECTION

- A. Protect installed products until completion of project.
- B. Touch-up, repair or replace damaged products before Substantial Completion.

END OF SECTION