



SECTION 13120

METAL BUILDING SYSTEMS

This section is based on the products of All American Systems, which is located at:

7301 Fairview
Houston, TX 77041
Tel: (713) 466-7788
Fax: (713) 896-8909
Email: sales@allamericansys.com
Web: www.allamericansys.com.

All American Systems is your leading resource for custom-engineered metal building systems of the highest caliber. As one of the oldest and most trusted brand names in the metal construction industry, Builders, General Contractors and Architects count on All American for the manufacturing capabilities and design flexibility that result in superior metal building solutions. Please browse our web site to learn more about All American. We look forward to creating a custom metal building system for you.

Ultra-Dek, Double-Lok, SuperLok, BattenLok HS, ShadowRib, NuWall, Artisan, and Signature are all trademarks of All American Systems / NCI Group, Inc. Galvalume and Galvalume Plus are trademarks of Bieci International, Inc. Hylar is a trademark of Ausimont U.S.A., Inc. Kynar is a trademark of Pennsalt Chemicals Corporation. Acrylume is a trademark of USX Corporation. Acrylit is a trademark of Stabilit America, Inc.

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.

1.2 RELATED SECTIONS

- A. Section 03300 - Cast-In-Place Concrete: Concrete slabs and footings.
- B. Section 05100 - Structural Metal Framing: Metal wall and roof framing.
- C. Section 05400 - Cold-Formed Metal Framing: Partition wall framing.

1.3 REFERENCES

- A. AISC - American Institute of Steel Construction.
- B. AISI - American Iron and Steel Institute.

- C. AWS - American Welding Society.
- D. ASTM A 36 - Standard Specification for Carbon Structural Steel.
- E. ASTM A 529 - Standard Specification for High-Strength Carbon-Manganese Steel of Structural Quality.
- F. ASTM A 572 - Standard Specification for High-Strength Low-Alloy Columbium-Vanadium Structural Steel.
- G. ASTM A 792 - Standard Specification for Steel Sheet, 55 Percent Aluminum-Zinc Alloy-Coated by the Hot-Dip Process.
- H. ASTM A 992 - Standard Specification for Structural Steel Shapes.
- I. 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.
- J. 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.
- K. ASTM E 331 - Standard Test Method for Water Penetration of Exterior Windows, Skylights, Doors, and Curtain Walls by Uniform Static Air Pressure Difference.
- L. MBMA - Metal Building Manufacturer's Association.
- M. IAS - International Accreditation Service.
- N. LGSI – Light Gauge Steel Institute.

1.4 DEFINITIONS

- A. Traditional Metal Building System: A building system that will use either continuous or simple span "Z" purlins for support of the roof covering material.
- 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 (flush in the column line). The rafters may or may not have interior columns.
- C. Gable Unsymmetrical: 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 (LT): A building extension, not an independent structure which uses the building it is attached to for support. A lean-to 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.
- 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).
- 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.
- J. Acrylic-Coated Galvalume: Galvalume with a light acrylic coating such as Galvalume Plus by Bethlehem, Acrylume by National or Galvalume Plus by U.S. Steel. This coating eliminates the need for roll-forming oil and reduces the incidence of field marking by handling or foot traffic.
- K. Auxiliary Loads: Dynamic loads induced by cranes, conveyors, or other material handling systems.
- L. Collateral Loads: The weight of any non-moving equipment or material, such as ceilings, electrical or mechanical equipment, sprinkler systems, plumbing, or ceilings.
- M. Dead Load: The actual weight of the building system (as provided by All American Systems) supported by a given member.
- N. Floor Live Loads: Loads induced on a floor system by occupants of a building and their furniture, equipment, etc.
- O. 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.
- P. 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.
- Q. Seismic Loads: Loads acting in any direction on a structural system due to the action of an earthquake.
- R. Wind Loads: The loads on a structure induced by the forces of wind blowing from any horizontal direction.

1.5 DESIGN REQUIREMENTS

- A. General
 - 1. The building manufacturer will use standards, specifications, recommendations, findings and/or interpretations of professionally recognized groups such as AISC, IAS, AISI, AWS, ASTM, 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 welded up plate sections in accordance with the 13th edition of AISC's "Specification for the Design, Fabrication and Erection of Structural Steel for Buildings", ASD method or LRFD method.
3. Cold-Formed steel structural members and panels will generally be designed in accordance with "Specifications for the Design of Cold-Formed Steel Structural Members", 2001 Edition with 2004 Supplement.

B. Design Loads

1. Specify design loads and set forth in the contract in accordance with the manufacturer's standard design practices. Design loads may include dead load, roof live loads, wind loads, seismic loads, collateral loads, auxiliary loads, floor live loads and/or other applied or specified loads.

1.6 SUBMITTALS

A. Submit under provisions of Section 01300.

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. Shop Drawings: Provide complete erection drawings for the proper identification and assembly of all building components. Drawings will show anchor bolt settings, transverse cross-sections, sidewall, endwall and roof framing, flashing and sheeting, and accessory installation details.

D. Selection Samples: For each finish product specified, two complete sets of color chips representing manufacturer's full range of available colors and patterns.

E. Verification Samples: For each finish product specified, two samples, representing actual product, color, and patterns.

F. Certifications: Shop drawings and design analysis shall bear the seal of a registered professional engineer upon request. Design analysis shall be on file and furnished by manufacturer upon request.

G. Bill of Materials: Bills of material shall be furnished and shall include item weights, if requested.

H. Welder's Certifications: Certification of welder qualifications shall be furnished as specified by the Project Engineer.

1.7 QUALITY ASSURANCE

A. Manufacturer / Fabricator Qualifications: All primary products specified in this section will be supplied by a single IAS certified Manufacturer /Fabricator with a minimum of five (5) years experience.

B. 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.

C. Design: Standard drawings and design analysis must bear the seal of a registered

professional engineer upon request from the Architect. Design analysis must be on file and furnished by manufacturer upon request.

1.8 DELIVERY, STORAGE, AND HANDLING

- A. Store products in manufacturer's unopened packaging until ready for installation. Long term storage is NOT recommended.
- B. Store and dispose of hazardous materials, and materials contaminated by hazardous materials, in accordance with requirements of local authorities having jurisdiction.

1.9 PROJECT CONDITIONS

- A. 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.

1.10 WARRANTY

- A. At project closeout, provide to Owner or Owners Representative an executed copy of the manufacturer's standard limited warranty against manufacturing defect, outlining its terms, conditions, and exclusions from coverage.

PART 2 PRODUCTS

2.1 MANUFACTURERS

- A. Acceptable Manufacturer: All American Systems, which is located at: 7301 Fairview ; Houston, TX 77041; Toll Free Tel: 800-777-9378; Tel: 713-466-7788; Fax: 713-466-3194; Email: sales@allamericansys.com; Web: www.allamericansys.com.
- B. Substitutions: Not permitted.
- C. Requests for substitutions will be considered in accordance with provisions of Section 01600.

2.2 MATERIALS

- A. Primary Framing Steel:
 - 1. Steel for hot rolled shapes must conform to the requirements of ASTM Specifications A 36 or A 992, with minimum yield of 36 or 50 ksi.
 - 2. Steel for built-up sections must conform to the requirements of ASTM A 1011, A 529, A 572 or A 36 as applicable, with minimum yield of 42, 46, 50, or 55 ksi as indicated by the design requirements.
 - 3. Pipe must conform to the requirements of ASTM A 53 Grade B with a minimum yield strength of 35 ksi.
 - 4. Round Tube must conform to the requirements of ASTM A 500 Grade B with a minimum yield strength of 42 ksi.
 - 5. Square and Rectangular Tube must conform to the requirements of ASTM A 500 Grade B with a minimum yield strength of 46 ksi.
 - 6. Steel for Cold-Formed endwall "C" sections must conform to the requirements of ASTM A 1011 Grade 55, or ASTM A 653 Grade 50 with a minimum yield strength of 55 ksi.
 - 7. X-bracing as required by the purchase order will conform to ASTM A 36 for

rod and angle bracing or ASTM A 475 for cable bracing.

- B. Secondary Framing Steel:
1. Steel used to form purlins, girts and eave struts must meet the requirements of ASTM A 1011 Grade 55, or ASTM A 653 Grade 50 with a minimum yield of 55 ksi.
 2. Design Thicknesses - Unless otherwise noted in these specifications, the following Design Thicknesses shall be used:
 - a. Gauge: 16 - 0.059 Inches (1.50 mm).
 - b. Gauge: 14 - 0.070 Inches (1.78 mm).
 - c. Gauge: 13 - 0.085 Inches (2.16 mm).
 - d. Gauge: 12 - 0.105 Inches (2.67 mm).
- C. Panels:
1. UL-580 Class 90, roll-formed acrylic coated Galvalume or pre-painted Galvalume.
 2. Standing Seam Panels must have:
 - a. (For US and Export) 50 percent minimum aluminum-zinc alloy- coating and conform to ASTM A 792 with a minimum yield of 50 ksi.
 - b. (For Canada) 55 percent minimum aluminum-zinc alloy- coating with Galvalume finish or 50 percent minimum aluminum-zinc alloy- coating with paint finish and conform to ASTM A 792 with a minimum yield of 50 ksi.
 3. Finish: Fluoropon coating produced with either Kynar 500 or Hylar 5000 resins carrying a 20 year limited warranty.
 4. Through-fastened panels must have:
 - a. (For US and Export) 50 percent minimum aluminum-zinc alloy- coating and conform to ASTM A 792 with a minimum yield of 50 ksi.
 - b. (For Canada) 55 percent minimum aluminum-zinc alloy- coating with Galvalume finish or 50 percent minimum aluminum-zinc alloy- coating with paint finish and conform to ASTM A 792 with a minimum yield of 50 ksi.
 5. Design Thicknesses - Unless otherwise noted in these specifications, the following Design Thicknesses shall be used:
 - a. Gauge: 29 - 0.0133 Inches (0.338 mm).
 - b. Gauge: 26 - 0.0181 Inches (0.460 mm).
 - c. Gauge: 24 - 0.0223 Inches (0.566 mm).
 - d. Gauge: 22 - 0.0286 Inches (0.726 mm).
- D. Fasteners:
1. Eave: #12-14 x 1 1/4 inch (32mm) long life self-drilling with sealing washer.
 2. Endlaps: #12-14 x 1 1/4 inch (32mm) long life self-drilling with sealing washer.
 3. Ridge: 1/4 -14 x 7/8 inch (22mm) Lap Tek long life self-drilling with sealing washer.
 4. Clips to Purlin: 1/4-14 x 1 1/4 inch (32mm) Tek 2 long life self-drilling with Hex Washer Head and 5/8 inch (15mm) O.D. washer.
 5. Clips to Bar Joists - #12-24 x 1 1/4 inch (32mm) Tek 4.5 self-drilling with Washer Head and 5/8 inch (15mm) O.D. washer.
 6. Long Life fasteners are used as a standard for all standing seam panels and on any through-fastened panel application for which a product warranty is desired.
 7. Stainless steel fasteners and non-long life carbon steel fasteners for roof attachment are also available upon request.
- E. Clips:
1. All clips must have factory-applied mastic and designed so that movement

- between the panel and the clip does not occur.
- 2. Low or High Fixed clips; shall be either 3 3/8 inches (86mm) or 4 3/8 inches (111mm) in height. Used for applications where only a moderate amount of thermal expansion and contraction in the roof panel is expected.
- 3. Low or High Sliding clips: shall be either 3 3/8 inches (86mm) or 4 3/8 inches (111mm) in height and provide either 2 inches or 4 inches of travel for panel thermal expansion and contraction, depending on clip choice.

F. Sealant And Closures:

- 1. Sidelaps: Factory applied, hot melt, foamable mastic - Q41A.
- 2. Endlaps, Eave, Ridge Assembly, and Gable Flashings: Field applied 100% solids butyl-based elastomeric tape sealant, furnished in roll form or pre-cut to length.
- 3. Outside Closures: Manufactured from the same materials as the roof panels.
- 4. Inside Closures: 18-gauge Galvalume or galvanized coated metal.

2.3 PRIMARY FRAMING

- A. Rigid Frames: Fabricated as welded built-up "I" sections or hot-rolled sections. Columns and rafters may be either uniform depth or tapered.
 - 1. Frame Design: Gable Symmetrical.
 - 2. Frame Design: Gable Unsymmetrical.
 - 3. Frame Design: Single Slope.
 - 4. Frame Design: Lean-to.
 - 5. Frame Type: Clear Span.
 - 6. Frame Type: Modular Span.
- B. Endwall Frames / Roof Beams: Fabricated as mill-rolled sections, or built-up "I" sections depending on design requirements. Fabricate endwall columns of cold-formed "C" sections, mill-rolled sections, or built-up "I" sections depending on design requirements.
- C. Interior Columns: Columns supporting rafters of mainframes shall be of the following cross-section type(s):
 - 1. Pipe (Round HSS).
 - 2. Tube (Square HSS).
 - 3. "I"-Shaped.
- D. Finish: Red Oxide Primer, Gray Primer, or galvanized (pre coated galvanized cold form, hot-dipped otherwise).
- E. Field Bolted Connections: All field bolted connections shall be designed and detailed in accordance with AISC Design Guides 4 and 16 as applicable.

2.4 SECONDARY FRAMING

- A. Purlins and Girts: Purlins and girts shall be cold-formed "Z" sections with stiffened flanges. Flange stiffeners shall be sized to comply with the requirements of the latest edition of AISI and LGS. Purlin and girt flanges shall be unequal in width to allow for easier nesting during erection. They shall be pre-punched at the factory to provide for field bolting to the rigid frames. They shall be simple or continuous span as required by design. Connection bolts will install through the purlin webs, not purlin flanges.
- B. Purlins: Horizontal structural members which support roof coverings.
 - 1. Depth: 8 inches (203mm).

- a. As required by design.
 - b. Gauge minimum:
 - 1) Gauge: 16.
 - 2) Gauge: 14.
 - 3) Gauge: 13.
 - 4) Gauge: 12.
 - 2. Depth: 10 inches (254mm).
 - a. As required by design.
 - b. Gauge minimum:
 - 1) Gauge: 16.
 - 2) Gauge: 14.
 - 3) Gauge: 13.
 - 4) Gauge: 12.
 - 3. Depth: 12 inches (305mm).
 - a. As required by design.
 - b. Gauge minimum:
 - 1) Gauge: 16.
 - 2) Gauge: 14.
 - 3) Gauge: 13.
 - 4) Gauge: 12.
 - 4. Maximum Length: To be determined by design.
 - 5. Finish: Red Oxide Primer.
 - 6. Finish: Gray Primer.
 - 7. Finish: Pre Coated Galvanized.
- C. Girts: Horizontal structural members that support vertical panels.
- 1. Depth: 8 inches (203mm).
 - a. As required by design.
 - b. Gauge minimum:
 - 1) Gauge: 16.
 - 2) Gauge: 14.
 - 3) Gauge: 13.
 - 4) Gauge: 12.
 - 2. Depth: 10 inches (254mm).
 - a. As required by design.
 - b. Gauge minimum:
 - 1) Gauge: 16.
 - 2) Gauge: 14.
 - 3) Gauge: 13.
 - 4) Gauge: 12.
 - 3. Depth: 12 inches (305mm).
 - a. As required by design.
 - b. Gauge minimum:
 - 1) Gauge: 16.
 - 2) Gauge: 14.
 - 3) Gauge: 13.
 - 4) Gauge: 12.
 - 4. Maximum Bay Spacing: To be determined by design.
 - 5. Finish: Red Oxide Primer.
 - 6. Finish: Gray Primer.
 - 7. Finish: Pre Coated Galvanized.
- D. Eave Struts: Unequal flange, cold-formed "C" sections.
- 1. Depth: 8 inches (203mm).
 - a. As required by design.
 - b. Gauge minimum:

- 1) Gauge: 16.
 - 2) Gauge: 14.
 - 3) Gauge: 13.
 - 4) Gauge: 12.
2. Depth: 10 inches (254mm).
 - a. As required by design.
 - b. Gauge minimum:
 - 1) Gauge: 16.
 - 2) Gauge: 14.
 - 3) Gauge: 13.
 - 4) Gauge: 12.
 3. Depth: 12 inches (305mm).
 - a. As required by design.
 - b. Gauge minimum:
 - 1) Gauge: 16.
 - 2) Gauge: 14.
 - 3) Gauge: 13.
 - 4) Gauge: 12.
 4. Length: To match bay length as shown on Contract Drawings.
 5. Finish: Red Oxide Primer.
 6. Finish: Gray Primer.
 7. 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.

2.5 ROOF PANELS

A. PBR Panel: A through-fastened roof with 1 1/4 inch (32mm) ribs at 12 inches (305mm) on center. The area between the ribs is reinforced to minimize oil-canning.

1. Gauge: 26.
2. Gauge: 24.
3. Gauge: 22.
4. Dimensions: 36 inches (915mm) wide by 1 1/4 inch (32mm) high.
5. Finish: As specified in Article PANEL FINISH.

B. Ultra-Dek Panel: A snap- seamed trapezoidal standing seam roof panel with concealed clips. Installed directly over purlins. Tested in accordance with ASTM E 283 and E 331 for air infiltration, water penetration, and wind uplift.

1. Gauge: 24.
2. Gauge: 22.
3. Dimensions: 24 inches (610mm) wide by 3 inches (76mm) high.

4. Dimensions: 18 inches (458mm) wide by 3 inches (76mm) high.
 5. Dimensions: 12 inches (305mm) wide by 3 inches (76mm) high.
 6. Clips: High Fixed.
 7. Clips: Low Fixed.
 8. Clips: High Sliding.
 9. Clips: Low Sliding.
 10. Finish: As specified in Article PANEL FINISH.
- C. Double-Lok Panel: A mechanically seamed trapezoidal standing seam roof panel with concealed clips. Installed directly over purlins. Tested in accordance with ASTM E 283 and E 331 for air infiltration, water penetration, and wind uplift.
1. Gauge: 24.
 2. Gauge: 22.
 3. Dimensions: 24 inches (610mm) wide by 3 inches (76mm) high.
 4. Dimensions: 18 inches (458mm) wide by 3 inches (76mm) high.
 5. Dimensions: 12 inches (305mm) wide by 3 inches (76mm) high.
 6. Clips: High Fixed.
 7. Clips: Low Fixed.
 8. Clips: High Sliding.
 9. Clips: Low Sliding.
 10. Finish: As specified in Article PANEL FINISH.
- D. BattenLok-HS: A mechanically seamed pan-type standing seam roof panel with concealed clips. Installed directly over purlins.
1. Gauge: 24.
 2. Gauge: 22.
 3. Dimensions: 12 inches (305mm) wide by 2 inches (51mm) high.
 4. Dimensions: 16 inches (406mm) wide by 2 inches (51mm) high.
 5. Clips: High Fixed.
 6. Clips: Low Fixed.
 7. Clips: High Sliding.
 8. Clips: Low Sliding.
 9. Finish: As specified in Article PANEL FINISH.
- E. SuperLok Panel: A mechanically seamed Pan-Type standing seam roof panel with concealed clips. Installed directly over purlins.
1. Gauge: 24.
 2. Gauge: 22.
 3. Dimensions: 12 inches (305mm) wide by 2 inches (51mm) high.
 4. Dimensions: 16 inches (406mm) wide by 2 inches (51mm) high.
 5. Clips: High Fixed.
 6. Clips: Low Fixed.
 7. Clips: High Sliding.
 8. Clips: Low Sliding.
 9. Finish: As specified in Article PANEL FINISH.

2.6 WALL PANELS

- A. PBR Panel: A through-fastened sidewall panel with 1 1/4 inch (32mm) ribs at 12 inches (305mm) on center. The area between the ribs is reinforced to minimize oil-canning. Reverse roll optional.
1. Gauge: 26.
 2. Gauge: 24.
 3. Gauge: 22.
 4. Dimensions: 36 inches (915mm) wide by 1 1/4 inch (32mm) high.
 5. Finish: As specified in Article PANEL FINISH.

- B. PBA Panel: Reverse-rolled wall panel with 1 1/4 inch (32mm) ribs at 12 inches (305mm) on center with semi-concealed fasteners.
 - 1. Gauge: 26.
 - 2. Gauge: 24.
 - 3. Dimensions: 36 inches (915mm) wide by 1 1/8 inch (29mm) high.
 - 4. Finish: As specified in Article PANEL FINISH.

- C. PBU Panel: Through-fastened 3/4 inch (19mm) utility panel with ribs on 6 inch (152mm) centers. Reverse roll optional.
 - 1. Gauge: 26.
 - 2. Gauge: 24.
 - 3. Gauge: 22.
 - 4. Dimensions: 36 inches (915mm) wide by 3/4 inch (19mm) high.
 - 5. Finish: As specified in Article PANEL FINISH.

- D. PBC Panel: Through-fastened wall panel with 7/8 inch (22mm) rounded ribs at 2 2/3 (68mm) inches on center.
 - 1. Gauge: 26.
 - 2. Gauge: 24.
 - 3. Dimensions: 34 inches (864mm) wide by 7/8 inch (22mm) high.
 - 4. Finish: As specified in Article PANEL FINISH.

- E. PBD Panel: Through-fastened wall panel with 7/8 inch (22mm) trapezoidal ribs at 2 2/3 (68mm) inches on center.
 - 1. Gauge: 26.
 - 2. Gauge: 24.
 - 3. Dimensions: 34 inches (864mm) wide by 5/8 inch (15mm) high.
 - 4. Finish: As specified in Article PANEL FINISH.

- F. ShadowRib Panel: Concealed fastener panel.
 - 1. Gauge: 24.
 - 2. Gauge: 22.
 - 3. Dimensions: 16 inches (406mm) wide by 3 inches (76mm) high.
 - 4. Finish: As specified in Article PANEL FINISH.

- G. NuWall Panel: Concealed fastener panel.
 - 1. Gauge: 26.
 - 2. Gauge: 24.
 - 3. Gauge: 22.
 - 4. Dimensions: 12 inches (305mm) wide by 2 1/2 inches (64mm) high.
 - 5. Finish: As specified in Article PANEL FINISH.

2.7 ACCESSORIES

- A. Canopies: Overhanging or projecting roof structures off the sidewall or endwall with the extreme end usually unsupported. For aesthetic application or to cover entrance or walkway.

- B. Purlin Extensions: Overhanging or projecting roof structure at the end of a building.

- C. 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.

- D. Walk Doors: Personnel entry doors.

1. Size: As noted on the Contract Drawings.
 2. Size: 3 foot by 7 foot (914x2133mm) Single Leaf.
 3. Size: 4 foot by 7 foot (1219x2133mm) Single Leaf.
 4. Size: 6 foot by 7 foot (1828x2133mm) Double Leaf.
- E. Slide Doors: A single or double leaf door which opens horizontally by means of overhead trolleys.
1. Size: As noted on the Contract Drawings.
 2. Size: 8 foot by 8 foot (2438x2438mm).
 3. Size: 8 foot by 10 foot (2438x3048mm).
 4. Size: 8 foot by 12 foot (2438x914mm).
 5. Size: 10 foot by 8 foot (3048x2438mm).
 6. Size: 10 foot by 10 foot (3048x3048mm).
 7. Size: 10 foot by 12 foot (3048x3658mm).
 8. Size: 12 foot by 8 foot (3658x2438mm).
 9. Size: 12 foot by 10 foot (3658x3048mm).
 10. Size: 12 foot by 12 foot (3658x1219mm).
 11. Size: 12 foot by 14 foot (3658x4267mm).
 12. Size: 14 foot by 8 foot (4267x2438mm).
 13. Size: 14 foot by 10 foot (4267x3048mm).
 14. Size: 14 foot by 12 foot (4267x3658mm).
 15. Size: 14 foot by 14 foot (4267x4267mm).
- F. Windows: Self-flashing, self-framing horizontal slide or fixed narrow-lite windows.
1. Size: As noted on the Contract Drawings.
 2. Size: 2 foot by 7 foot (610x2133mm).
 3. Size: 3 foot by 3 foot (914x914mm).
 4. Size: 4 foot by 3 foot (1219x914mm).
 5. Size: 4 foot by 4 foot (1219x1219mm).
 6. Size: 6 foot by 3 foot (1828x914mm).
- G. Light Transmitting Panels: Through-fastened translucent panel formed with the same profile of the roof panel in place of roof panel sheets to supply natural light to the building.
- H. Wall Light Transmitting Panels: Translucent Acrylit panels of the same profile as the wall panel. Allows natural light into the building. Not available in PBU Panel.
1. Size: As noted on the Contract Drawings.
 2. Size: 3 foot by 3 foot (914x914mm).
 3. Size: 3 foot by 4 foot (914x1219mm).
 4. Size: 3 foot by 5 foot 4 inches (914x1626mm).
 5. Size: 3 foot by 6 foot (914x1828mm).
 6. Size: 3 foot by 10 feet 8 inches (914x3251mm).
 7. Size: 3 foot by 12 foot (914x3658mm).
- I. Liner Panels:
1. Artisan Panel:
 - a. Gauge: 24.
 - b. Gauge: 22.
 - c. Dimensions: 8 inches (203mm) wide by 1 inch (25mm) high.
 - d. Dimensions: 10 inches (254mm) wide by 1 inch (25mm) high.
 - e. Dimensions: 12 inches (305mm) wide by 1 inch (25mm) high.
 - f. Surface: Smooth.
 - g. Surface: Embossed Texture.
 - h. Finish: As specified in Article PANEL FINISH.

2. PBU Panel:
 - a. Gauge: 26.
 - b. Gauge: 24.
 - c. Gauge: 22.
 - d. Dimensions: 36 inches (915mm) wide by 3/4 inch (19mm) high.
 - e. Finish: As specified in Article PANEL FINISH.
3. PBR Panel:
 - a. Gauge: 26.
 - b. Gauge: 24.
 - c. Gauge: 22.
 - d. Dimensions: 36 inches (915mm) wide by 1 1/4 inch (32mm) high.
 - e. Finish: As specified in Article PANEL FINISH.
4. PBC Panel:
 - a. Gauge: 26.
 - b. Gauge: 24.
 - c. Dimensions: 36 inches (915mm) wide by 7/8 inch (22mm) high.
 - d. Finish: As specified in Article PANEL FINISH.
5. PBD Panel:
 - a. Gauge: 26.
 - b. Gauge: 24.
 - c. Dimensions: 36 inches (915mm) wide by 5/8 inch (15mm) high.
 - d. Finish: As specified in Article PANEL FINISH.

J. Soffit Panels:

1. Artisan Panel:
 - a. Gauge: 24.
 - b. Gauge: 22.
 - c. Dimensions: 8 inches (203mm) wide by 1 inch (25mm) high.
 - d. Dimensions: 10 inches (254mm) wide by 1 inch (25mm) high.
 - e. Dimensions: 12 inches (305mm) wide by 1 inch (25mm) high.
 - f. Surface: Smooth.
 - g. Surface: Embossed Texture.
 - h. Finish: As specified in Article PANEL FINISH.
2. PBU Panel:
 - a. Gauge: 26.
 - b. Gauge: 24.
 - c. Gauge: 22.
 - d. Dimensions: 36 inches (915mm) wide by 3/4 inch (19mm) high.
 - e. Finish: As specified in Article PANEL FINISH.
3. PBR Panel:
 - a. Gauge: 26.
 - b. Gauge: 24.
 - c. Gauge: 22.
 - d. Dimensions: 36 inches (915mm) wide by 1 1/4 inch (32mm) high.
 - e. Finish: As specified in Article PANEL FINISH.
4. PBC Panel:
 - a. Gauge: 26.
 - b. Gauge: 24.
 - c. Dimensions: 36 inches (915mm) wide by 7/8 inch (22mm) high.
 - d. Finish: As specified in Article PANEL FINISH.
5. PBD Panel:
 - a. Gauge: 26.
 - b. Gauge: 24.
 - c. Dimensions: 36 inches (915mm) wide by 5/8 inch (15mm) high.
 - d. Finish: As specified in Article PANEL FINISH.

- K. Facades: Decorative structural and panel system projecting from the face of a wall panel.
- L. Parapet Walls: Wall panels below the roof line that extend above the roof line to a given elevation. Parapet walls include 14 gauge pre-galvanized parapet gutter when located on a sidewall (except at the high side of a Single-Slope or Lean-to building).
- 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 (3048mm) sections, Field welded in place.
- O. Louvers: Wall mounted accessory for allowing airflow into the building.
 - 1. Size: As noted on the Contract Drawings.
 - 2. Size: 2 foot by 2 foot (610x610mm).
 - 3. Size: 3 foot by 2 foot (914x610mm).
 - 4. Size: 3 foot by 3 foot (914x914mm).
 - 5. Size: 4 foot by 3 foot (1219x914mm).
 - 6. Size: 3 foot by 4 foot (914x1219mm).
 - 7. Size: 4 foot by 4 foot (1219x1219mm).
 - 8. Size: 5 foot by 4 foot (1524x1219mm).
- P. Roof Vents: Accessories used on the roof to allow air to pass through.
 - 1. Size: 12 inch by 10 foot (305x3048mm).
 - 2. Size: 20 inch (508mm) round.
 - 3. Size: 24 inch (610mm) round.
- Q. Pipe Flashings: Aluminum base with EPDM boot. The base flange must bend to form a seal with surface irregularities or roof pitch.
- R. Trim:
 - 1. Trim Type: Offset Panel Cap Trim.
 - 2. Trim Type: Sculptured Eave Trim.
 - 3. Trim Type: Gutter.

2.8 PANEL FINISHES

- A. Roof Panel:
 - 1. Galvalume.
 - 2. Cool Roof Colors:
 - a. Commercial / Industrial Signature Series 200 - Siliconized Polyester Coating:
 - 1) Solar White
 - b. Architectural Signature Series 300 - Kynar 500 / Hylar 5000 Coating.
 - 1) Bone White
 - 3. Commercial / Industrial Signature Series 200 - Siliconized Polyester Coating.
 - a. Color: Burnished Slate.
 - b. Color: Polar White.
 - c. Color: Charcoal Gray.
 - d. Color: Light Stone.
 - e. Color: Hawaiian Blue.
 - f. Color: Rustic Red.
 - g. Color: Koko Brown.
 - h. Color: Fern Green.

- i. Color: Crimson Red.
- j. Color: Ash Gray.
- k. Color: Saddle Tan.
- l. Color: Desert Sand.
- m. Color: Gallery Blue.
- 4. Architectural Signature Series 200 - Siliconized Polyester Coating.
 - a. Color: Burnished Slate.
 - b. Color: Polar White.
 - c. Color: Charcoal Gray.
 - d. Color: Light Stone.
 - e. Color: Hawaiian Blue.
 - f. Color: Rustic Red.
 - g. Color: Koko Brown.
 - h. Color: Fern Green.
 - i. Color: Coal Black.
- 5. Commercial / Industrial Signature Series 300 - Kynar 500 / Hylar 5000 Coating.
 - a. Color: Medium Bronze.
 - b. Color: Snow White.
 - c. Color: Slate Gray.
 - d. Color: Almond.
 - e. Color: Classic Green.
 - f. Color: Brownstone.
 - g. Color: Scarlet Red.
 - h. Color: Harbor Blue.
- 6. Architectural Signature Series 300 - Kynar 500 / Hylar 5000 Coating.
 - a. Color: Colonial Red.
 - b. Color: Natural Patina.
 - c. Color: Medium Bronze.
 - d. Color: Pacific Blue.
 - e. Color: Hunter Green.
 - f. Color: Snow White.
 - g. Color: Slate Gray.
 - h. Color: Almond.
 - i. Color: Midnight Bronze.
 - j. Color: River Teal.
 - k. Color: Classic Green.
 - l. Color: Everglade.
 - m. Color: Brownstone.
 - n. Color: Sea Mist.
 - o. Color: Tundra.
 - p. Color: Spruce.
 - q. Color: Scarlet Red.
 - r. Color: Harbor Blue.
 - s. Color: Copper Metallic.
 - t. Color: Silver Metallic.
 - u. Color: Dove Metallic.
 - v. Color: Sandstone Metallic.

B. Wall Panel:

- 1. Galvalume
- 2. Commercial / Industrial Signature Series 200 - Siliconized Polyester Coating.
 - a. Color: Burnished Slate.
 - b. Color: Polar White.
 - c. Color: Charcoal Gray.
 - d. Color: Light Stone.

- e. Color: Hawaiian Blue.
 - f. Color: Rustic Red.
 - g. Color: Koko Brown.
 - h. Color: Fern Green.
 - i. Color: Crimson Red.
 - j. Color: Ash Gray.
 - k. Color: Saddle Tan.
 - l. Color: Desert Sand.
 - m. Color: Gallery Blue.
3. Architectural Signature Series 200 - Siliconized Polyester Coating.
- a. Color: Burnished Slate.
 - b. Color: Polar White.
 - c. Color: Charcoal Gray.
 - d. Color: Light Stone.
 - e. Color: Hawaiian Blue.
 - f. Color: Rustic Red.
 - g. Color: Koko Brown.
 - h. Color: Fern Green.
 - i. Color: Coal Black.
4. Commercial / Industrial Signature Series 300 - Kynar 500 / Hylar 5000 Coating.
- a. Color: Medium Bronze.
 - b. Color: Snow White.
 - c. Color: Slate Gray.
 - d. Color: Almond.
 - e. Color: Classic Green.
 - f. Color: Brownstone.
 - g. Color: Scarlet Red.
 - h. Color: Harbor Blue.
5. Architectural Signature Series 300 - Kynar 500 / Hylar 5000 Coating.
- a. Color: Colonial Red.
 - b. Color: Natural Patina.
 - c. Color: Medium Bronze.
 - d. Color: Pacific Blue.
 - e. Color: Hunter Green.
 - f. Color: Snow White.
 - g. Color: Slate Gray.
 - h. Color: Almond.
 - i. Color: Midnight Bronze.
 - j. Color: River Teal.
 - k. Color: Classic Green.
 - l. Color: Everglade.
 - m. Color: Brownstone.
 - n. Color: Sea Mist.
 - o. Color: Tundra.
 - p. Color: Spruce.
 - q. Color: Scarlet Red.
 - r. Color: Harbor Blue.
 - s. Color: Copper Metallic.
 - t. Color: Silver Metallic.
 - u. Color: Dove Metallic.
 - v. Color: Sandstone Metallic.

C. Liner Panel:

- 1. Galvalume
- 2. Commercial / Industrial Signature Series 200 - Siliconized Polyester Coating.

- a. Color: Burnished Slate.
 - b. Color: Polar White.
 - c. Color: Charcoal Gray.
 - d. Color: Light Stone.
 - e. Color: Hawaiian Blue.
 - f. Color: Rustic Red.
 - g. Color: Koko Brown.
 - h. Color: Fern Green.
 - i. Color: Crimson Red.
 - j. Color: Ash Gray.
 - k. Color: Saddle Tan.
 - l. Color: Desert Sand.
 - m. Color: Gallery Blue.
3. Architectural Signature Series 200 - Siliconized Polyester Coating.
- a. Color: Burnished Slate.
 - b. Color: Polar White.
 - c. Color: Charcoal Gray.
 - d. Color: Light Stone.
 - e. Color: Hawaiian Blue.
 - f. Color: Rustic Red.
 - g. Color: Koko Brown.
 - h. Color: Fern Green.
 - i. Color: Coal Black.
4. Commercial / Industrial Signature Series 300 - Kynar 500 / Hylar 5000 Coating.
- a. Color: Medium Bronze.
 - b. Color: Snow White.
 - c. Color: Slate Gray.
 - d. Color: Almond.
 - e. Color: Classic Green.
 - f. Color: Brownstone.
 - g. Color: Scarlet Red.
 - h. Color: Harbor Blue.
5. Architectural Signature Series 300 - Kynar 500 / Hylar 5000 Coating.
- a. Color: Colonial Red.
 - b. Color: Natural Patina.
 - c. Color: Medium Bronze.
 - d. Color: Pacific Blue.
 - e. Color: Hunter Green.
 - f. Color: Snow White.
 - g. Color: Slate Gray.
 - h. Color: Almond.
 - i. Color: Midnight Bronze.
 - j. Color: River Teal.
 - k. Color: Classic Green.
 - l. Color: Everglade.
 - m. Color: Brownstone.
 - n. Color: Sea Mist.
 - o. Color: Tundra.
 - p. Color: Spruce.
 - q. Color: Scarlet Red.
 - r. Color: Harbor Blue.
 - s. Color: Copper Metallic.
 - t. Color: Silver Metallic.
 - u. Color: Dove Metallic.
 - v. Color: Sandstone Metallic.

- D. Soffit Panel:
1. Galvalume
 2. Commercial / Industrial Signature Series 200 - Siliconized Polyester Coating.
 - a. Color: Burnished Slate.
 - b. Color: Polar White.
 - c. Color: Charcoal Gray.
 - d. Color: Light Stone.
 - e. Color: Hawaiian Blue.
 - f. Color: Rustic Red.
 - g. Color: Koko Brown.
 - h. Color: Fern Green.
 - i. Color: Crimson Red.
 - j. Color: Ash Gray.
 - k. Color: Saddle Tan.
 - l. Color: Desert Sand.
 - m. Color: Gallery Blue.
 3. Architectural Signature Series 200 - Siliconized Polyester Coating.
 - a. Color: Burnished Slate.
 - b. Color: Polar White.
 - c. Color: Charcoal Gray.
 - d. Color: Light Stone.
 - e. Color: Hawaiian Blue.
 - f. Color: Rustic Red.
 - g. Color: Koko Brown.
 - h. Color: Fern Green.
 - i. Color: Coal Black.
 4. Commercial / Industrial Signature Series 300 - Kynar 500 / Hylar 5000 Coating.
 - a. Color: Medium Bronze.
 - b. Color: Snow White.
 - c. Color: Slate Gray.
 - d. Color: Almond.
 - e. Color: Classic Green.
 - f. Color: Brownstone.
 - g. Color: Scarlet Red.
 - h. Color: Harbor Blue.
 5. Architectural Signature Series 300 - Kynar 500 / Hylar 5000 Coating.
 - a. Color: Colonial Red.
 - b. Color: Natural Patina.
 - c. Color: Medium Bronze.
 - d. Color: Pacific Blue.
 - e. Color: Hunter Green.
 - f. Color: Snow White.
 - g. Color: Slate Gray.
 - h. Color: Almond.
 - i. Color: Midnight Bronze.
 - j. Color: River Teal.
 - k. Color: Classic Green.
 - l. Color: Everglade.
 - m. Color: Brownstone.
 - n. Color: Sea Mist.
 - o. Color: Tundra.
 - p. Color: Spruce.
 - q. Color: Scarlet Red.
 - r. Color: Harbor Blue.

- s. Color: Copper Metallic.
- t. Color: Silver Metallic.
- u. Color: Dove Metallic.
- v. Color: Sandstone Metallic.

2.9 FABRICATION

- A. General:
 - 1. Shop fabricate all framing members for field bolted assembly. The surfaces of the bolted connections must be smooth and free from burrs or distortions.
 - 2. Shop connections must conform to the manufacturer's standard design practices as defined in this section. Certification of welder qualifications will be furnished when required and specified in advance.
 - 3. All framing members must carry an identifying mark.
- B. Primary Framing:
 - 1. Plates, Stiffeners and Related Members.: Factory weld base plates, splice plates, cap plates, and stiffeners into place on the structural members.
 - 2. Bolt Holes and Related Machining: Shop fabricate base plates, splices and flanges to include bolt connection holes. Shop fabricate webs to include bracing holes.
 - 3. Secondary structural connections (purlins and girts) 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 certifications. Special inspection 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 is not required on this project.
- C. Zee Purlins:
 - 1. Fabricate girts from cold-formed "Z" sections with stiffened flanges. Size flange stiffeners to comply with the requirements of the latest edition of AISI. Girt flanges must be unequal in width to allow for easier nesting during erection and pre-punched at the factory to provide for field bolting to the rigid frames.
- D. Girts:
 - 1. Girts must be simple or continuous span As required by design. Connection bolts will install through the webs, not the flanges.
- E. Bracing:
 - 1. Diagonal Bracing:
 - a. 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 or seismic forces. Diagonal bracing in the roof and sidewalls may be used to resist longitudinal loads (wind, crane, etc.) in the structure if diaphragm action cannot be used.
 - b. Diagonal bracing will be furnished to length and equipped with hillside washers and nuts at each end. It may consist of rods threaded each end or galvanized cable with suitable threaded end anchors. If load requirements so dictate, bracing may be of structural angle and/or pipe, bolted in place.
 - 2. Special Bracing: When diagonal bracing is not permitted in the sidewall, a rigid frame type portal or fixed base column will be used. Shear walls can also be used where adequate to resist the applied wind or seismic forces.

3. Flange Braces: The compression flange of all primary framing must be braced laterally with angles connecting to the bottoms chords of purlins or to the webs of girts so that the flange compressive stress is within allowable limits for any combination of loading.
- F. Standing Seam Panels - General:
1. One side of the panel is configured as female, having factory applied hot-melt mastic inside the female seam. The female side will snap over the male side and when seamed creates a continuous lock, forming a 360-degree Pittsburgh Seam.
 2. Panels are factory notched at both ends so that field installation can commence or terminate from either end of the building. Panels cannot start at both ends of the building and work towards each other.
 3. Maximum panel length is 45 feet (13716mm) unless otherwise noted in the Contract Documents.
- G. Endlaps:
1. Endlaps must have a 16 gauge backup plate and have the eight endlap joint fasteners installed in six pre-punched holes in the flat and in the dimples in the trapezoidal legs.
 2. Apply mastic between the panels and secured with 1/4 inch (6mm) - #14 x 1 1/4 inch (32mm) self-drilling fasteners through the panels, and backup plate to form a compression joint.
 3. "Through the roof" fasteners may only be used at endlaps and eaves.

PART 3 EXECUTION

3.1 EXAMINATION

- A. Do not begin installation until substrates have been properly prepared.
- B. If substrate preparation is the responsibility of another installer, notify Architect of unsatisfactory preparation before proceeding.

3.2 PREPARATION

- A. Clean surfaces thoroughly prior to installation.
- B. Prepare surfaces using the methods recommended by the manufacturer for achieving the best result for the substrate under the project conditions.

3.3 INSTALLATION

- A. Install in accordance with manufacturer's instructions.

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