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## **SPECIFICATION**

### **1.0 SCOPE**

Pinnacle Structures, Inc. is an AISC-MB certified manufacturer. The building system shall include all columns, rafters, endwall columns, purlins, girts, struts, clips, bracing, exterior metal covering, flashing, fasteners, and miscellaneous items necessary for a complete and weather tight structure, or as required by the customer.

### **2.0 BUILDING GEOMETRY**

#### **2.1 Building Width:**

The building width shall be the horizontal distance between the outside faces of the eave struts.

#### **2.2 Building Height:**

The building height shall be vertical distance from the base of the sidewall columns to the outside top corners of the eave struts.

#### **2.3 Building Length:**

The building length shall be the horizontal distance between the outside flanges of the endwall girts.

#### **2.4 Bay Spacing:**

The interior bay spacing shall be the horizontal distance between the centerlines of adjacent interior frames. The end bay length shall be the horizontal distance from the centerline of the first interior frame to the outside flanges of the endwall girts.

### **3.0 DRAWINGS AND CERTIFICATIONS**

#### **3.1 Drawings:**

##### **3.1.1 Anchor Bolt Setting Plans**

Pinnacle shall furnish Anchor Bolt Setting Plans showing the diameters, locations and material specifications for the building anchor bolts and reaction schematics showing the rigid frame reactions.

Foundation design and anchor bolt lengths are not the responsibility of Pinnacle Structures, Inc. Anchor bolts are not designed to stabilize the columns during erection. Temporary bracing as needed for safety is the erector's responsibility.

### **3.1.2 Erection Drawings**

Pinnacle shall furnish Erection Drawings which shall include the elevations and details necessary to erect the building.

## **3.2 Certifications:**

### **3.2.1 Letter of Certification**

Pinnacle shall submit a letter sealed by a professional engineer stating that the loads were applied and the building was designed in accordance with the specified building code and/or purchase order documents.

### **3.2.2 Design Calculations**

Subsequent to the awarding of the contract, Pinnacle shall, upon request, submit design calculations sealed by a professional engineer.

## **4.0 DESIGN**

### **4.1 Design Authorities:**

#### **4.1.1 Structural Steel**

All Structural steel sections and welded plate members shall be designed in accordance with the allowable stresses and design requirement sections of the 9<sup>th</sup> edition of the American Institute of Steel Construction's Manual of Steel Construction (Allowable Stress Design).

#### **4.1.2 Cold-Formed**

All cold-formed members, including exterior covering, shall be designed in accordance with the allowable stresses and design requirement sections of the 2001 edition of the American Iron and Steel Institute's Cold-Formed Steel Design Manual with 2004 addendums.

### **4.2 Design Loads:**

#### **4.2.1 Snow, Wind, Live and Collateral Loads**

Loads and the application of loads shall be as specified by the Architect or Engineer of Record. In no case shall the loads or the application of loads be less than those recommended by the 2002 MBMA Metal Building Systems Manual.

#### **4.2.2 Dead Load**

The dead load shall be the weight of the structure.

#### **4.2.3 Load Combinations**

The design load combinations for all buildings shall be as specified by the Architect or Engineer of Record. In no case shall the load combinations be less severe than specified in the 2002 MBMA Metal Building Systems Manual.

### **4.3 Anchor Bolts**

Anchor bolts shall be sized to resist loads induced by the structure and shall not be less than the diameters, material specifications and quantities shown by Pinnacle. All anchor bolts shall be unpainted to bond to the concrete and shall be set in strict accordance with Pinnacle's drawings.

## **5.0 FOUNDATION DESIGN**

### **5.1 General**

Pinnacle Structures, Inc. shall not furnish, design, nor accept responsibility for the concrete foundation, anchor bolts or embedded concrete reinforcing. The final reactions, anchor bolt diameters, quantities and material specifications shall be shown on the anchor bolt setting plans. Suggested anchor bolt details and anchorage details included in Pinnacles anchor bolt setting plans shall be verified and approved by the Architect or Engineer of Record for the project.

### **5.2 Materials**

The anchor bolts and reinforcing shall not be furnished by Pinnacle Structures, Inc.

## **6.0 COMPONENT DESCRIPTION AND USAGE**

### **6.1 Primary Framing**

#### **6.1.1 Columns**

Primary frame columns shall be either prismatic or tapered sections composed of shop welded steel bar and plate. Wall columns may have either exterior or flush mounted girts. The depth and flange width of columns shall be as dictated by the specified design criteria.

#### **6.1.2 Rafters**

Primary frame rafters shall be either prismatic or tapered sections composed of

shop welded steel bar and plate. Rafters shall have exterior mounted purlins. The depth and flange width of rafters shall be as dictated by the specified design criteria.

### **6.1.3 Interior Modular Columns**

Interior modular columns supporting primary frame rafters shall be either round structural pipe or prismatic sections composed of shop welded steel bar and plate. Columns shall have the necessary connections for field bolting to the rafters and to the anchor bolts. The diameter or depth and flange width of welded sections shall be as dictated by the specified design criteria.

## **6.2 Secondary Structural Members**

### **6.2.1 Cold-Formed Purlins and Girts**

Purlins and girts shall be either 8", 9" or 10" "Z" sections, precision cold-formed from material with design thickness of 0.059" to 0.102". Exterior mounted simple span purlins and girts shall have 4 ½" nominal end laps for alignment purposes. Continuous span purlins and girts shall have minimum end laps of 2'0" to develop continuity. All girts on buildings with flush girts shall be mounted so that the outside flanges of the girts are flush with the exterior face of the controlling outside flange of the columns. Purlins and girts shall be attached to the primary framing with ½" diameter bolts and nuts. Continuous purlins shall have four ½" diameter bolts and nuts through the webs to interlock the sections for continuity.

### **6.2.2 Bar Joist Purlins**

Bar joist purlins shall be as required to comply with the specified design criteria. Bar joists shall be field welded to the rafters, except that bolted connections shall be provided at critical locations required for stability during erection.

### **6.2.3 Eave Struts**

Eave struts shall be either 8", 9" or 10" "C" sections, precision cold-formed from material with design thickness of .059" to 0.102". The upper and lower flanges shall slope at the building roof slope and the webs shall be vertical to receive the sidewall covering. Eave struts shall be connected to the primary framing with standard 1/2" diameter bolts.

### **6.2.4 Wind and Seismic Bracing**

Wind and seismic bracing shall be as shown on Pinnacle Structures, Inc. erection drawings and shall be accomplished by diagonal cable bracing, rod bracing, or other means necessary to resist roof and wall wind and seismic loads. All diagonal cable and rod bracing shall include necessary hardware for installation and adjustment of lengths.

### **6.2.5 Flange Bracing**

Flange bracing shall be steel angles attached to the purlins and/or girts and to the inner flanges of the primary framing. The quantity and location of all brace angles shall be as dictated by the building design and shall be located as shown on Pinnacle's erection drawings.

### **6.2.6 Gable Angles**

Gable angles provide a surface for attaching endwall panels to the rake of a building. Gable angles shall be 2" x 4" angles precision cold-formed from material with a minimum design thickness of .059". Gable angles shall be attached to the purlins along the building rake.

### **6.2.7 Connection Clips**

Connection clips shall be provided by Pinnacle as necessary to facilitate the assembly of the building components. Connection clips shall be located as shown on Pinnacle's erection drawings.

### **6.2.8 Base Options**

#### **6.2.8.1 Base Angles**

Base angles shall be 2" x 4" angles precision cold-formed from galvanized steel with a minimum design thickness of .059". Base angles shall be attached to the concrete foundation with 1/4" x 1 1/4" minimum Metal Hit Anchors or equivalent at 2'-0 maximum spacing. Pinnacle Structures, Inc. shall not furnish the base angle anchors.

#### **6.2.8.2 Base Angle Trim**

Base angle trim shall be optional in lieu of Base Angles. Base angle trim shall be 0.059" minimum thickness galvanized steel with factory applied Bronze paint. Base angle trim shall be attached to the concrete foundation with 1/4" x 1 1/4" minimum Metal Hit Anchors or equivalent at 2'-0 maximum spacing. Base angle trim shall be optional to replace base angles and eliminate the necessity for a concrete notch. Pinnacle Structures, Inc. shall not furnish the base angle trim anchors.

#### **6.2.8.3 Base Girts**

Base Girts shall be optional in lieu of Base Angles or Base Angle Trim. Base girts shall be located 6" above the finished floor elevation.

## **6.3 End Frames**

### **6.3.1 Non-Expandable End Frames**

### **6.3.1.1 Built-up End Frames**

Non-expandable (built-up) end frames shall consist of cold-formed channel rafters or welded plate rafters and welded plate or Hot rolled columns. Column-to-rafter connections shall transmit shear and axial loads only.

### **6.3.1.2 Rigid Frame End Frames**

Non-expandable rigid frame end frames shall consist of a primary frame designed to support one half of the end bay loadings. Endwall column-to-rafter connections shall transmit shear loads only.

## **6.3.2 Expandable End Frames**

Expandable end frames shall consist of a primary frame designed to support a full bay and endwall columns of welded plate or hot rolled steel. Endwall column-to-rafter connections shall transmit shear loads only.

## **6.4 Covering**

### **6.4.1 Material**

#### **6.4.1.1 Unpainted GALVALUME®**

Unpainted GALVALUME® shall conform to ASTM A792 with a coating class of AZ 50 or heavier, chemically treated and lightly oiled. All 26 gauge unpainted GALVALUME® used for roof and wall applications shall be grade 80, except when used for trim it shall be grade 50. All 24 gauge unpainted GALVALUME® used for roof and wall applications shall be grade 80, except for 24 gauge shall be grade 50.

#### **6.4.1.2 Painted GALVALUME®**

GALVALUME® used as a substrate for factory applied baked on paint shall conform to ASTM A792 with a coating class of AZ 50 or heavier, minimum spangle, as specified by the coater. All 26 gauge painted GALVALUME® used for roof and wall applications shall be grade 80. All 26 gauge painted GALVALUME® used for trim shall be grade 50. All 26 gauge painted GALVALUME® used for roof and wall applications shall be grade 80, except for 24 gauge shall be grade 50.

## **6.5 Covering Fasteners**

### **6.5.1 Material**

#### **6.5.1.1 Exposed Roof Fasteners (Screws)**

Exposed roof fasteners shall have a zinc aluminum case hex washer head fixed over the head of a carbon steel plated fastener. Each fastener shall have a neoprene washer fitted and protected under the hex washer head.

### 6.5.1.2 Non-exposed Roof Fasteners

Fasteners for non-exposed roof applications shall be made of carbon steel with zinc electroplating finish with or without bonded neoprene washer.

### 6.5.1.3 Wall Fasteners

Wall fasteners shall be made of carbon steel with zinc electroplating without bonded neoprene washer.

## 6.5.2 Fastener (Screw) Finish

### 6.5.2.1 Long-Life Finish

Long-life finish shall consist of composite fluorocarbon combined with organic polymers to form a plastic-alloy finish which is applied to the entire fastener and washer assembly by means of a DIP/SPIN/CURE process, providing exceptional corrosion protection.

### 6.5.2.2 Paint

Painted fasteners shall be provided to match the wall and roof panel color. Paint shall be a factory applied baked on finish.

### 6.5.2.3 Zinc Aluminum

The zinc aluminum finish of the exposed roof fasteners shall be adequately formulated to be corrosion resistant and to never red rust.

## 6.5.3 Covering Fastener Types

Type Designation	Sizes	Pullout	Ultimate Strengths	
			Pull Over	Shear
Exposed Self-Drilling Roof Screw	#12-14 x 1 1/4" #12-14 x 1 1/2"	770# to 1850#	794# to 1647#	2050#
Exposed Self-Drilling Roof-lap Screw	1/4"-14 x 7/8"	256# to 688#	794# to 1647#	2850#

Non-Exposed Self-Drilling Clip Screw	#12-14 x 1 ¼"	770# to 1858#		2050#
Self-Drilling Wall Screw	#12-14 x 1 ¼" #12-14 x 1 ½"	770# to 1850#	501# to 649#	2050#
Self-Drilling Wall-lap Screw	¼"-14 x 7/8"	256# to 688#	501# to 649#	2858#

## 6.6 Building Trim

### 6.6.1 General

Formed GALVALUME® steel flashing with factory baked on paint shall be provided at corners, endwall rakes, eaves, and openings to insure a neat, weather tight structure.

### 6.6.2 Eave Trim Options

The junction of the roof panels and sidewall panels shall be adequately flashed with formed GALVALUME® steel with factory baked on paint. Eave flashing shall be one of the following:

- A. Eave gutters with downspouts.
- B. Eave box trim. Eave box trim which resembles the configuration of the endwall flashing is recommended for northern regions where ice and snow make eave gutters impractical.
- C. Sidewall flashing. Sidewall flashing shall be formed to the roof slope and capped over the top of the sidewall panels.
- D. Combination of A and C.

### 6.6.3 Eave Gutters

Eave gutters shall be suspended box sections supported at 3'-0 on center (maximum) and formed to match the configuration of the endwall flashing. Eave gutters shall have a minimum cross-sectional area of 24 square inches for water flow. Pop rivets, hanger clips and sealant shall be used to secure the gutter and seal the gutter end laps.

### 6.6.4 Eave Gutter Downspouts

Downspouts shall be a minimum of 3 ½" x 4" rectangular sections. Spacing of the downspouts will be dictated by the building width and the local rainfall intensity. Locations shall be shown on Pinnacle Structures, Inc. erection drawings. Eave gutter outlets shall be provided to connect the downspouts to the eave gutters. Field connected downspout elbows shall be provided to divert water away from the building.

### **6.6.5 Corner Flashing**

The juncture of sidewall panels and endwall panels shall be adequately flashed to ensure weather tightness and neat appearance. The flashing shall be designed to complement the wall panel used and shall match the wall panel color.

### **6.6.6 Accessory Flashing**

Accessories which penetrate the wall or roof panels shall be adequately flashed and caulked as necessary to ensure weather tightness and neat appearance.

## **7.0 MATERIALS**

### **7.1 Structural Plate, Sheet and Bar**

All structural plate, sheet and bar shall have a minimum yield strength of 55,000 psi.

### **7.2 Cold-Formed**

All cold-formed structural material shall have a minimum yield strength of 55,000 psi.

### **7.3 Hot Rolled Sections**

All hot rolled sections shall have a minimum yield strength of 36,000 psi.

### **7.4 Pipe**

All structural pipe sections shall have a minimum yield strength of 36,000 psi.

### **7.5 Rod**

All rod used as structural bracing shall have a minimum yield strength of 36,000 psi.

### **7.6 Cable**

All cable used as structural bracing shall be extra high strength galvanized ("A" Coat) wire strand (left-hand lay).

### **7.7 Covering**

All 26 gauge cold-formed panel material shall have a minimum yield strength of 80,000 psi.  
All 24 gauge cold-formed panel material shall have a minimum yield strength of 50,000 psi

### **7.8 High Strength Bolts**

All bolts used in primary structural connections shall be ASTM A325 Bolts.

### **7.9 High Strength Nuts**

High strength nuts shall be ASTM 194 Grade 2H. Acceptable substitutes are ASTM 563 Grade C, C3, D, DH, DH3.

### **7.10 Standard Bolts**

All Bolts used in secondary structural connections shall be ASTM A307 Bolts

### **7.11 Standard Nuts**

Standard nuts shall be ASTM A563 Grade A or Grade 2.

## **8.0 SHOP FABRICATION**

### **8.1 Scope**

All fabricated members shall be sheared, formed, punched, welded, and painted in the plant of the manufacturer. All holes and clips required to facilitate the attachment of secondary framing shall be provided by Pinnacle Structures, Inc.

### **8.2 Welding**

All shop welding shall be in accordance with the American Welding Society and the American National Standards Institute Structural Welding Code (ANSI/AWS D1.1). Dimensional tolerances of fabricated components shall comply with the Metal Building Manufacturers Association (MBMA) Metal Building Systems Manual, Section 9 – “Fabrication and Erection Tolerances”. All welding shall be done by welders certified in accordance with AWS Code. Flanges and webs of “I” section shall be joined by a continuous automatic submerged arc welding (SAW) process or a semi-automatic gas metal arc welding (GMAW) process. Flange-to-web welds shall be applied on only one side of the web unless load transfer requirements dictate that welds be applied to both sides.

### **8.3 Structural Primer**

All fabricated members other than GALVALUME, galvanized, or prepainted panel and flashing material shall receive a factory applied coat of rust inhibiting primer. The primer shall be a universal anti-corrosive, lead and chromate free, fast drying, modified alkyd primer.

### **8.4 Identification**

All fabricated items shall have an identifying mark which corresponds to the mark shown on the erection drawings. The mark shall be stamped, stenciled, or printed on or attached to the items or to their containers.

## **9.0 FRAMED OPENINGS**

Framed openings shall consist of cold-formed headers and jambs of a sufficient depth designed and located to allow flush framing of the wall girts. Flashing shall be provided to ensure weather tightness and neat appearance.

## **10.0 CANOPIES**

### **10.1 Eave Line Flush Sidewall Canopy**

Eave line flush canopies shall consist of structural rafters of shop welded steel plate cantilevered to support flush mounted purlins and eave struts. Rafter depths shall match purlin depths. So that the top and bottom flanges of the rafters are flush with the top and bottom flanges of the purlins and eave struts. Canopy roof panels shall be an extension of the main building roof panels. As an option, canopies may be soffited with panels attached to the bottom flanges of the purlins and eave struts. Canopies shall be flashed at the eaves and ends to conceal the purlins and structural rafters.

### **10.2 Below Eave Line Flush Canopy**

Below eave line flush canopies shall consist of structural rafters of shop welded steel plate to support flush mounted purlins and eave struts. Rafter depths shall match purlin depths so that the top and bottom flanges of the rafters are flush with the top and bottom flanges of the purlins and eave struts. Canopy roof panels shall be adequately flashed to the building wall panels. As an option, canopies may be soffited with panels attached to the bottom flanges of the purlins and eave struts. Canopies shall be flashed at the eaves and ends to conceal the purlins and structural rafters.

### **10.3 Eave Line Structural Canopy**

Eave line structural canopies shall consist of structural rafters of shop welded steel plate cantilevered to support purlins and eave struts. Rafters shall be tapered sections mounted below the bottom flanges of the canopy purlins. Canopy roof panels shall be an extension of the main building roof panels. As an option, canopies may be soffited with panels attached to the bottom flanges of the purlins and eave struts. Canopies shall be flashed at the eaves and ends to conceal the purlins.

### **10.4 Below Eave Line Structural Canopy**

Below eave line structural canopies shall consist of structural rafters of shop welded steel plate cantilevered to support purlins and eave struts. Rafters shall be tapered sections mounted below the bottom flanges of the canopy purlins. Canopy roof panels shall be adequately flashed to the building wall panels. As an option, canopies may be soffited with panels attached to the bottom flanges of the purlins and eave struts.

## **10.5 Purlin Extension (Endwall Overhang)**

Purlins extensions shall be projections of the end bay purlins and roof panels beyond the endwall steel reference line. As an option, purlin extensions may be soffit with panels attached to the bottom flanges of the purlins and eave struts. Flashing shall be provided at the eaves and the rakes of the purlin extensions to match the main building flashing and to ensure weather tightness and neat appearance.

## **11.0 FACADE SYSTEM**

### **11.1 Structural Facades**

Structural facades shall be field assembled and consist of outriggers and stanchions of shop welded steel plate which support 8" cold-formed struts top and bottom. Facades shall project a minimum of 2'-0" from the building wall and extend a minimum of 2'-0" below the building eave. Facades may be either vertical or sloped toward the building 2" per 12" of vertical height. Façade face panels shall be included. Soffit panels, back panels and valley gutters shall be optional. Endwall facades with back panels shall project a minimum of 8" above the roof line. Flashing shall be provided to trim facades at the top, bottom, corners and ends.

## **12.0 PARTITIONS**

Partitions shall include all columns, girts, panels, flashing and fasteners necessary for a complete installation. Partition girts may be exterior or flush mounted. Partitions may be sheeted on one or both sides.

## **13.0 ROOF MODIFICATION**

### **13.1 Ice and Snow Condition Roof**

Upon written request, or at Pinnacles discretion, Pinnacle shall provide additional material to guard against roof damage resulting from ice and snow accumulations. The additional materials shall consist of additional fasteners to be applied along the building eaves and roof panel side laps and additional gutter clips (2'-0" O.C.).

### **13.2 UL 90 Wind Uplift Classified Roof**

Upon written request, Pinnacle Structures, Inc. shall provide UL labeled components and details to construct a roof which meets the requirements for an Underwriters Laboratories Classified Roof.

## **14.0 WINDOWS**

### **14.1 Horizontal Slide Windows**

Aluminum horizontal slide windows shall have extruded aluminum structural sections in mill finish and bronze. Window jambs shall be weather stripped with 3/16" x 1/4" pressure sensitive butyl sealant. Sashes shall be factory glazed clear glass. Sliding sections shall have cam or sweep interior locks and exterior screens. Windows shall be furnished complete with framing, fasteners, flashing and sealant necessary to ensure weather tightness and neat appearance.

## **15.0 SWING DOORS**

### **15.1 Door Frames**

Swing door frames shall be fabricated from 16 gauge galvanized or Galvalume steel with strike and hinge reinforcements. Door frames shall be bonderized and cleaned to provide paint adhesion. Door frames shall be given one coat of primer and one finish coat of white enamel (1.7 to 2.1 mils dry film).

### **15.2 Door Leaves**

Swing door leaves shall be fabricated from hot-dip galvanized G-60, or GALVALUME 20 gauge, mill bonderized, embossed steel with a stretcher level degree of flatness. After cleaning, all exterior surfaces shall be given a primer coat followed by a finish coat of white enamel (0.9 to 1.1 mils dry film.). Internal construction of swing door leaves shall be expanded polystyrene core with closed-cell rigid thermoplastic material with a U factor of 0.16.

### **15.3 Lockset Options**

Swing doors shall be provided with one of the following locksets:

- A. Cylindrical locksets with 2 3/4" backset with lever handles and satin chrome finish. Locksets shall be reversible for right or left hand operation.
- B. Heavy-duty mortise locksets with 2 3/4" backset with lever handles and satin chrome finish. Field reversible locksets shall be furnished for right or left hand operation.
- C. Rim type exit panic devices shall attach to doors prepared for cylindrical locksets. Push bars shall be furnished 23" in length. Panic hardware shall be furnished in a dull finish.

### **15.4 Thresholds**

Aluminum thresholds shall be sealed beneath and anchored to the concrete floor with countersunk fasteners. Thresholds, used in conjunction with door bottoms, shall provide a weather tight seal at the bottom of the door.

### **15.5 Door Bottoms**

Swing door bottoms shall be face-mounted assemblies consisting of drip strips with vinyl insert sweeps to seal the bottoms of the doors to the thresholds.

## 15.6 Trim

Trim flashing shall be provided for the heads and jambs of door frames when door frames are located at sheeted walls.

## 15.7 Swing Door Closer

Door closers shall be of rack and pinion construction. The rack and pinion shall be made of heat-treated steel and mounted in a cast hydraulic iron case. Closing of the doors shall be controlled by dual needle valves which shall be concealed against unauthorized adjustment. Closers shall be surface applied with projections not over 2 3/4" and shall be capable of being applied on 1 3/4" top rails or top jambs for inverted mounting.

## 16.0 WALL AND ROOF LIGHTS

### 16.1 General

Wall lights, roof lights and insulated roof lights shall be either fiberglass reinforced modified acrylic or fiberglass reinforced polyester translucent material. Wall and roof lights shall be furnished in the configuration of the wall or roof panels as applicable. Each wall and roof light shall be sized to replace one panel width and shall lap the building panel at the ends. Wall and roof lights shall be furnished with the sealant and fasteners necessary for the installation.

### 16.2 Wall Lights

Wall lights shall be chopped fiber reinforced, 6 ounce per square foot modified acrylic translucent material with a smooth finish. Wall lights shall be furnished white, in 5'-0 and 7'-0 lengths only. Wall lights shall have light transmission factors of 0.46 and heat transmission factors of 0.37. Wall lights shall be furnished for wall installation only and under no circumstances shall be installed in building roofs.

### 16.3 Roof Lights

Roof lights shall be mat fiber reinforced, 8 ounce per square foot modified acrylic translucent material with a smooth finish. Shadow panel roof lights shall be furnished white, in 11'-0 lengths only. Roof lights shall have light transmission factors of 0.46 and heat transmission factors of 0.64. Roof lights shall comply with the Underwriters Laboratories UL 90 Wind Uplift Classification when labeled and erected in accordance with UL 90 Roof Construction requirements.

### 16.4 UL 25 Flame Spread Rated Lights

UL 25 roof lights shall be mat fiber reinforced, 8 ounce per square foot, fire retardant (Underwriters Laboratories UL 25 Flame Spread Classification) polyester translucent material with a smooth finish. UL 25 roof lights shall have light transmission factors of 0.46 and heat transmission factors of 0.64. UL 25 roof lights shall comply with the Underwriters Laboratories UL 90 Wind Uplift Classification when labeled and erected in accordance with the UL 90 Roof Construction requirements.

## **16.5 Insulated Roof Lights**

Insulated roof lights shall be factory assembled units consisting of white roof lights and 4 ounce per square foot translucent pans which create a ¼" dead air space. Each roof light and pan shall be sealed with contact adhesive and pressure sensitive tape mastic. Insulated roof lights shall comply with the Underwriters Laboratories UL 90 Wind Uplift Classification when labeled and erected in accordance with UL 90 Roof Construction requirements. Insulated roof lights shall be furnished in 11'-0 lengths only.

## **17.0 SEALANT**

### **17.1 Tube Sealant**

Tube sealant shall be a one-component, moisture curing polyurethane multi-purpose sealant. The sealant shall exhibit extreme stability in the presence of ultra-violet radiation atmospheric contamination and infrared radiation.

### **17.2 Tape Sealant (Bead Mastic)**

Tape sealant shall be a cross-linked isobutylene / isoprene copolymer tape that will not lose shape due to storage or transportation. Tape sealant shall be available in the following size rolls: ¼" x 3/16" x 40' rectangular, 7/8" x 3/16" x 40' rectangular and 1 ½" x 3/32" x 45' rectangular.

## **18.0 CLOSURE STRIPS**

### **18.1 Closure Strips**

Closure strips shall be made of semi-rigid cross-linked polyethylene foam sheets fused together in plywood-like lamination. Foam closure strips shall be formed to fit the contour of the ribbed panels.