SECTION 13121

PRE-ENGINEERED BUILDINGS

PART 1 GENERAL

1.1 SECTION INCLUDES

A. Structural steel frame.

B. Complete roof covering system consisting of the exterior roof panels, panel attachments, sealants, mastics, trim and flashings as required.

C. Complete wall covering system consisting of the exterior wall panels, panel attachments, sealants, mastics, trim and flashings as required for a weathertight assembly.

D. Field seaming machine.

E. Wall accessories, including:
   1. Service doors.
   2. Windows.
   3. Louvers.

F. Roof Accessories, including:
   1. Facade systems.
   2. Translucent roof panels.
   3. Gravity ventilators.
   4. Ridge ventilators.
   5. Roof curbs.
   6. Roof walkways.

1.2 RELATED SECTIONS

A. Section 03300 - Cast-in-Place Concrete: Foundations and anchor bolts.

B. Section 09900 - Paints and Coatings: Finish painting of structural members, doors, roof curbs, etc.

1.3 REFERENCES

A. AAMA 101 - Voluntary Specification for Aluminum and Poly (Vinyl Chloride) (PVC) Prime Windows and Glass Doors; American Architectural Manufacturers Association.

B. ASTM A 36/ASTM A36M - Standard Specification for Carbon Structural Steel.

C. ASTM A 307 - Standard Specification for Carbon Steel Bolts and Studs, 60 000 PSI Tensile Strength.

D. ASTM A 325 - Standard Specification for Structural Bolts, Steel, Heat Treated, 120/105 ksi Minimum Tensile Strength.

E. ASTM A 529/A 529M - Standard Specification for High-Strength Carbon-Manganese Steel of Structural Quality.

F. ASTM A 570/A 570M - Standard Specification for Steel, Sheet and Strip, Carbon, Hot-Rolled, Structural Quality.

G. ASTM A 572/A 572M - Standard Specification for High-Strength Low-Alloy Columbium-Vanadium Steel.

H. ASTM A 653/A 653M - Standard Specification for Steel Sheets, Zinc-Coated (Galvanized) or Zinc-Iron Alloy-Coated (Galvannealed) by the Hot-Dip Process.

I. ASTM A 792/A 792M - Standard Specification for Steel Sheet, 55% Aluminum-Zinc Alloy-Coated by the Hot-Dip Process.

J. ASTM D 635 - Standard Test Method for Rate of Burning and/or Extent and Time of Burning of Self-Supporting Plastics in a Horizontal Position.

K. ASTM D 1929 - Standard Test Method for Ignition Properties of Plastics.

L. ASTM D 2843 - Standard Test Method for Smoke from the Burning or Decomposition of Plastics.

M. ASTM E 84 - Standard Test Method for Surface Burning Characteristics of Building Materials.

N. ASTM E 774 - Standard Specification for Sealed Insulating Glass Units.

O. SDI 100 - Recommended Specifications for Standard Steel Doors and Frames; Steel Door Institute.

P. UL 580 - Tests For Wind Uplift Resistance of Roof Assemblies; Underwriters Laboratories Inc.

1.4 DEFINITIONS

A. Building Width: Measured from outside to outside of sidewall girts.

B. Building Length: Measured from outside to outside of endwall girts.

C. Building Line: Outside face of structural steel.

D. Building Eave Height: Measured from the top of the eave member at the outside of the sidewall girt line to the bottom of the sidewall column base plate.

E. Bay Spacing: Measured from centerline to centerline of primary frames for interior bays and from centerline of the first interior frame to outside of endwall girts for endbays.

F. Roof Pitch: The ratio of the vertical rise to the horizontal run.

1.5 DESIGN REQUIREMENTS

A. Design structural systems according to professionally recognized methods and standards.
B. Design under supervision of professional engineer licensed in _____.
C. Design Loads:
   1. Applicable Building Code: _____.
   2. Roof Live Load: _____ psf (____ MPa), reducible.
   3. Roof Live Load: _____ psf (____ MPa), non-reducible.
   4. Roof Snow Load: _____ psf (____ MPa).
   5. Roof Wind Load: Calculate in accordance with applicable code, using ____ mph (____ km/h) Basic Wind Speed, Exposure Category ___, and Importance Factor of ____.
   6. Collateral Loads: ____ psf (____ MPa).
   7. Provide roof panel systems that have UL 580 Class 90 wind uplift rating.
   8. Provide roof panel systems that have UL 580 Class 60 wind uplift rating.
   9. Seismic Loads: Calculate in accordance with applicable code, for Zone ____, Occupancy Group ____.
   10. Floor Load: ____ psf (____ MPa).
   11. Dead loads, including the weight of all indicated permanent construction.

D. Design wall and roof panel system to withstand specified loads with deflection of _____ of span, maximum.

E. Anchor Bolts: Furnish design criteria for anchor bolts furnished by others, to resist the loads induced by the design loads on the structure.

1.6 SUBMITTALS

A. Submit in accordance with requirements of Section 01300.

B. Design Data: Provide detailed design criteria and calculations.

C. Certification: Manufacturer certification that the building conforms to the contract documents and manufacturer's standard design procedures.

D. Shop Drawings: Show building layout, primary and secondary framing member sizes and locations, cross-sections, and product and connection details.

E. Product Data: Information on manufactured products to be incorporated into the project.

F. Color Charts: For selection of colors.

G. Anchor Bolt Installation Drawings: Layouts with minimum bolt diameters.

H. Specimen Warranty.

1.7 WARRANTY

A. Provide manufacturer's standard warranty for:
Materials and workmanship: 1 year.
1. Panel finish: 3 years.
2. Panel finish: 20 years.
3. Weathertightness: 20 years.

PART 2 PRODUCTS

2.1 MANUFACTURER

A. Provide products made by VP Buildings, 3200 Players Club Circle, P.O. Box 17967, Memphis, TN 38187-0967. ASD. Tel: (901) 748-8000. Fax: (901) 748-9323.

2.2 METAL MATERIALS

A. Select materials and material yield strengths based on building design requirements; use the following unless required otherwise.

B. Structural Steel Plate, Bar, Sheet, and Strip for Use in Bolted and Welded Constructions: ASTM A 572/A 572M, A 529/A 529M or A 36/A 36M Modified 50, with minimum yield strength of 50,000 psi (345 MPa).

C. Structural Steel Material for Use in Roll Formed or Press Broken Secondary Structural Members: ASTM A 570/A 570M, with minimum yield strength of 55,000 psi (380 MPa).

D. Galvanized Steel Sheet for Roll Formed or Press Broken Roof and Wall Coverings, Trim and Flashing: ASTM A 653/A 653M, with minimum yield strength of 50,000 psi (345 MPa).

E. Galvalume Steel Sheet Used in Roll Formed or Press Broken Roof Covering: Aluminum-zinc alloy-coated steel sheet, ASTM A 792/A 792M, with minimum yield strength of 50,000 psi (345 MPa); nominal coating weight of 0.5 oz per sq ft (152 kg/sq m) both sides, equivalent to an approximate coating thickness of 0.0018 inch (0.05 mm) both sides.

F. Hot Rolled Steel Shapes: W, M and S shapes, angles, rods, channels and other shapes; ASTM A 572/A 572M or ASTM A 36/A 36M as applicable; with minimum yield strengths required for the design.

G. Structural Bolts and Nuts Used with Primary Framing: High strength, ASTM A 325.

H. Bolts and Nuts Used with Secondary Framing Members: ASTM A 307.

I. Shop Coat: Manufacturer's standard rust inhibitive primer paint; manufacturer's standard color.

J. SP Pre-Painted Finish: 0.8 mil baked on silicone polyester exterior surface.
   1. Color: As selected from manufacturer's full line.
   2. Color: _____.

3. Interior finish: Off white 0.5 mil (0.01 mm) washcoat.

K. KXL Pre-Painted Finish: 1 mil (0.025 mm) Kynar 500 coating on exterior surface.
   1. Color: As selected from manufacturer's full line.
   2. Color: _____.
   3. Interior Finish: Off white 0.5 mil (0.01 mm) washcoat.

2.3 FRAMING COMPONENTS

A. Primary Framing: Rigid Frame (RF Series) solid web framing consisting of tapered or uniform depth rafters rigidly connected to tapered or uniform depth columns. Provide a clear span that supports the loads at bay spacings indicated.

B. Primary Framing: Continuous Beam (CB Series) solid web framing utilizing tapered or uniform depth beams or girders supported on tapered or uniform depth columns. Locate interior columns where indicated and design to support loads at bay spacings indicated.

C. Primary Framing: Truss Beam (TB Series) open web framing utilizing roof trusses supported on uniform depth columns. Provide a clear span that supports the loads at bay spacings indicated.

D. Primary Framing: Continuous Truss (CT Series) open web framing utilizing continuous trusses supported by exterior and interior uniform depth columns that supports the loads at bay spacings indicated.

E. Primary Framing: Unibeam (UB and UBL Series) solid web framing consisting of a tapered beams supported by uniform depth columns. Provide a clear span that supports the loads at bay spacings indicated.

F. Select one type of endwall framing below and delete the others. If more than one type of endwall framing is required for a single building, edit the following text to indicated that multiple types are required -- if necessary, refer to the drawings for locations.

G. Endwall Framing: Corner posts, endposts and rake beams.

H. Endwall Framing: Half-loaded full frames.

I. Endwall Framing: Full frames with endposts, for future expansion.

J. Purlins: Zee-shaped; depth as required; with minimum yield strength of 55,000 psi (345 MPa); simple span or continuous span as required for design.

K. Girts: Zee- or Cee-shaped; depth as required, with minimum yield strength of 55,000 psi (345 MPa); simple span or continuous span as required for design.

L. Transbay Members: Open web, parallel chord, secondary joists; simple span, utilizing materials, sizes and yield strength as required.

M. Wind Bracing: Portal, torsional, diagonal bracing or diaphragm in accordance with manufacturer's standard design practices; utilizing rods, angles, and other members, with minimum yield strengths as required for design.

N. Primary Frame Flange Bracing: Attached from purlins or girts to the primary framing, minimum yield strength as required for design.

O. Base Angles: 2 inch x 3 inch x 0.059 inch (50 mm x 75 mm x 1.5 mm) steel angles, with minimum yield strength of 55,000 psi (38 MPa), anchored to the floor slab or grade beam with power driven fasteners or equivalent at a maximum spacing of 4 feet (1220 mm) on center and not more than 6 inches (150 mm) from the end of any angle member.

P. Door Headers and Jambs: Zee- or Cee-shaped; depth as required; with minimum yield strength of 55,000 psi (380 MPa).

Q. Sag Angles and Bridging: Steel angles, with minimum yield strength of 36,000 psi (250 MPa).

R. Fabrication: Fabricate according to manufacturer's standard practice.
   1. Fabricate structural members made of welded plate sections by jointing the flanges and webs by continuous automatic submerged arc welding process.
   2. Use certified welders for shop welding.

3. Weld shop connections. Prepare members for bolted field connections by making punched, drilled, or reamed holes in the shop.

S. Component Identification: Mark all fabricated parts, either individually or by lot or group, using an identification marking corresponding to the marking shown on the shop drawings, using a method that remains visible after shop painting.

T. Shop Coating: Finish all structural steel members using one coat of manufacturer's standard shop coat, after cleaning of oil, dirt, loose scale and foreign matter.

U. Package building components for shipping by common carrier.

2.4 ROOF AND WALL PANEL COMPONENTS

A. Roof Panels: Panel Rib; 36 inch (915 mm) wide net coverage, with 1-3/16 inch (30 mm) high major ribs at 12 inches (305 mm) on center with minor ribs spaced between the major ribs.
   1. Material: Galvalume steel.
   2. Material: Galvanized steel, with G90/Z275 coating.
   3. Thickness: 26 gage (0.45 mm).
   4. Thickness: 24 gage (0.61 mm).
   5. Side laps: At least one full major rib, with a supporting member bearing edge on the lower panel and an anti-capillary groove on the upper panel.
   6. Length: Continuous from eave to ridge up to 41 feet (12.5 m) in length.
   7. Endlaps, Where Required: 6 inches (150 mm) wide, located at a support member.
   8. Finish: SP pre-painted finish.
   9. Finish: KXL pre-painted finish.

B. Roof Panels: SSR Standing Seam Roof Panels; 24 inches (610 mm) wide net coverage, with 3 inches (75 mm) high major ribs formed at the panel side laps, formed for field seaming using electrically operated seaming machine.
   1. Side Joints: Factory applied sealant for field seaming.
   2. Material: Galvalume steel.
   3. Thickness: 24 gage (0.61 mm).
   4. Thickness: 22 gage (0.76 mm).

5. Side laps: Two factory-formed interlocking ribs, with one weather sealed joint, field-seamed into place to form a double-fold 360 degree seam.
6. Length: Continuous from eave to ridge up to 41 feet (12.5 m) in length.
7. Endlaps, Where Required: 7 inches (178 mm) wide, located at a support member.
8. Finish: KXL pre-painted finish, standard color.
9. Finish: KXL pre-painted finish, premium color.
10. Panel-to-roof purlin structural attachments: SSR clips with movable tabs which interlock with seamed SSR panel ribs and provide for 1 inch (25 mm) of panel movement in either direction from center of clip to compensate for thermal effects.

C. Ridge Assembly for High End of Slopes: SSR Ridge; draw-formed aluminum seam caps factory-attached to SSR ridge panels that are seamed together along the center of the ridge, utilizing only one weathersealed joint and providing a true expansion joint for panel movement.

D. Roof Panels: SLR Architectural Standing Seam Roof Panels; 16 inches (406 mm) wide net coverage with major ribs formed at the panel side laps, for field seaming using electrically operated seaming machine.
1. Material: Galvalume steel.
2. Thickness: 24 gage (0.61 mm), with 2 inch (50 mm) standing seam.
3. Thickness: 22 gage (0.76 mm), with 3 inch (75 mm) standing seam.
4. Side Joints: Factory applied sealant for field seaming
5. Length: Continuous from eave to ridge up to 41 feet (12.5 m) in length.
6. Endlaps, Where Required: 6 inches (150 mm) wide, located at a support member.
7. Finish: KXL pre-painted finish, standard color.
8. Finish: KXL pre-painted finish, premium color.
9. Panel-to-roof purlin structural attachments: SLR clips, with movable tabs that interlock with seamed SLR panel ribs and provide 1 inch (25 mm) of panel movement in either direction from center of clip to compensate for thermal effects.

E. Wall Panels: Panel Rib; 36 inch (915 mm) wide net coverage, with 1-3/16 inch (30 mm) high major ribs at 12 inches (305 mm) on center with minor ribs spaced between the major ribs.
1. Material: Galvalume steel, unpainted.
2. Material: Galvanized steel, with G90/Z275 coating.

3. Thickness: 26 gage (0.45 mm).
4. Thickness: 24 gage (0.61 mm).
5. Side laps: Two fully overlapping major ribs secured together with 1/4 inch (6 mm) diameter color-matched carbon steel fasteners.
6. Length: Continuous from sill to eave up to 41 feet (12.5 m) in length.
7. Endlaps, Where Required: 4 inches (100 mm) wide, located at a support member.
8. Crimp panels at the base and notch to match roof panel configuration at the eave.
9. Cut panels square at each end.
10. Cut panels square at each end; provide base trim at sill.
11. Finish: SP pre-painted finish.
12. Finish: KXL pre-painted finish.

F. Wall Panels: Vee Rib; 36 inch (915 mm) wide net coverage, with reverse ribs 12 inches (305 mm) on center 1-1/4 inches (32 mm) deep, sculptured profile with textured finish.
1. Material: Galvalume steel, unpainted.
2. Material: Galvanized steel, with G90/Z275 coating.
3. Thickness: 26 gage (0.45 mm).
4. Thickness: 24 gage (0.61 mm).
5. Side laps: At least one full major rib, with a supporting member bearing edge on the lower panel and an anti-capillary groove on the upper panel.
6. Length: Continuous from sill to eave up to 41 feet (12.5 m) in length.
7. Endlaps, Where Required: Located at a support member.
8. Cut panels square at ends; provide base trim at sill.
9. Finish: SP pre-painted finish.
10. Finish: KXL pre-painted finish.

G. Wall Panels: Span Loc Wall Panels; deep fluted panels, with 16 inch (406 mm) wide net coverage, 3 inch (75 mm) deep interlocking ribs for concealed fasteners.
1. Material: Galvalume steel.
2. Thickness: 24 gage (0.61 mm).
3. Thickness: 22 gage (0.76 mm).
4. Side laps: At least one full major rib, with interlocking ribs for concealed fasteners.
5. Length: Continuous from sill to eave up to 39 feet (11.89 m) in length.
6. Endlaps, Where Required: Located at a support member.

7. Finish: KXL pre-painted finish.

H. Liner Panels: Panel Rib Liner Panels; 36 inch (915 mm) wide net coverage, with 1-3/16 inch (30 mm) high major ribs with minor ribs spaced between the major ribs.
   1. Finish: SP pre-painted finish.
   2. Finish: KXL pre-painted finish.
   3. Provide partial height wall liner panels, to _____ high.
   4. Provide eave height liner panels.
   5. Provide full height liner panels.
   6. Provide liner panel wainscot.

I. Soffit Panels: Match Panel Rib wall panels.

J. Soffit Panels: Match Vee Rib wall panels.

K. Soffit Panels: VP100 Architectural Soffit Panels; 12 inch (305 mm) wide net coverage.
   1. Material: Galvanized steel with G90/Z275 coating.
   2. Thickness: 26 gage (0.45 mm).
   3. Side Joints: Factory applied gasket; tongue-in-groove connection with adjacent panels, with the connection reinforced by clips.
   4. Panel Length: 10 feet (3048 mm), maximum.
   5. Finish: SP pre-painted finish.
   6. Finish: KXL pre-painted finish.

L. Soffit Panels: VP002 Architectural Soffit Panels; 12 inch (305 mm) wide net coverage, with two 6 inch (150 mm) wide flat surfaces in the same plane separated by a V-groove at 6 inches (150 mm) on center after adjacent panels have been installed.
   1. Material: Galvanized steel with G90/Z275 coating.
   2. Thickness: 24 gage (0.61 mm).
   3. Side Joints: Factory applied gasket; tongue-in-groove connection with adjacent panels, with the connection reinforced by clips.
   4. Panel Length: 10 feet (3048 mm), maximum.
   5. Finish: SP pre-painted finish.
   6. Finish: KXL pre-painted finish.

M. Panel Fasteners:
   1. For Galvalume and KXL finished roof panels: Stainless steel-capped carbon steel fasteneers with integral seealing washer.
   2. For SP finished roof panels: Coated carbon steel.

3. For wall panels: Coated carbon steel with integral sealing washer.
4. Color of exposed fastener heads to match the wall panel finish.
5. Concealed Fasteners: Self-drilling type, of size as required.
6. Provide fasteners in quantities and location as required by the manufacturer.

N. Flashing and Trim: Match material, finish, and color of adjacent components. Provide trim at rakes, including peak and corner assemblies, high and low eaves, corners, bases, framed openings and as required or specified to provide weathertightness and a finished appearance.

O. Plastic Parts: Glass fiber reinforced resin or thermoformed ABS (Acrylonitrile-Butadiene-Styrene).
1. ABS: Minimum 1/8 inch (3 mm) thick.
2. Color: Manufacturer's standard color.

P. Sealants, Mastics and Closures: Manufacturer's standard type.
1. Provide at roof panel endlaps, sidelaps, rake, eave, transitions and accessories as required to provide a weather resistant roof system; use tape mastic or gunnable sealant at sidelaps and endlaps.
2. Provide at wall panel rakes, eaves, transitions and accessories.
3. Closures: Formed to match panel profiles; closed cell elastic material, manufacturer's standard color.
4. Tape Mastic: Pre-formed butyl rubber-based, non-hardening, non-corrosive to metal; white or light gray.
5. Gunnable Sealant: Non-skinning synthetic elastomer based material; gray or bronze.

Q. Blanket Insulation: Glass fiber, with factory laminated facing material
1. Glass fiber: Odorless, neutral colored, long filament, flexible resilient, 0.8 pcf (12.8 kg/cu m) density material.
2. Conductivity (k): 0.29 at 40 degF (0.50 at 4 degC) mean temperature and 0.31 at 70 degF (0.54 at 21 degC) mean temperature.
3. Flame spread Index: 25 or less, when tested in accordance with ASTM E 84.

4. Smoke Developed Index: 50 or less, when tested in accordance with ASTM E 84.
5. UL Classified.
6. Facing: White vinyl; embossed, 0.0032 inch (0.08 mm) thick; permeance 1.00 perm (57 ng/Pa s sq m).
7. Facing: Foil scrim kraft; 0.0005 inch (0.013 mm) thick aluminum foil, glass fiber scrim reinforcing, 30 lb kraft paper; permeance 0.02 perms (1.1 ng/Pa s sq m).
8. Facing: White vinyl scrim foil; 0.0008 inch (0.02 mm) thick vinyl film, glass fiber scrim reinforcing, 0.0005 inch (0.013 mm) aluminum foil; permeance 0.02 perms (1.1 ng/Pa sq m).
9. Facing: Heavy duty white vinyl scrim foil; 0.0008 inch (0.02 mm) thick vinyl film, glass fiber scrim reinforcing, 0.0005 inch (0.013 mm) aluminum foil; permeance 0.02 perms (1.1 ng/Pa s sq m).
10. Facing: White vinyl scrim polyester; 0.003 inch (0.076 mm) thick PVC film, glass fiber scrim reinforcing, 0.0005 inch (0.013 mm) thick polyester film; permeance 0.02 perms (1.1 ng/Pa s sq m).
11. Facing: White polypropylene scrim kraft; 0.0015 inch (0.04 mm) thick polypropylene film, glass fiber scrim reinforcing, 12 lb kraft paper; permeance 0.02 perms (1.1 ng/Pa s sq m).
12. Facing: Heavy duty white polypropylene scrim kraft; 0.0015 inch (0.04 mm) thick polypropylene film, glass fiber scrim reinforcing, 30 lb kraft paper; permeance 0.02 perms (1.1 ng/Pa s sq m).
13. Provide facing 3 inches (75 mm) wider on both edges than blanket.
14. Width: As required for installation.
15. Use blanket insulation at walls.
16. Use blanket insulation at roof.
17. Use blanket insulation at roof and walls.
18. Thickness: 3 inches (75 mm); R-value: 11.73.
19. Thickness: 4 inches (100 mm); R-value: 15.03.
20. Thickness: 6 inches (150 mm); R-value: 21.83.

R. Rigid Board Insulation: Glass-fiber-reinforced polyisocyanurate foam plastic core, nominal density of 2 pcf (32 kg/cu m), with aluminum foil facers on both sides.
1. Facer Finish: _____.
2. Width: 4 feet (1220 mm).
3. Use rigid board insulation at walls.
4. Use rigid board insulation at roof.
5. Use rigid board insulation at roof and walls.

6. Thickness: 1-1/4 inches (32 mm); R-value: 11.27.
7. Thickness: 1-1/2 inches (38 mm); R-value: 13.27.
8. Thickness: 1-3/4 inches (44 mm); R-value: 15.27.
9. Thickness: 2 inches (50 mm); R-value: 17.27.
10. Thickness: 2-1/4 inches (57 mm); R-value: 19.27.
11. Thickness: 2-1/2 inches (63 mm); R-value: 21.27.

S. Thermal Blocks: High density, 3/4 inch (19 mm) thick extruded polystyrene, for installation over the purlin.

T. Thermal blocks: Superblock; 1 x 3-1/2 inch (25 x 89 mm) extruded polystyrene thermal spacer strips capped by 22 gage (0.76 mm) galvanized channels, with swagged end for interconnection along the purlin run, metal tabs at 2 feet (610 mm) on center at SSR clip locations, and pre-punched fastener holes.

U. Semi-Rigid Blanket Insulation: 1.0 or 1.5 pcf (16 or 24 kg/cu m) density glass fiber semi-rigid blanket insulation, cut to width for applications between or outside of Span Loc interior ribs.
1. Thickness: 3 inches (75 mm).
2. Thickness: 4 inches (100 mm).
3. Thickness: 6 inches (150 mm).

2.5 WALL ACCESSORIES

A. Windows: Extruded aluminum frames with extruded aluminum sash of 6063-T5 alloy, complying with AAMA 101 performance and testing requirements for Grade ____.
1. Screens: 18 by 16 fiberglass mesh.
2. Finish on all exposed areas of aluminum windows and fins: Baked enamel complying with AAMA 603.8.
3. Color: Manufacturer's standard bronze.
4. Type: Horizontally sliding.
5. Type: Casement, project in.
6. Type: Fixed.
7. Glass: Single glazing.
8. Glass: Sealed insulating units, ASTM E 774, CBA rated with a 5 year warranty against seal failure; polysulfide sealant; overall unit thickness not less than 5/8 inch (16 mm).
9. Provide fully tempered glass.
10. Provide ____ tinted glass.
11. Provide obscure glass at _____ locations.

B. Service Doors:

1. Doors for Cylindrical Locks: SDI 100, Grade 1, Model 1 (1-3/4 inches (44 mm) thick minimum 20 gage (0.91 mm) steel face sheets).
2. Doors for Mortise Locks or Panic Devices: SDI 100, Grade 2, Model 1 (1-3/4 inches (44 mm) thick minimum 18 gage (1.22 mm) steel face sheets).
3. Type: Full flush.
4. Type: Half glass.
5. Type: Narrow lite style.
6. Frames: SDI 100, modified drywall type, 4-3/4 inches (120 mm) jamb depth minimum 16 gage (1.52 mm) steel; self-framing and self-flashing.
7. Hardware Reinforcements: Comply with SDI 100; locate so that door and frame are non-handed.
8. Finish: Two coat baked on paint on all exposed surfaces, apply after cleaning and chemical treatment for corrosion resistance and paint adhesion; manufacturer's standard bronze color.
9. Weatherstripping: At jambs, head and sill, complying with water and air resistance requirements of SDI 115 and SDI 116.
10. Hardware:
    a. One key in-knob cylindrical lockset per opening.
    b. One mullion and one pair surface bolts per double door opening.
    c. Three full mortise hinges per leaf, one with non-removable pin.
11. Size: As indicated on drawings.
12. Single Door Size: 3 by 7 feet (915 by 2135 mm).
13. Single Door Size: 3 feet 6 inches by 7 feet (1065 by 2135 mm).
14. Double Door Size: 6 by 7 feet (1830 by 2135 mm) overall.

C. Louvers: 18 gage (1.22 mm) galvanized steel, self-framing, self-flashing with integral head gutter, with paint finish.
1. Type: Fixed blade.
2. Type: Operable blade, with weather-stripped blades and 15 feet (4575 mm) of pull chain with dogging clip.
3. Screen: Exterior mounted, removable insect screen.
4. Minimum Free Area: 65 percent.
5. Size: 3 by 3 feet (915 by 915 mm).
6. Size: 4 by 3 feet (1220 by 915 mm).
7. Color: Manufacturer's standard bronze.

D. Wall Openings: Cold-formed sheet metal framing concealed with manufacturer's standard bronze trim.

2.6 ROOF ACCESSORIES

A. Eave Gutters: Roll-formed 26 gage (0.45 mm) steel sheet, with gutter straps, fasteners and joint sealant; manufacturer's standard bronze color.
   1. Downspouts: 4 x 5 inches (100 by 125 mm) in 10 foot (3050 mm) lengths, with downspout elbows and downspout straps; same color as wall panels.

B. Multi-Gutters and Valley Gutters: 0.059 inch (1.5 mm) thick cold-formed steel sheet.
   1. Finish: G90/Z275 galvanized coated.
   2. Joints: Field welded or mechanically fastened.

C. Translucent Roof Panels: Tuf-Lite; UV stabilized thermosetting polyester resin reinforced with chopped and woven roving glass fiber; manufacturer's standard configuration.
   1. Color: White, with textured exterior surface and minimum 50 percent light transmittance.
   2. Self-Ignition Temperature: 650 degF (343 degC) or greater, when tested in accordance with ASTM D 1929.
   3. Smoke Density Index: 450 or less, when tested in accordance with ASTM E 84, or 75 or less, when tested in accordance with ASTM D 2843.
   4. Extent of Burning: 1 inch (25.4 mm) or less, when tested in accordance with ASTM D 635.
   5. Rate of Burning: 2.5 inches (64 mm) per minute or less, when tested in accordance with ASTM D 635.
   6. Condensation Control Pan: Bonded to interior surface.

D. Gravity Ventilators: APEX 20; factory assembled, round, with 20 inch (510 mm) diameter throat with damper, operating cord and bird screen and base configured to match roof panel.
   1. Color: Manufacturer's standard white.
   2. Provide insulation retaining ring at interior.

E. Ridge Ventilators: 10 feet (3050 mm) long, 26 gage (0.45 mm) Galvalume, with damper with chain and worm gear operator and bird screen, and base configured to match roof panel.
   1. Throat Opening: 9 inches (229 mm).
   2. Throat Opening: 12 inches (305 mm).

3. Connect individual vents to form continuous ridge vent with one operator for each 5 vents.

F. Structural Facade System: Facade mounted below the plane of the roof, without roof supports or through the roof structural attachments.
1. Face: Panel Rib wall panels.
2. Face: Vee Rib wall panels.
3. Face: VP100 soffit panels.
4. Face: VP002 soffit panels.
5. Face: _____.
6. Face Style: Vertical.
7. Face Style: Mansard with incline of _____.
8. Height: ___ feet (____ m), with bottom edge at 2 feet (610 mm) below building eave line.
9. Close space between facade and roof with gutter.
10. Provide standard eave gutter on roof with open space between gutter and back side of facade.
11. Back Side: Closed with standard wall panels.
12. Soffit: Matching panels.

G. Light Facade System: Facade mounted on the roof, with through the roof structural attachments; G90/Z275 galvanized cold-formed light gage steel framing.
1. Face: Panel Rib wall panels.
2. Face: Vee Rib wall panels.
3. Face Style: Vertical.
4. Face Style: Mansard with incline of _____.
5. Height: ___ feet (____ m), with bottom edge at 1 foot (305 mm) below building eave line.
6. Provide standard eave gutter on roof with open space between gutter and back side of facade.
7. Back Side: Closed with standard wall panels.
8. Soffit: Matching panels.

H. Roof Curbs: Welded units fabricated for shingled installation with roof panels; minimum 18 gage (1.22 mm) Galvalume coated steel, with welds cleaned and treated with protective coating compatible with the Galvalume substrate.
1. Top of curbs horizontal with 1-1/2 inch (38 mm) perimeter flange.
2. Curb walls insulated with 1-1/2 inch (38 mm), 3 pcf (48 kg/cu m) density rigid glass fiber insulation.
3. Water Diversion: Integral 4 inch (100 mm) high by full length cricket on upslope side.
4. Exposed curb flanges pre-drilled for correct fastener locations.

5. Upslope and downslope curb flanges with integral welded inside and outside cell closures compatible with the roof panel profile.
6. Curb Framing: Mounted on secondary structural members and installed from the top; compatible with the thermal expansion and contraction properties of the roof on which it is used.
7. Opening Size: As indicated on drawings.
8. Roof Access Hatch: Manufacturer's standard 30 by 36 inch (760 by 915 mm) opening, with curb.
9. Curbs for SSR Roof Panels: One-piece type.
10. Curbs for SSR Roof Panels: Three-piece type.
11. Curbs for SSR Roof panels: Seamed in type.

I. Roof Walkways: 18 gage (1.22 mm) G90/Z275 galvanized planks, supports and hardware; for attachment to top of the SSR rib with no fastener penetrations through roof panel.
1. Planks: Interlocking, with slip resistant die formed tooth pattern on surface.
2. Width: As indicated on drawings.
3. Width: 18 inches (457 mm).
4. Width: 24 inches (610 mm).
5. Width: 36 inches (915 mm).
6. Length: 20 foot (6.1 m) modules.

PART 3 EXECUTION

3.1 EXAMINATION

A. Verify that foundations are installed correctly.

B. Verify that anchor bolts are installed as indicated on anchor bolt shop drawings.

3.2 ERECTION

A. Erect pre-engineered building in accordance manufacturer's instructions, erection drawings, and other erection documents.

B. Provide temporary bracing, shoring, blocking, bridging and securing of components as required during the erection process.

END OF SECTION