

Standard Specifications for PRE-FABRICATED METAL BUILDINGS

1. GENERAL

1.1 SCOPE

The building shall include all primary and secondary structural framing members, connection bolts, covering, doors, windows, skylights, flashing, fasteners, closures, tape and tube sealant, insulation, and other miscellaneous items as shown or called for in the drawings or specifications, unless specifically excluded in WHIRLWIND's contract.

1.2 BUILDING TYPES

1.2.A All frames shall be considered pinned at the base. Standard roof slope is One:12.

1.2.B "WRF" - The building is a single span, rigid frame structure, fabricated from welded-up plates with solid webs. The frames are either tapered or of uniform depth.

1.2.C "CB" - The building is a continuous span, rigid frame structure with one or more intermediate columns. The frames are fabricated from welded-up plates with solid webs and may include either welded-up plate or pipe sections for interior columns. The frames are either tapered or uniform depths.

1.2.D "WTB" - The building is a single span, rigid frame structure fabricated from either hot rolled sections or welded-up plates with solid webs. The frame has straight sidewall columns and tapered rafters.

1.2.E "SS" - The building may have the same characteristics as the "WRF", "CB" and "WTB" frames, except that the roof is single slope instead of being a gable type.

1.2.F "LT" - The building is designed as simple span column and rafters, fabricated from either hot rolled sections or welded-up plates with solid webs. The frame has straight sidewall columns and tapered or uniform depth rafters. The high side of the building must be attached to another structure, which must provide lateral and vertical support for the frame.

1.3 BUILDING NOMENCLATURE

1.3.A The building "Width" and "Length" shall be measured from the inside face to the inside face of the wall covering.

1.3.B The building "Eave Height" shall be measured from the bottom of the base plate of the frame columns to the intersection of lines representing the inside of the wall covering and the inside of the roof covering.

1.3.C The "Bay Spacing" shall be measured centerline to centerline of the main frames.

1.4 DRAWINGS AND CERTIFICATIONS

1.4.A WHIRLWIND's Houston, Texas plant is certified by the American Institute of Steel Construction to have the personnel, organization, experience, capability and commitment to produce fabricated structural steel for Category MB, Metal Buildings Systems as set forth in the AISC Certification Program.

1.4.B WHIRLWIND will furnish complete erection drawings showing anchor bolt settings, sidewall, endwall, roof framing, transverse cross-sections, covering and flashing details, and accessory installation details to clearly indicate the proper assembly of all building parts. On request, WHIRLWIND shall also furnish a certificate signed by a registered professional engineer stating that the building design meets the project ordered criteria and is in accordance with generally accepted engineering practices.

2. DESIGN

2.1 DESIGN RESPONSIBILITY

2.1.A If the End Customer hires a Design Professional for a construction project, it is the responsibility of the Design Professional to specify the design criteria for the metal building to be used by the Builder and WHIRLWIND including all applicable design loads.

2.1.B If the End Customer does not retain a Design Professional, it is the responsibility of the End Customer to specify the design criteria to be used for the metal building including all applicable design loads.

2.1.C In any event, it is the responsibility of the Builder to interpret all aspects of End Customer's specifications and incorporate the appropriate specifications, design criteria, and design loads into the Order Documents submitted to WHIRLWIND.

2.1.D It is the responsibility of WHIRLWIND to design the metal building to meet the specifications including the design criteria and design loads incorporated by the Builder into the Order Documents. WHIRLWIND is not responsible for making an independent determination of any local codes or any other requirements not part of the Order Documents.

2.1.E WHIRLWIND is responsible only for the structural design of the metal building it sells to the Builder. WHIRLWIND, or WHIRLWIND's Engineer is not the Design Professional or Engineer of Record for the Construction Project. WHIRLWIND is not responsible for the design of any components or material not sold by WHIRLWIND, or their interface and connection with the metal building unless such design responsibility is specifically required by the Order Documents.

2.2 DESIGN SPECIFICATIONS

2.2.A All structural steel sections and welded plate members shall be designed in accordance with either the AISC *Specification for Structural Steel Buildings - Allowable Stress Design and Plastic Design* or the *Load and Resistance Factor Design Specifications for Structural Steel Buildings* at WHIRLWIND's option.

2.2.B All light gauge cold-formed structural members and exterior covering shall be designed in accordance with the AISI *Specification for the Design of Cold-Formed Steel Structural Members*.

2.2.C All welding shall be in accordance with the ANSI/AWS D1.1 *Structural Welding Code-Steel* or the ANSI/AWS D1.3 *Structural Welding Code-Sheet Steel*, as applicable.

3. STRUCTURAL FRAMING

3.1 GENERAL

3.1.A All framing members shall be shop fabricated for field bolted assembly. Field cutting or drilling, when required, shall be clearly noted on the drawings.

3.1.B Primary structural framing shall include the transverse rigid frames, lean-to columns and rafters, canopy rafters, intermediate columns, bearing end frames, and wind bracing.

3.1.C All hot rolled steel plate and flat bar shall conform to ASTM A1011, A529 or A572 having a minimum yield strength of 50 ksi.

3.1.D All hot rolled steel sheet, 0.127" (10 gauge) minimum thickness and heavier, shall conform to either ASTM A1011 Grade 50 or A572 having minimum yield strength of 50 ksi.

3.1.E All hot rolled structural shapes shall conform to either ASTM A572 or A992, having minimum yield strength of 50 ksi.

3.1.F All painted hot rolled steel sheet with minimum thickness of 0.056" (16 gauge), 0.067" (14 gauge) and 0.100" (12 gauge) shall conform to ASTM A1011, Grade 55, having a minimum yield strength of 55 ksi. All pre-galvanized hot rolled steel sheet with minimum thickness of 0.058" (16 gauge), 0.069" (14 gauge) and 0.102" (12 gauge) shall conform to ASTM A653 Grade 50 Class 1 with a Coating Designation of G90. The minimum yield strength shall be 50 ksi. Minimum ordered thickness for coated steel products always includes the thickness of the coating.

3.1.G All round tubing and pipe shall conform to ASTM A53 Grade B having minimum yield strength of 35 ksi, or ASTM A500 Grade B having minimum yield strength of 42 ksi.

3.1.H All galvanized cable used for X-bracing shall conform to ASTM A475, Extra High Strength. All hardware used with this cable shall have physical characteristics meeting or exceeding the cable used.

3.1.I All hot rolled rounds shall conform to ASTM A36, having minimum yield strength of 36 ksi.

3.1.J Cold-formed sections shall be manufactured by precision roll or brake forming. All dimensions shall be true and the formed member shall be free of fluting, buckling, or waving.

3.1.K All flange to web welds shall be continuous gas metal or submerged arc partial penetration fillet welds on one side of the web. Other welds shall be either the gas metal or shielded arc process. Butt welds in flange plates and webs shall be full penetration.

3.1.L All field connections shall be bolted. Bolts shall be either high-strength bolts, furnished with nuts, conforming to ASTM A325, or machine bolts, furnished with nuts, conforming to ASTM A307. Drawings will be furnished indicating the placement of the differing bolts. A325 bolts shall be tightened by the "turn-of-nut" method. The faying surfaces of all bolted connections shall be smooth and free from burrs or distortions. All A307 bolts shall be electro-zinc plated. All A325 bolts shall be furnished black.

3.1.M All framing members shall carry an easily visible identifying mark-stamped, stenciled or printed on each member.

3.1.N Other materials may be used based on the particular building design requirements.

3.2 RIGID FRAMES, LEAN-TO FRAMES AND CANOPY RAFTERS

All members shall be welded, built-up "I" shapes, either constant depth or tapered.

3.3 BEARING END FRAMES

Bearing end frames shall consist of columns at the building corners, intermediate column(s), and a continuous rafter beam supported by the end wall columns. Interior frames may be substituted for bearing frames.

3.4 PURLINS AND GIRTS

Purlins shall be cold-formed "Z" sections with unequal flanges and stiffening lips. Stiffening lips shall be formed at an angle of 50 degrees with the flanges to permit nesting during shipping and when making overlapping connections. Girts shall be cold-formed "Z" sections or cold-formed "C" sections. Purlins and girts will be 0.056" (16 gauge) minimum thickness.

3.5 EAVE STRUTS

Eave struts shall be cold-formed, unequal flange "C" sections formed so as to provide adequate support for both roof and wall panels at the building eave. Eave struts will be 0.056" (16 gauge) minimum thickness.

3.6 WIND BRACING

Buildings shall be designed to resist wind loads by diaphragm action of the roof and wall panels, diagonal bracing consisting of either rods, cables, angles, structural wind bents, fixed-base columns or a combination of these methods.

3.7 FLANGE BRACING

The inside flange of frames shall be braced adequately so that the allowable compressive stress is adequate for the design load combination.

3.8 SILL SUPPORT

A continuous member shall be provided to which the base of the wall covering may be attached. This member shall be 0.067" (14 gauge) minimum thickness

angle, secured to the concrete floor by WHIRLWIND supplied fasteners at a maximum of 3'-0 on center.

3.9 FRAMED OPENINGS

Structural framing members for all openings shall be adequate for the specified design loads.

3.10 PAINTING

3.10.A All cold-formed structural framing members shall be shot blasted or pickled, given one coat (0.5 mils) of premium polyester-based red primer, then oven baked prior to any fabrication. The primer contains a "wax" type lubricant to facilitate roll forming and deter marring during those operations. Hairline crazing which may occur during forming operations is considered normal.

3.10.B All other structural framing members shall be cleaned in accordance with the AISC *Code of Standard Practice* and given one shop coat (1.0 mils) of WHIRLWIND's standard red oxide primer designed for short term field protection during the erection process. Primer shall meet or exceed the performance requirements as outlined in the Structural Steel Paint Council's paint specification SSPC-15.

4. ROOF AND WALL COVERING

4.1 MATERIALS

4.1.A Unless otherwise specified, the exposed surfaces of all roof and wall panels, trim and other exterior steel surfaces shall be either clear acrylic coated or factory painted GALVALUME®. GALVALUME® is a zinc-aluminum alloy coating that is applied to the base steel material. Acrylic coated GALVALUME® shall have a Coating Class AZ55 (0.55 ounces (combined total of both sides) per square foot). Factory painted GALVALUME® shall have a minimum Coating Class AZ50 (0.50 ounces (combined total of both sides) per square foot).

4.1.B GALVALUME® coated steel for roof and wall panels shall conform to ASTM A792 Grade 80 (80 ksi minimum yield strength). GALVALUME® coated steel for flashing, metal trim and other miscellaneous uses shall conform to ASTM A792 Grade 50 (50 ksi minimum yield strength).

4.1.C All roof material shall be ordered to a minimum decimal thickness of 0.0185" (26 gauge). All wall and trim material shall be ordered to a minimum decimal thickness of 0.0180" (26 gauge). Minimum ordered thickness for coated steel products always includes the thickness of the coating.

4.2 PAINTED FINISH

4.2.A All painted GALVALUME® shall be factory coated by a firm which coats coil products exclusively. The coater shall be responsible for ensuring color consistency, paint film hardness, and paint film thickness.

4.2.B The GALVALUME® will be pre-treated before painting in chemical solutions formulated to clean and prepare the steel for superior paint adhesion.

4.2.C Each side of the GALVALUME® will be coated with 0.2 mils baked-on primer before the color coating.

4.2.D A baked-on silicone polyester finish coat will be applied on one side while a baked-on straight polyester wash coat will be applied on the other. Thickness of the finish coat will be a nominal 1.0 mils (including the primer coat). Thickness of the wash coat will be a nominal 0.5 mils (including the primer coat).

4.3 MATERIAL WARRANTY

4.3.A Specific conditions concerning each finish shall be covered in detail on the written warranty issued, on request, with each building.

4.3.B GALVALUME® panels shall have a limited warranty for a period of twenty-five years after the building has been delivered to the jobsite. The limited warranty provides that GALVALUME® panels will not rupture, fail structurally, or perforate within a period twenty-five years after shipment due to exposure to normal atmospheric corrosion.

4.3.C The color finish on factory painted GALVALUME® panels shall have a limited warranty for a period of thirty years after the building has been delivered to the jobsite. The limited warranty provides protection from excessive chalking and color change (fading), peeling and cracking within this thirty-year period. Polar White color shall be painted with Polydure™ 1000. All of WHIRLWIND's other standard colors shall be painted with Ceram-A-Star (950/940), as manufactured by AKZO Coatings, a silicone polyester enamel. The wash coat on the reverse side does not carry a warranty.



4.4 ROOF PANELS

4.4.A Roof covering shall be "Super Span" panel. Panel coverage will be 36" to the weather with 1-1/4" deep major ribs every 12" and two 3/16" deep minor ribs between each major rib. The roof, when constructed with the aforementioned panel and in conjunction with WHIRLWIND's standard installation procedures, shall meet the requirements of Underwriters Laboratories standard UL 580 Class 90 for uplift resistance.

4.4.B Panels shall be continuous from ridge to eave on buildings 70'-0" wide or less. Where endlaps are required, they shall be a minimum of 4" and shall occur at a purlin. A closure strip shall be installed at the eave.

4.4.C Before securing, all laps of roof panels shall be sealed with a continuous ribbon of tape sealant.

4.4.D Panels shall be secured to intermediate framing members with sheet metal screws at a maximum spacing of 12" on center. At endlaps, the maximum screw spacing shall be 6" on center. Sheet metal stitch screws at a maximum of 20" on center shall be installed at the sidelaps.

4.5 WALL PANELS

4.5.A Wall covering shall be "Super Span", "Monarch" or "Low Rib" panel. Panel coverage will be 36" to the weather.

4.5.B Panels shall be continuous from 1-1/2" below the column base to the roofline, except where the required length would exceed 35'-0" in which case the panels would lap at a girt. The panel must not rest on the concrete foundation; the panel must sit 1/8" above the concrete. All panels shall be square cut at the roofline.

4.5.C Panels shall be secured to intermediate framing members with sheet metal screws at a maximum spacing of 12" on center. Sheet metal stitch screws at a maximum of 42" on center shall be installed at the sidelaps.

4.6 FLASHING, CLOSURES AND TRIM

4.6.A Flashing and/or trim shall be furnished at the rake, corners, eaves, framed openings, and wherever necessary to provide weathertightness and a finished appearance.

4.6.B A die-formed panel, matching the adjoining roof panels, shall be provided along the building for roof slopes up through 6:12.

4.6.C Standard trim colors are "Polar White", "Sahara Tan", "Burnished Slate", "Light Stone", "Hawaiian Blue" and "Steel Gray".

4.7 EAVE GUTTERS AND DOWNSPOUTS (OPTIONAL)

4.7.A Eave gutters shall be roll-formed to a profile, free of objectionable waviness and any other imperfections. The face of the gutter shall match the profile of the rake trim. All gutter sections shall be securely fastened and sealed at end laps. The outside face of the gutter shall be supported by 0.0180" (26 gauge) minimum thickness clear acrylic or factory painted GALVALUME® supports on 3'-0" centers. The standard "Shadow" style gutter has an approximate cross sectional area of 32-3/8 square inches.

4.7.B Downspouts shall be 4"x4" roll-formed box sections. Matching finish steel straps shall be provided for securing downspouts to the building wall. Kickouts (not elbow type) shall be provided on each downspout.

4.8 FASTENERS

4.8.A All fasteners furnished for the building panels will be 14-10 x 1" Type A, Hex Head Flat-Top Tapping Screw, Carbon Steel, 0.0003" Mechanical Zinc Plate. The fasteners shall have a flat top undercut head with EPDM sealing washer for weather-tightness. These fasteners are not self-drilling. Fasteners shall conform to ASME Standard B18.6.4.

4.8.B After plating, all fastener heads shall be coated with fluoropolymer base coat and a finish coat of baked-on polyurethane enamel. The finish of the fasteners shall match the building panels and trim.

4.8.C Rivets shall be 1/8" x 1/8" Regular Protruding Head, Break Mandrel Blind Rivet, Stainless Steel Body and Mandrel. All rivets shall match the finish of the trim. When installed, the body shall deform in such a manner as to securely clinch the joined sheet metal surfaces together.

4.9 TAPE SEALANT

4.9.A Sealant for roof sidelaps, endlaps, and flashing shall be gray, pressure sensitive, 100 percent solids, butyl based continuous tape. Width of the tape sealant shall be 3/8" while the thickness shall be 3/32". Sealant tape shall be provided in fifty-foot rolls incorporating the use of a coated, waterproof release paper for ease of installation.

4.9.B The tape sealant shall be comprised of butyl rubber, elastomeric polymers, reinforcing and inert fillers. The material shall be non-asphaltic, non-shrinking, non-drying, and non-toxic. Adhesion shall be superior on metal, plastics and painted surfaces at a temperature range of -40 degrees to +200 degrees Fahrenheit.

4.9.C Life expectancy of the sealant tape shall be a minimum of twenty years.

4.10 CLOSURE STRIP

A closed cell, chemically cross-linked, polyethylene, die-formed closure strip shall be provided for installation at the eave and the rake of the building. All closure strips shall be formed to accommodate the appropriate panel's inside or outside face, as required.

4.11 TUBE SEALANT

4.11.A An acrylic based clear tube sealant shall be provided for sealing applications including, but not exclusively for, the following: gutter/downspout joining, window and door perimeter, translucent fiberglass panels, or where necessary around other penetrations where a clear caulk/sealant is needed. The sealant shall provide a high performance, flexible seal with superior adhesion and elasticity. This sealant meets or exceeds AAMA Specification 800-92.

4.11.B A polyurethane based color tube sealant for same applications as described above, but used when a color sealant is required. Sealant meets or exceeds the above requirements plus meets or exceeds Federal Specification TT-S-00230C, Type II, Class A, Type NS, One Component. Also Meets or exceeds ASTM C-920, Type S, Grade NS, Class 25, USE-NT, Commercial A-A-272. Polyurethane caulks and sealants cannot be made clear.

5. ACCESSORIES

5.1 HOLLOW METAL SWING DOORS

5.1.A Door leaves shall be 1-3/4" thick, full flush, fabricated from 0.032" (20 gauge) embossed A60 galvanized mill bonderized steel. The leaves shall have a one piece, Kraft honeycomb core with a minimum crush strength of 45 psi. The core shall be secured to the face sheets with a waterproof adhesive.

5.1.B Door leaves shall have a tight hemmed vertical seam on lock and hinge edges. Leading edge of the leaf that contacts the frame stop will have four thickness of metal. Door edges will be continuously locked and beveled 1/8" in 2" for neat fit and security.

5.1.C A 0.053" (16 gauge) A60 galvanized top and bottom channel will be projection welded to both face sheets of the door leaf and shall be inverted. All hinge reinforcements shall be 0.178" (7 gauge) thick steel, projection welded to the door leaf in six places.

5.1.D Door frames shall be 8-1/4" deep, open channel fabricated from 0.053" (16 gauge) galvanized, mill bonderized steel. Each frame shall be prepared for the Universal A.S.A. strike and include three rubber door stops.

5.1.E Door frames shall be of the knock-down type furnished with mitered corners and tabs.

5.1.F All door leaves and frames shall be bonderized inside and outside for maximum protection. A rust resistant, modified acrylic synthetic resin primer, white in color, will be spray applied, then baked and will have a nominal dry film thickness of 0.7 mils.

5.1.G Standard hardware preparations for all door leaves and frames will be for 4-1/2" x 4-1/2" template hinges and Gov't. Series 161 type lockset. Special hardware preparations available as required.

5.1.H Each door unit will be furnished with a set of (three) 4-1/2" x 4-1/2" (0.134) full mortise, plain bearing hinges with a US26D (satin chrome) finish and non-removable pins.

5.1.I Each door unit will be furnished with a 1/2" high extruded aluminum threshold with sweep strip and necessary fasteners.

5.1.J A Gov't series 161, standard duty, lever action lockset (A.D.A.) with a US26D (satin chrome) finish will be furnished with each door unit.

5.1.K Each door unit will be furnished with a set of 0.054" (16 gauge), red oxide primed, channel extensions with bolts and clips to secure the door frame to the next wall member, if required. Intermediate girts (if existing) and sheets shall be field cut to accommodate door installations.

5.1.L Door units of the double leaf type will be furnished with a white, prime painted astragal, a lock filler plate for the passive leaf, and surface-mounted head and foot bolts in addition to the aforementioned hardware.

5.1.M Door closers, when required, shall be of the Size IV hydraulic type,



standard duty, with an aluminized painted finish and shall be mounted to the door leaf with thru-bolts.

5.2 ALUMINUM WINDOWS

5.2.A Aluminum windows shall be specially designed for installations with the exterior wall panels. The horizontal sliding windows shall conform to AAMA specification HS-C25.

5.2.B All aluminum sections shall be 6063-T5 extruded aluminum a minimum of 0.055 inches thick. Screws, nuts, bolts, rivets and other miscellaneous fastening devices incorporated in the windows shall be of aluminum, stainless steel, or other non-corrosive materials compatible with aluminum and shall be of sufficient strength to perform the functions for which they are used. Extruded aluminum fins shall be provided with each window for proper installations into the exterior wall panels.

5.2.C Windows shall be complete with latch, removable halfscreen, weather-stripping and provisions for the installation of a storm sash.

5.2.D Halfscreens shall be made of aluminum frames wired with fiberglass cloth.

5.2.E All exposed surfaces of aluminum frames and sash shall be mill finish with natural uniform color.

5.2.F Windows shall be factory glazed with DSB glass using vinyl glazing beads and shall be backbedded.

5.3 FIBERGLASS PANELS

5.3.A Fiberglass panels shall be of a translucent glass fiber laminate which consists of a uniform mat of high strength glass fibers with woven fiberglass cloth embedded into an organic resin. The material shall be lightweight, strong, and shatter resistant with excellent light diffusion characteristics. Resin is UV stabilized.

5.3.B Fiberglass panels shall conform to all requirements of ASTM D3841 for General Purpose Type 1.

5.3.C Fiberglass panels shall have a matching profile to the exterior roof or wall panels, shall be approximately 0.060" thick, and shall weigh a nominal 8 ounces per square foot.

5.3.D Panels shall be white in color and will allow approximately 46 percent light transmission and 20 percent heat transmission.

5.3.E The surface of each panel shall be smooth on both sides.

5.3.F When specified by the Order Documents, additional components shall be supplied for installation with the fiberglass panels such that the fiberglass panels, in conjunction with the "Super Span" steel roof, shall meet the requirements of Underwriters Laboratories standard UL 580 Class 90 for uplift resistance.

5.4 FIBERGLASS BLANKET INSULATION

5.4.A The fiberglass blanket shall be laminated to a white taffeta vinyl vapor barrier leaving a 2" tab on each side. The vinyl vapor barrier shall have a nominal thickness of 4 mils.

5.4.B The density of the fiberglass blanket shall be 0.75 pounds per cubic foot and shall meet the requirements of: a) Federal Specification HH-1-558, Form B, Type 1, Class 6, b) ASTM C-991 Type 2, and c) NAIMA Standard 202. Insulation shall have a flame spread rating of 25 or less with smoke development of 50 or less as determined by ASTM E 84.

5.4.C Insulation shall be provided in rolls, cut to the specific lengths required

for proper installation. Rolls for the roof shall be of continuous lengths for building up to 120'-0" wide, while the rolls for the walls shall be multiple increments of necessary lengths to be cut to proper length in the field. All rolls shall be individually protected in clear poly bags.

5.4.E The thickness of the fiberglass blanket shall be 3" (R-10) or 4" (R-13).

5.4.F Wire mesh, if required, shall be 20 gauge galvanized wire with 2" hexagonal mesh.

5.5 VENTILATORS

5.5.A Ventilators shall be of the gravity type, fabricated from 0.0180" (26 gauge) minimum unpainted GALVALUME® or factory painted G90 galvanized steel.

5.5.B Ventilators of the continuous type shall be in 10'-0" sections. All ventilators of this type shall be provided with a 0.0230" (24 gauge) die-formed skirt on all "Super Span" roofs, which allows maximum weather resistance. All ventilators of this type shall be peak mounted.

5.5.C Ventilators of the circular type shall be provided with interior baffles and exterior wind band designed to provide maximum air flow. Ventilators of this type will be mounted on a 0.0180" (26 gauge) thick die-formed peak sheet or slope mounted, as required.

5.5.D Both types of ventilators shall be provided with a weatherproof rain shield. Operable dampers shall be operated by a galvanized cable connected to a hand-operated winch. Up to three ventilators shall be operated simultaneously with each winch.

5.5.E All ventilators shall be provided with 4 x 4 galvanized 20 gauge wire cloth permanently installed as a birdscreen.

5.6 LOUVERS

5.6.A Louvers shall be fabricated from aluminum or G90 galvanized steel. Either material shall be factory painted, if required. Louvers shall have blades of the overlapping type providing maximum weather resistance while allowing free air flow.

5.6.B Steel louvers shall have 0.046" (18 gauge) frames and 0.034" (20 gauge) blades. Aluminum louvers shall have both frames and blades of 0.080" (14 gauge) material.

5.6.C Louvers shall be provided with either 4 x 4 galvanized 20 gauge birdscreen or a standard 18-16 mesh insect screen, as required.

5.6.D Louvers shall be available with movable or fixed blades, as required. A hand crank or chain pull shall operate adjustable blade louvers, as required.

6. BUILDING ANCHORAGE AND FOUNDATIONS

WHIRLWIND is not responsible for the design, materials and workmanship of the foundation. Anchor bolt plans prepared by WHIRLWIND are intended to show only location, diameter and projection of anchor bolts required to attach the building to the foundation. WHIRLWIND is responsible for providing the unfactored, uncombined foundation reactions required to resist the building loads. It is the responsibility of the End Customer to ensure that adequate provisions are made for specifying bolt embedment, bearing angles, tie rods, and/or other associated items embedded in the concrete foundation, as well as foundation design for the loads imposed by the building, other imposed loads, and the bearing capacity of the soil and other conditions of the building site.

