



SLIM SEAM PANEL SEAM

MATERIAL	WT./SQ. PLAIN	WT./SQ. PAINTED	METAL SPECIFICATION	FINISH
ALUMINUM 0.032" (16") 0.040" (16")	56.6 lb. 73.2 lb.	59.9 lb. 74.5 lb.	3105-H14 or equal (20 ksi yield strength) aluminum alloy conforming to ASTM B 209.	plain: mill finish painting: two-coat 70% Kynar® 500/Hylar® 5000 with 0.5 mil two-coat polyester backer
0.032" (12") 0.040" (12")	63.0 lb. 78.8 lb.	64.4 lb. 80.2 lb.		
GALVANIZED STEEL 24 ga. (16") 22 ga. (16")	150.0 lb. 182.4 lb.	151.7 lb. 184.1 lb.	Grade 50 (50 ksi yield strength) with G90 coating, both conforming to ASTM A 653	plain: regular spangle painting: two-coat 70% Kynar® 500/Hylar® 5000 with 0.5 mil two-coat polyester backer
24 ga. (12") 22 ga. (12")	161.4 lb. 196.3 lb.	163.2 lb. 198.1 lb.		
ALUMINUM-ZINC ALLOY COATED STEEL 24 ga. (16") 22 ga. (16")	145.1 lb. 177.6 lb.	146.8 lb. 179.3 lb.	Grade 50 (50 ksi yield strength) with AZ50 coating, both conforming to ASTM A 792	plain: regular spangle painting: two-coat 70% Kynar® 500/Hylar® 5000 with 0.5 mil two-coat polyester backer
24 ga. (12") 22 ga. (12")	156.1 lb. 191.2 lb.	158.0 lb. 193.0 lb.		

TEST REPORT SUMMARIES

AIR INFILTRATION: No leakage at 20.0 psf pressure differential per ASTM E 1680.

AIR EXFILTRATION: No leakage at 1.57 psf pressure, 0.02 cfm/ft.² leakage at 6.24 psf pressure, and 0.06 cfm/ft.² leakage at 12.0 and 20.0 psf pressure differential per ASTM E 1680.

WATER PENETRATION: No leakage under 5 gal./hr. spray at 12.0 psf pressure differential per ASTM E 1646.

UL90 RATING: 24 ga. steel Slim Seam with 22 ga. stainless steel clips spaced at maximum of 3'-0" o.c. over 22 ga. metal deck with up to 4" of 2.0 pcf rigid insulation. Clips supported by 6" x 6" x 24 ga. bearing plates and secured by two #14 Dekfast screws per clip.

UL90 RATING: 24 ga. steel Slim Seam with 22 ga. stainless steel clips installed over 16 ga. purlins (Grade 50 steel) spaced at maximum of 3'-0" o.c. Clips secured to purlins with two #10 x 1" pancake head self-drilling screws per clip.

UL90 RATING: 24 ga. steel Slim Seam with 22 ga. stainless steel clips spaced at maximum of 2'-0" over 1/2" plywood decking. Clips secured to purlins with two #10 x 1" pancake head wood screws per clip.

UL60 RATING: 24 ga. steel or 0.032" aluminum Slim Seam with 22 ga. stainless steel clips spaced at maximum of 3'-0" o.c. over 1/2" plywood decking. Clips secured to decking with two #14 x 1" pancake head wood screws per clip.

For loading information, refer to the Slim Seam manual which has detailed uplift load tables for various substrates.

Oil canning is an inherent trait of light gauge metal products, particularly those with wide flat areas. Many of Fabral panels come standard with stiffening ribs, pencil beads, or shadow lines as these help minimize the appearance of oil-canning. However, due to the limitations of commercially available metals, some oil-canning should be anticipated. Oil-canning in any of Fabral's products will not be cause for rejection of material.

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SLIM SEAM SPECIFICATIONS

1.01 SUMMARY

- A. Section includes: Pre-finished, prefabricated, snap-together, structural standing seam roof system and accessories.
- B. Related Sections
 - 1. Metal decking
 - 2. Rough carpentry, plywood, and underlayment
 - 3. Insulation
 - 4. Membrane roofing
 - 5. Flashing and sheet metal
 - 6. Joint sealers: sealants and caulk
 - 7. Structural framing.

1.02 REFERENCES

- A. American Society for Testing and Materials (ASTM)
 - 1. ASTM A 653: Steel Sheet, Zinc-Coated by the Hot Dip Process
 - 2. ASTM A 792: Steel Sheet, Aluminum-Zinc Alloy Coated by the Hot Dip Process.
 - 3. ASTM B 209: Aluminum and Aluminum Alloy Sheet and Plate.
 - 4. ASTM E 283: Air leakage
 - 5. ASTM E 331: Water penetration
 - 6. ASTM E 1646-95 Water Penetration
 - 7. ASTM E 1680-95 Air Infiltration and Exfiltration
- B. Underwriters Laboratory
 - 1. UL Building Materials Directory
 - 2. Underwriters Laboratories Construction No. 274, 274a, and 369 for Uplift Test 580 Class 90.
- C. Sheet Metal and Air Condition Contractors National Association, Inc. (SMACNA)
 - 1. SMACNA Architectural Sheet Metal Manual, 1993 Edition.
- D. American Iron and Steel Institute (AISI)
 - 1. AISI Cold Formed Steel Design Manual
- E. Aluminum Association
 - 1. Aluminum Design Manual
- F. Metal Construction Association (MCA)
 - 1. Preformed Metal Wall Guidelines
- G. Code references
 - 1. ASCE, Minimum Loads for Buildings and Other Structures
 - 2. BOCA National Building Code
 - 3. UBC Uniform Building Code
 - 4. SBC Standard Building Code

1.03 SYSTEM DESCRIPTION

- A. Performance Requirements: Provide factory formed, pre-finished, snap-together, concealed clip, structural standing seam metal roof system, that has been pre-tested and certified by manufacturer to comply with specified requirements under installed conditions.
 - 1. Provide UL90 rated roofing system that has been tested in accordance with UL 580 test procedure. Steel panels shall be capable of spanning 3'-0" o.c. purlins with UL90 rating.
 - 2. Resistance to air leakage: there was no air infiltration at 20 psf pressure differential. There was 0.06 cfm/ft.² air exfiltration at 20 psf pressure differential.
 - 3. Resistance to water penetration: there was no leakage through panel joints when tested in accordance with ASTM E 1646 at static pressure differential of 12.0 psf.
- B. Structural Requirements: Engineer panels for structural properties in accordance with latest edition of American Iron and Steel Institute *Cold Formed Steel Design Manual* using "effective width" concept and Aluminum Association's *Aluminum Design Manual*.

1.04 SUBMITTALS

- A. Product Data: submit manufacturer's specifications, standard profile sheet, product data brochure and finish warranty.
- B. Shop Drawings: shop drawings showing roof plan with layout of panels, clips, clip attachment, underlayment and sections of each flashing/trim condition shall be submitted for approval prior to fabrication. Drawings shall contain material type, metal thickness and finish. Drawings shall distinguish between factory and field fabrication.
- C. Samples:
 - 1. Submit sample 12" long x full width panel, showing proposed metal gauge, seam profile and specified finish.
 - 2. Submit manufacturer's standard colors for Architect's selection.
- D. Test Reports:
 - 1. Submit the test reports prepared by Underwriters Laboratory indicating wind uplift rating of proposed roof system. The manufacturer must be listed by name in the UL Directory.
 - 2. Air leakage per ASTM E 1680 and Water penetration per ASTM E 1646 (Actual independent laboratory certified test results must be submitted).
- E. Certification: Submit manufacturer's certification that materials and finishes meet specification requirements.

1.05 QUALITY ASSURANCE

- A. Panel manufacturer shall have a minimum of ten (10) years of experience in manufacturing architectural roofing in a permanent stationary indoor facility.
- B. Panel installer shall have a minimum of two (2) years experience in the installation of concealed clip architectural standing seam metal roofing and show evidence of successful completion of at least three (3) projects of similar size, scope, and complexity.

1.06 DELIVERY, STORAGE, and HANDLING

- A. Panels and flashings shall be protected and properly packaged to protect against transportation damage in transit to the jobsite.
- B. Upon delivery, exercise care in unloading, stacking, moving, storing, and erecting panels and flashings to prevent twisting, bending, scratching, or denting.
- C. Store panels and flashings in a safe, dry environment under a waterproof covering to prevent water damage. Allow for adequate ventilation to prevent condensation. Panels and flashings with strippable film shall not be stored in direct sunlight.
- D. Upon installation immediately remove strippable film from panels and flashings. Protect panels and flashings from foot traffic and from all other trades.

1.07 PROJECT CONDITIONS

- A. Field dimensions shall be taken prior to fabrication to verify jobsite conditions.
- B. Minimum recommended pitch for this panel is 1:12.
- C. Maximum panel length is 48' (contact the factory for longer panels).

1.08 WARRANTIES

- A. Panel manufacturer shall provide a twenty (20) year warranty on the paint finish covering chalking, cracking, checking, chipping, blistering, peeling, flaking, and fading.
- B. Applicator shall furnish written warranty for a two (2) year period from date of substantial completion of building covering repairs required to maintain roof and flashings in watertight conditions.

2.01 PRODUCT DESCRIPTION

- A. Slim Seam structural standing seam roof system as manufactured by Fabral, 3449 Hempland Road, Lancaster, PA 17601; ph: 717-397-2741; fax: 717-397-1040.
- B. The Slim Seam panel shall have a coverage of 12" or 16". Seams shall be 1/8" high.
- C. Roof panels shall use a one-piece roof clip allowing for unlimited thermal movement of the panel system.
- D. The panel shall have a factory applied mastic and be seamed by snapping together the integral seam.
- E. The panel system shall be as a true standing seam shape requiring no trapezoidal foam closures, plugs, or fillers at eaves.

2.02 PRODUCT SUBSTITUTIONS

- A. Requests to use alternate systems shall be submitted in writing to the project designer at least ten (10) days prior to bid date. Request shall demonstrate proposed substitution meets or exceeds specified performance requirements. Certified statements, samples and descriptive data shall be included in this submittal request.
- B. Manufacturers listed in this section are pre-qualified manufacturers. Substitution of manufacturer's products for those specified shall not be allowed at anytime during construction.

2.03 MATERIALS AND FINISHES

- A. Panel materials
 - 1. 24 or 22 gauge, Grade 50 (50 ksi yield strength) structural steel with G90 (0.90 oz./ft.²) hot dipped galvanized coating, both conforming to ASTM A 653.
 - 2. 24 or 22 ga., Grade 50 (50 ksi yield strength) structural steel with AZ50 (0.50 oz./ft.²) aluminum-zinc alloy coating, both conforming to ASTM A 792.
 - 3. 0.032" or 0.040", 3105-H14 or equivalent (20 ksi yield strength) aluminum alloy conforming to ASTM B 209.
- B. Texture: panels shall be smooth.
- C. Finish: Refer to manufacturer's standard color card to determine appropriate finish and color. All panels shall receive a factory-applied Kynar[®] 500/Hylar[®] 5000* conforming to the following:
 - 1. Metal preparation: all metal shall have the surfaces carefully prepared for painting on a continuous process coil coating line by alkali cleaning, hot water rinsing, application of chemical conversion coating, cold water rinsing, sealing with an acid rinse, and thorough drying.
 - 2. Prime coating: a base coat of epoxy paint, specifically formulated to interact with the top-coat, shall be applied to the prepared surfaces by roll coating to a dry film thickness of 0.20 ± 0.05 mils. This prime coat shall be oven cured prior to application of finish coat.
 - 3. Exterior coating: a Kynar[®] 500/Hylar[®] 5000 finish coating shall be applied over the primer by roll coating to a dry film thickness of 0.80 ± 0.05 mils for a total dry film thickness of 1.00 ± 0.10. This finish coating shall be oven-cured.
 - 4. Interior coating: a washcoat shall be applied on the reverse side over the primer by roll coating to a dry film thickness of 0.30 ± 0.05 mils for a total dry film thickness of 0.50 ± 0.10 mils. The washcoat shall be oven-cured.
 - 5. Color: the color of the exterior finish shall be _____ as chosen from the manufacturer's standard color chart.
 - 6. Physical properties: the coating shall conform to the manufacturer's standard performance criteria as listed by certified test reports for fade, chalk, abrasion, humidity, adhesion, pollution resistance, and others as required and standard within the industry.

2.04 ACCESSORIES

- A. Concealed clips:
 - 1. 1 pc.: 22 ga. stainless steel UL90 rated clip, 3" long.
 - 2. 1 pc.: 24 ga. galvanized steel clip, 3" long.
- B. Flashing and Trim
 - 1. All flashing and trim shall be of the same material, gauge, finish, and color as the roof panels and fabricated in accordance with standard SMACNA procedure and details.
 - 2. Provide transition rib covers where roofing changes pitch.
 - 3. Fabricate gutters and downspouts in the same gauge, material, finish, and color as the roof panels.
- C. Fasteners
 - 1. Clips to substrate: Screw shall be #10 diameter, self tapping type (for attachment to wood) or self-drilling, self tapping (for attachment to light gauge structurals), zinc-plated steel with a flat, Phillips drive head.
 - 2. Flashings to panels: exposed screws shall be zinc plated with a #14 x 1" combination steel and neoprene washer, color to match panel.
- D. Sealants
 - 1. Shall not contain oil, asbestos, or asphalt.
 - 2. Factory applied sealant shall be applied in the seam and designed for metal to metal concealed joints.
 - 3. Field applied panel end sealant shall be mastic tape sealant.
 - 4. Exposed sealant shall be one-part polyurethane joint sealant. Coordinate color with roof panels.
- E. Closures
 - 1. Ridge and hip closures shall be protected and supported by a formed metal closure manufactured from the same material, color, and finish as the panels.
 - 2. Metal closures shall be factory fabricated and field-cut as needed.
- F. Vapor Retarder:
 - 1. Retarder with a permeance of 0.05 or less as determined by ASTM E 98.

2.05 RELATED MATERIALS

- A. Refer to other sections listed in Related Sections paragraph for related materials.

2.06 FABRICATION

- A. Roof panels shall be formed in continuous lengths. End laps will not be allowed.
- B. Panels shall be roll formed on a stationary industrial type rolling mill to gradually shape the sheet metal. Portable rollformers, rented or owned by the installer, are not acceptable.
- C. Fabricate flashings from the same material as the roof system.

2.07 SOURCE QUALITY

- A. Source Quality: obtain metal panels and accessories from a single manufacturer.
- B. Fabrication tolerances: follow tolerances in MCA's Preformed Metal Wall Guidelines.
- C. Tests and inspections
- D. Verification of performance

3.01 MANUFACTURER'S INSTRUCTIONS

- A. Compliance: Comply with manufacturer's product data, including product technical bulletins, product catalog installation instructions, and product cartons for installation.

3.02 EXAMINATION

- A. Installer shall:
 - 1. Inspect roof deck and/or purlins to verify that it complies with shop drawings and is smooth, even, sound, and free of depressions.
 - 2. Report variations and potential problems in writing to the architect.

3.03 INSTALLATION

- A. Conform to the standard set forth in the SMACNA architectural sheet metal manuals and the approved shop drawings detailed for the project.
- B. Install panels plumb, level, and straight with the seams parallel, conforming to the design as indicated.
- C. Install panel system so it is watertight, without waves, warps, buckles or distortions, and allow for thermal movement considerations.
- D. Abrasive devices shall not be used to cut on or near roof panel system.
- E. Apply sealant tape or caulking as necessary at flashing and panel joints to prevent water penetration.
- F. Remove any strippable film immediately upon exposure to direct sunlight.
- G. Vapor retarder: The joints, perimeter, and all openings shall be sealed per the manufacturer's instructions to provide a continuous vapor retarder.
- H. Underlayment (solid substrate):
 - 1. Provide an underlayment with horizontal overlaps and endlaps staggered between layers.
 - 2. Provide ice and water shield membrane at all valley and eave conditions as well as any area at less than a 3:12 slope.
 - 3. Lay parallel to ridge line with 2½" horizontal laps and 6" vertical laps.

3.04 CLEANING

- A. Dispose of excess materials and debris from jobsite.
- B. Remove filings, grease, stains, marks, or excess sealants from roof panel system to prevent staining.
- C. Protect work from damage from other trades until final acceptance.

* Kynar[®] 500 is a registered trademark of Elf Atochem North America, Inc.
Hylar[®] 5000 is a registered trademark of Ausimont USA, Inc.