



SECTION 07720

ROOF ACCESSORIES

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PART 1 GENERAL

1.1 SECTION INCLUDES

- A. Attachment clamp system for standing seam metal roofs.
- B. Attachment clamp system for standing seam metal walls.
- C. Attachment clamp system for photovoltaic systems.
- D. Snow retention system for standing seam metal roofs with non-penetrating attachment.

1.2 RELATED SECTIONS

- A. Section 07410 - Metal Roof Panels.
- B. Section 07610 - Sheet Metal Roofing.

1.3 REFERENCES

- A. Aluminum Association (AA) - Aluminum Standards and Data, 2003 Edition.
- B. ASTM International (ASTM):
 - 1. ASTM A581/A581M - Standard Specification for Free-Machining Stainless Steel Wire and Wire Rods.
 - 2. ASTM A582 - Standard Specification for Free-Machining Stainless Steel Bars.
 - 3. ASTM B85 - Standard Specification for Aluminum-Alloy Die Castings.
 - 4. ASTM B221 - Standard Specification for Aluminum and Aluminum-Alloy Extruded Bars, Rods, Wire, Profiles, and Tubes.
 - 5. ASTM E527 - Standard Practice for Numbering Metals and Alloys.

1.4 SYSTEM DESCRIPTION

- A. Accessory attachment system for standing seam metal systems:
 - 1. With only minor dimpling of panel seams.
 - 2. With only round point set screws.
 - 3. Without penetrations through seams or panels.
 - 4. Without use of sealers or adhesives.
 - 5. Without voiding warranty.

- B. Loading: Design snow guard system to resist minimum in-service vector load of [] pounds per linear foot of eave.
- C. Factor of safety: Utilize a factor of safety SYMBOL 179 "Symbol" 10 2 to determine allowable loads from ultimate tested clamp tensile load values.

1.5 SUBMITTALS

- A. Submit under provisions of Section 01300.
- B. Product Data: Manufacturer's data sheets on each product to be used, including:
 - 1. Preparation instructions and recommendations.
 - 2. Storage and handling requirements and recommendations.
 - 3. Installation methods.
- C. Shop Drawings:
 - 1. Show locations of clamps, clamp spacing, and type of component being attached.
 - 2. Show locations of snow guards on roof and attachment spacing.
- D. Verification Samples:
 - 1. Samples of typical clamp.
 - 2. 12 inches (305 mm) long cross member samples including coupler and other hardware.
- E. Quality Control Submittals:
 - 1. Calculator: Results of S-5! Calculator for ColorGard Systems.
 - 2. Test Results: Results of product load testing, issued by a recognized independent testing laboratory, showing load-to-failure value of attachment.
- F. Closeout Submittals: Installer's certification that roof attachment system was installed in accordance with manufacturer's instructions and approved Shop Drawings.

1.6 QUALITY ASSURANCE

- A. Load Testing:
 - 1. Provide product tensile load testing performed by a recognized independent testing laboratory.
 - 2. Test loading to failure on mockup of specific panel seams proposed for this Project, performed in direction parallel to seams.
- B. Mock-Up: Provide a mock-up for evaluation of surface preparation techniques and application workmanship.
 - 1. Finish areas designated by Architect.
 - 2. Do not proceed with remaining work until workmanship is approved by Architect.
 - 3. Refinish mock-up area as required to produce acceptable work.

1.7 DELIVERY, STORAGE, AND HANDLING

- A. Store products in manufacturer's unopened packaging until ready for installation.
- B. Store and dispose of solvent-based materials, and materials used with solvent-based materials, in accordance with requirements of local authorities having jurisdiction.

1.8 EXTRA MATERIALS

- A. Extra Materials: Provide 2 percent extra clamps with set screws and attachment bolts.

PART 2 PRODUCTS

2.1 MANUFACTURERS

- A. Acceptable Manufacturer: Metal Roof Innovations, Ltd., which is located at: 8655 Table Butte Rd. ; Colorado Springs, CO 80908; Tel: 719-495-0518; Email: [requestinfo \(Shaddock@s-5.com\)](mailto:requestinfo@shaddock@s-5.com); Web: www.S-5solutions.com
- B. Substitutions: Not permitted.
- C. Requests for substitutions will be considered in accordance with provisions of Section 01600. Proposed substitutions must be a bar system that has an available lifetime warranty, mechanical attachment and no damaging round point set screws.

2.2 CLAMPS

- A. Standard Clamps:
 - 1. Manufactured from 6061-T6 aluminum extrusions conforming to ASTM B221 or aluminum castings conforming to ASTM B85 and to AA Aluminum Standards and Data.
 - 2. Clamp Model: No. S-5-U as manufactured by Metal Roof Innovations, Ltd.
 - 3. Clamp Model: No. S-5-E as manufactured by Metal Roof Innovations, Ltd.
 - 4. Clamp Model: No. S-5-T as manufactured by Metal Roof Innovations, Ltd.
 - 5. Clamp Model: No. S-5-K as manufactured by Metal Roof Innovations, Ltd.
 - 6. Clamp Model: No. S-5-Z as manufactured by Metal Roof Innovations, Ltd.
 - 7. Clamp Model: No. S-5-R as manufactured by Metal Roof Innovations, Ltd.
 - 8. Clamp Model: No. S-5-T2 as manufactured by Metal Roof Innovations, Ltd.
 - 9. Clamp Model: No. S-5-S as manufactured by Metal Roof Innovations, Ltd.
 - 10. Clamp Model: No. S-5-K 700 as manufactured by Metal Roof Innovations, Ltd.
 - 11. Set Screws: 300 Series stainless steel, 18-8 alloy, 3/8 inch (9.5 mm) diameter, with round nose point, two per clamp. Cup-point setscrews are not permitted.
 - 12. Attachment bolts: 300 Series stainless steel, 18-8 alloy, 25/64 inch (10 mm) diameter, with flat washers.
- B. Mini Clamps:
 - 1. Manufactured from 6061-T6 aluminum extrusions conforming to ASTM B221 or aluminum castings conforming to ASTM B85 and to AA Aluminum Standards and Data.
 - 2. Clamp Model: No. S-5-U Mini as manufactured by Metal Roof Innovations, Ltd.
 - 3. Clamp Model: No. S-5-E Mini as manufactured by Metal Roof Innovations, Ltd.
 - 4. Clamp Model: No. S-5-T Mini as manufactured by Metal Roof Innovations, Ltd.
 - 5. Clamp Model: No. S-5-Z Mini as manufactured by Metal Roof Innovations, Ltd.
 - 6. Clamp Model: No. S-5-S Mini as manufactured by Metal Roof Innovations, Ltd.
 - 7. Clamp Model: No. S-5-K Mini as manufactured by Metal Roof Innovations, Ltd.
 - 8. Set Screw: 300 Series stainless steel, 18-8 alloy, 3/8 inch (9.5 mm) diameter, with round nose point, one per clamp. Cup-point setscrews are not permitted.

9. Attachment Bolts: 300 Series stainless steel, 18-8 alloy, 5/16 inch (8 mm) diameter, with flat washers.
- C. Clamps:
1. Manufactured from red brass, Copper UNS Alloy No. C23000.
 2. Clamp Model: No. S-5-B as manufactured by Metal Roof Innovations, Ltd.
 3. Set Screws: 300 Series stainless steel, 18-8 alloy, 3/8 inch diameter, with round nose point. Cup-point setscrews are not permitted.
 4. Attachment Bolts: 300 Series stainless steel, 18-8 alloy, 10 mm diameter, with flat washers.
- D. Mini Clamps:
1. Manufactured from red brass, Copper UNS Alloy No. C23000.
 2. Clamp Model: No. S-5-B Mini as manufactured by Metal Roof Innovations, Ltd.
 3. Set Screw: 300 Series stainless steel, 18-8 alloy, 3/8 inch diameter, with round nose point, one per clamp. Cup-point setscrews are not permitted.
 4. Attachment Bolts: 300 Series stainless steel, 18-8 alloy, 5/16 inch (8 mm) diameter, with flat washers.

2.3 BRACKETS

- A. Penetrating Bracket:
1. Product: VersaBracket as manufactured by Metal Roof Innovations, Ltd.
 - a. VB-67Bracket: 2.65 inches (67 mm). The mounting face has no holes or slots, thus, ancillary items are typically secured using self-tapping screws.
 - b. VB-47 Bracket: 1.86 inches (47 mm). Provide face mounting configurations as detailed or required.
 2. Product: CorruBracket as manufactured by Metal Roof Innovations, Ltd.
- B. Penetrating Bracket for Face-Fastened or Corrugated Metal Profile:
1. Product: VersaBracket as manufactured by Metal Roof Innovations, Ltd.
 2. Product: CorruBracket as manufactured by Metal Roof Innovations, Ltd.
- C. Photovoltaic Panel Brackets:
1. PV Kit-30 accommodates frame thicknesses of 1.2 inches (30mm) to 1.9 inches (48mm).
 2. PV Kit-41 accommodates frame thicknesses of 1.6 inches (41mm) to 2.4 inches (60mm).
 3. Clamp: As scheduled or required to fit seam height and profile.
 4. Material:
 - a. Threaded Stud: Stainless steel.
 - b. Flange Nut: Stainless steel.
 - c. Bracket "Grab": Aluminum.
 - d. Mounting Disc: Aluminum for aluminum clamps
 - e. Mounting Disc: Stainless steel for brass clamps.

2.4 SNOW RETENTION

- A. Product: S-5! ColorGard as manufactured by Metal Roof Innovations, Ltd.
- B. Clamps:
1. Clamp Model: No. S-5-U as manufactured by Metal Roof Innovations, Ltd.
 2. Clamp Model: No. S-5-E as manufactured by Metal Roof Innovations, Ltd.
 3. Clamp Model: No. S-5-T as manufactured by Metal Roof Innovations, Ltd.
 4. Clamp Model: No. S-5-K as manufactured by Metal Roof Innovations, Ltd.

5. Clamp Model: No. S-5-Z as manufactured by Metal Roof Innovations, Ltd.
6. Clamp Model: No. S-5-R as manufactured by Metal Roof Innovations, Ltd.
7. Clamp Model: No. S-5-T2 as manufactured by Metal Roof Innovations, Ltd.
8. Clamp Model: No. S-5-S as manufactured by Metal Roof Innovations, Ltd.
9. Clamp Model: No. S-5-K 700 as manufactured by Metal Roof Innovations, Ltd.

C. Brackets:

1. Model: VersaBracket as manufactured by Metal Roof Innovations, Ltd.
2. Model: CorruBracket as manufactured by Metal Roof Innovations, Ltd.
3. Screws for attachment of brackets to roof: Stainless steel, of type best suited to application.

D. Cross Members:

1. Manufactured from 6061-T6 alloy and temper aluminum extrusions conforming to ASTM B221 and AA Aluminum Standards and Data.
2. Receptacle in face to receive color-matched metal strips.
3. Provide splice connectors ensuring alignment and structural continuity at end joints.

E. Color Strips: Same material and finish as roof panels; obtained from roof panel manufacturer.

F. SnoClips: For seam heights greater than 2 inches (52 mm).

1. Type: Punched.
2. Type: Unpunched with VersaClip.

2.5 SNOW RETENTION

A. Product: S-5! RamGard as manufactured by Metal Roof Innovations, Ltd.

1. Finish: Textured aluminum finish.
2. Clamp: S-5! Mini clamps
3. Clamp: Heavy duty clamps
4. Clamp: VersaBracket.

2.6 SNOW RETENTION

A. Product: SnoRail as manufactured by Metal Roof Innovations, Ltd.

B. Product: SnoFence as manufactured by Metal Roof Innovations, Ltd.

C. Cross Members and Posts:

1. Cross Members: 6061-T6 alloy and temper aluminum extrusions conforming to ASTM B221 and AA Aluminum Standards and Data.
2. Posts: 300 series stainless steel.
 - a. Style: SnoPost.
 - b. Style: SnoPost E, for end of 3/8 inch rod to prevent movement.
3. Coupler: Coupler ensuring alignment and structural continuity at end joints.
4. Clamps: Clamp model: No. S-5-A.
5. Clamps: Clamp model: No. S-5-AE.

D. Cross Members and Posts:

1. Cross Members and Posts: Type 303 stainless steel conforming to ASTM A581/A581M or ASTM A 582.
 - a. Style: SnoPost.
 - b. Style: SnoPost E, for end of 3/8 inch rod to prevent movement.
2. Coupler: Coupler ensuring alignment and structural continuity at end joints.

3. Clamps: Clamp model: No. S-5-A.
 4. Clamps: Clamp model: No. S-5-AE.
- E. Cross Members and Posts:
1. Manufactured from red brass, Copper UNS Alloy No. C23000.
 2. Provide coupler ensuring alignment and structural continuity at end joints.
 3. Clamps: Clamp model: No. S-5-B B.
 4. Clamps: Clamp model: No. S-5-BE.

2.7 SNOW RETENTION ACCESSORY

- A. Product: SnoClips as manufactured by Metal Roof Innovations, Ltd.
1. Profile: Aluminum, with rubber foot, minimum 3 inches wide.
 2. SnoClip II: 2 locks and made for horizontal seam heights of 1 inch (25 mm), 1-3/4 inches (44.5 mm) and 2 inches (51 mm) vertical seams, but not 2" (51 mm) horizontal.
 3. SnoClip III: 3 different locks and made for seam heights of 1-3/4 inches (44.5mm) up to 3 inches (76 mm).

PART 3 EXECUTION

3.1 EXAMINATION

- A. Do not begin installation until substrates have been properly prepared.
- B. If substrate preparation is the responsibility of another installer, notify Architect of unsatisfactory preparation before proceeding.
- C. Prior to beginning installation, verify that:
1. Panel seaming is complete.
 2. Panel attachment is sufficient to withstand loads applied by snow guard system.
 3. Installation will not impede roof drainage.
- D. Prior to beginning installation, verify that:
1. Roof attachment is sufficient to withstand loads applied by snow guard system.
 2. Installation will not impede roof drainage.

3.2 PREPARATION

- A. Prepare surfaces using the methods recommended by the manufacturer for achieving the best result for the substrate under the project conditions.

3.3 CLAMP INSTALLATION

- A. Clean seam areas to receive clamps; remove loose and foreign matter that could interfere with installation or performance.
- B. Install clamps in accordance with manufacturer's instructions and approved Shop Drawings.
- C. Place clamps in neat, straight rows, evenly spaced.
- D. Place both set screws on same side of clamp.
- E. Tighten set screws to manufacturer's recommended torque.

- F. Randomly test set screw torque using calibrated torque wrench.

3.4 SNOW RETENTION INSTALLATION

- A. Install system in accordance with manufacturer's instructions and approved Shop Drawings.
- B. Place clamps at maximum 32 inches (813 mm) on center or as required by in-service loads.
- C. Place clamps at maximum 24 inches (610 mm) on center or as required by in-service loads.
- D. Place clamps in straight, aligned rows.
- E. Place both set screws on same side of clamp.
- F. Tighten set screws to manufacturer's recommended torque.
- G. Use S-5-AE for aluminum requirement and S-5-BE for brass requirement clamps in lieu of standard clamp at each end of each assembly, and at a frequency and spacing of one for each 50 feet (15.25 m) of assembly.
- H. Install cross members through holes in clamps.
- I. Install couplers at cross member end joints.
- J. Tighten set screws against cross members at all "E" clamp locations.
- K. Do not cantilever cross members more than 3 inches (76 mm) beyond last clamp at ends.
- L. Install SnoClip per panel between panel seams in quantity/panel as recommended by manufacturer.

3.5 SNOW RETENTION INSTALLATION

- A. Install system in accordance with manufacturer's instructions and approved Shop Drawings.
- B. Place clamps at maximum 32 inches (813 mm) on center or as required by in-service loads.
- C. Place clamps in straight, aligned rows.
- D. Insert color-matched metal strips into cross members, staggering strips to cover cross member joints.
- E. Attach cross members to clamps; tighten bolts to manufacturer's recommended torque.
- F. Install splice connectors at cross member end joints.
- G. Do not cantilever cross members more than 3 inches (76 mm) beyond last clamp at ends.
- H. Install SnoClip per panel between panel seams in quantity/panel as recommended by manufacturer.

3.6 SNOW RETENTION INSTALLATION

- A. Install the S-5! mini clamp on the seam and tightening the round-point setscrew.
- B. Attach the RamGard with the stainless steel bolt.

3.7 PROTECTION

- A. Protect installed products until completion of project.
- B. Touch-up, repair or replace damaged products before Substantial Completion.

END OF SECTION