SnoFence/SnoRail – Continuous/Fence Systems
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SECTION 07 72 53

SNOW GUARDS

This section has been prepared by Metal Roof Innovations, Ltd. for use in the preparation of a project specification. Attachment may be by one of the following methods:

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:
1. Snow guards for metal roofs.
2. Non-penetrating attachment system.

1.2 RELATED SECTIONS

A. Division 01: Administrative, procedural and temporary work requirements apply to this section.

B. Section 07 41 13 – Metal Roof Panels

C. Section 07 61 00 – Sheet Metal Roofing

D. Section 07 62 00 – Sheet Metal Flashing and Trim

E. Section 07 72 53 – Roof Accessories – Snow Guards

F. Section 13 34 19 – Metal Building Systems

1.3 REFERENCES

A. Aluminum Association (AA) - Aluminum Standards and Data, Current Edition.

B. ASTM International (ASTM):
1. A484/A484M-16 – Standard Specifications for General Requirements for Stainless Steel Bars, Billets and Forgings.
2. A554-16 – Standard Specification for Welded Stainless Steel Mechanical Tubing.
3. A555/A555M-16 – Standard Specification for General Requirements for Stainless Steel Wire and Wire Rods.
4. B85-03 - Standard Specification for Aluminum-Alloy Die Castings.
5. B221-04a - Standard Specification for Aluminum and Aluminum-Alloy Extruded Bars, Rods, Wire, Profiles and Tubes.
6. F836M-02 (Current) – Standard Specification for Style 1 Stainless Steel Metric Nuts (Metric).
7. F880-12 – Standard Specification for Stainless Steel Socket, Square Head, Torx and Slotted Headless-Setscrews.

C. ICC Evaluation Service (www.icc-es.org):
1. Division: 05 00 00 – METALS; Section: 05 05 23 – METAL FASTENERS Evaluation Report ESR-3869.

1.4 SUBMITTALS

A. Action Submittal:
   1. Shop Drawings: Include roof plans showing locations of snow guards on roof and attachment details and spacing.
   2. Product Data:
      a. Product description.
      b. Construction details.
      c. Material descriptions.
      d. Individual component dimensions.
      e. Finishes.
      f. Installation instructions.
   3. Samples:
      a. Clamp samples.
      b. 12-inch long cross member samples including all associated hardware.

B. Informational Submittals:
   1. Proof of Job-Specific Engineering: Include registered professional engineer wet-stamped calculation for number and frequency of snow guard attachments based on design roof snow load, roof slope, roof dimensions, specific roof profile name, material type, gauge thickness and brand of manufacture; brand and model of snow retention device. **[(https://s-5.com/snow-calculator/)]**
   2. Proof of Product Testing: Results of appropriate product tensile load testing, issued by a recognized ISO 17025 accredited independent testing laboratory, showing the mean (of a minimum three test pulls) ultimate load-to-failure value of attachment **[bracket] [clamping device]** proposed on the specimen material named in B.1.
   3. Proof of Certified Production: Copy of manufacturer current ISO 9001 certficate (latest edition).
   4. Proof of Best Practice Compliance: Manufacturer duly exected letter stating full compliance with all provisions of the Metal Construction Association technical bulletin, “Qualifying Snow Retention Systems for Metal Roofing” (latest edition).

C. Closeout Submittals:
   1. Certification: Installer's certification or duly executed letter stating snow guard system was installed in accordance with manufacturer's instructions and approved shop drawings.

1.5 QUALITY ASSURANCE

A. Manufacturer Qualifications: Manufacturer to specialize in production of snow guard products of the type specified with a minimum of 10 years documented experience.

B. Manufactured in an ISO 9001 certified facility; ICC audited facility.

C. Installer Qualifications: Installer to specialize in metal roof installation and installation of snow guard products with a minimum of 5 years documented experience.

D. Mockup:
   1. Size: Minimum **[8] [__]** feet long.
   2. Show: Snow guard attachment, cross members and accessories.
   3. Locate **[where directed] [____]**.
   4. Approved mockup may remain as part of the Work.

E. Warranty:
1. Lifetime material/workmanship warranty on all products.

1.6 DELIVERY, STORGE AND HANDLING

A. Deliver components to jobsite properly packaged to provide protection during transport, delivery and handling.

B. Store products in manufacturer's original labeled and unopened packaging in a clean and dry location, protected from potential damage, until ready for application.

PART 2 - PRODUCTS

2.1 SYSTEM DESCRIPTION

A. Attachment system to provide attachment to standing seam metal roofs:
1. With only minor dimpling of panel seams.
2. Without penetrations through roof seams or panels.
3. Without use of sealers or adhesives.
4. Without violation of roof warranty.

B. Performance Requirements: Provide snow guards to withstand exposure to the weather and environmental elements and resist design forces without failure due to defective material or manufacture.
1. Loading: Design snow guard system to resist minimum design roof snow load(s) **[of __] [See structural drawings for roof design snow loads]**.
2. Factor of Safety: Utilize a factor of safety **≥ [2] [____]** to determine allowable loads from ultimate tested **[clamp] [bracket]** tensile mean load values.
3. Source Limitation: Provide snow guard system as designed and tested by the manufacturer as a complete system. Install all system components by the same manufacturer.

2.2 MANUFACTURER

A. Basis of Design: S-5!® div. of Metal Roof Innovations, Ltd., 500 W. Highway St., Iowa Park, TX 76367; Tel: 888-825-3432; Fax: 719-495-0045; Email: support@s-5.com; Web: www.s-5.com

B. Acceptable Manufactures if products meet specification requirements:
1. S-5!® div. of Metal Roof Innovations, Ltd. https://www.s-5.com/
2. LMCurbs. https://www.lmcurbs.com/
3. Rocky Mountain Snow Guards Inc. https://www.rockymountainsnowguards.com/

C. Substitutions: [Under provisions in Division 1.] Not permitted.

2.6 CONTINUOUS, FENCE-TYPE SNOW RETENTION SYSYEMS FOR STANDING SEAM METAL ROOFS

A. Basis of Design: SnoRail™ and SnoFence™, manufactured by S-5! div. of Metal Roof Innovations, Ltd.

1. Clamps:
a. Manufactured from 6000-series aluminum extrusions conforming to ASTM B221 or aluminum castings conforming to ASTM B85 and to AA Aluminum Standards and Data.
1) Clamp model: No. S-5-A and S-5-AE.
2) Setscrews: 300-series stainless steel, 18-8 alloy, 3/8 inch (9.525 mm) diameter, with round nose point.

2. Cross Members **[and Posts]**:
   a. Manufactured from Type 300-series stainless steel conforming to ASTM A581/A581M or ASTM A 582.
   b. Provide coupler ensuring alignment and structural continuity at end joints.
3. Ice and Snow Clips:
   a. Aluminum, with rubber foot, minimum 3 inches (76.2 mm) wide.
      1) Model: SnoClip II for standing seam heights 1 inch (25.4 mm) to 1.5 inches (38.1 mm).
      2) Model: SnoClip III for standing seam heights 1.75 inches (44.45 mm) to 3.25 inches (82.55 mm).

1. Clamps:
   a. Manufactured from red brass, Copper UNS Alloy No. C23000.
      1) Clamp model: No. S-5-B B and S-5-BE.
      2) Setscrews: 300 Series stainless steel, 18-8 alloy, 3/8 inch (9.525 mm) diameter, with round nose point.

2. Cross Members **[and Posts]**:
   a. Manufactured from brass 360 round rod, half hard temper conforming to ASTM B16.
   b. Provide coupler ensuring alignment and structural continuity at end joints.

PART 3- EXECUTION

3.1 EXAMINATION

Prior to beginning installation, verify:
1. Panel seaming is complete.
2. Panel attachment is sufficient to withstand loads applied by snow guard system.
3. Installation will not impeded roof drainage.

3.2 PREPARATION

A. Clean areas to receive attachments; remove loose and foreign matter that could interfere with installation or performance.

3.3 INSTALLATION

A. Install system in accordance with manufacturer's current instructions and approved Shop Drawings.

B. SnoRail and SnoFence Snow Retention Systems

1. Place clamps at maximum 32 inches (812.8 mm) on center or as required by certified calculation.

2. Place clamps in straight, aligned rows.

3. Place both setscrews on same side of clamp.

4. Tighten setscrews to manufacturer's recommended torque. Test setscrew torque using calibrated torque wrench.

5. Use **[S-5-AE] [S-5-BE]** 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.

6. Install SnoPosts vertically in each clamp. Use SnoPost E at all (above) “E” clamp locations.

7. Install cross members through holes in clamps and posts.

8. Install coupler at cross member end joints.

9. Tighten setscrews against cross members at all “E” clamp and post locations.

10. Do not cantilever cross members more than 4 inches (101.6 mm) beyond last clamp at ends.

11. Install **[one SnoClip] [two SnoClips]** per panel between panel seams.

END OF SECTION