



Evaluation Report CCMC 13011-R MetalWorks® StoneCrest® and MetalWorks® AstonWood® Steel Shingles

MasterFormat:	07 41 13
Evaluation issued:	2001-03-06
Re-evaluated:	2020-05-04

1. Opinion

It is the opinion of the Canadian Construction Materials Centre (CCMC) that “MetalWorks® StoneCrest® and MetalWorks® AstonWood® Steel Shingles,” when used as metal roofing systems in accordance with the conditions and limitations stated in Section 3 of this Report, comply with the National Building Code of Canada (NBC) 2015:

- Clause 1.2.1.1.(1)(a) of Division A, using the following acceptable solutions from Division B:
 - Article 9.3.3.2., Galvanized Sheet Steel (Metal)
 - Sentence 9.26.1.2.(1), Required Protection
 - Article 9.26.13.1., Thickness (Sheet Metal Roofing)
- Clause 1.2.1.1.(1)(b) of Division A, as an alternative solution that achieves at least the minimum level of performance required by Division B in the areas defined by the objectives and functional statements attributed to the following applicable acceptable solutions:
 - Subsection 9.26.2., Roofing Materials

This opinion is based on CCMC’s evaluation of the technical evidence in Section 4 provided by the Report Holder.

Ruling No. 08-05-190 (13011-R) authorizing the use of this product in Ontario, subject to the terms and conditions contained in the Ruling, was made by the Minister of Municipal Affairs and Housing on 2017-01-30 pursuant to s.29 of the *Building Code Act*, 1992 (see Ruling for terms and conditions). This Ruling is subject to periodic revisions and updates.

2. Description

The products are intended to be used on residential and light commercial buildings falling under the scope of Part 9, Housing and Small Buildings, of Division B of the NBC 2015.

The products are sheet-metal roofing systems consisting of a basic panel that is pressure-formed from 0.37-mm zinc alloy sheet steel that is finished with a fluoropolymer coating (70% polyvinylidene difluoride (PVDF)). The underside is finished with a corrosion-resistant coating.

The products have a nominal measurement of 1 010 mm × 320.5 mm. The panels are constructed with a four-way locking system and installed with a concealed nailing clip.

The longitudinal cross section of the “MetalWorks® StoneCrest® Steel Shingle” consists of five modules, each with a stone-embossed profile.

The longitudinal cross section of the “MetalWorks® AstonWood® Steel Shingle” consists of six modules, each with a wood-embossed profile.

Both systems include accessory strips for hip and ridge cap, valley pan, gable and flashing.

Typical installation details and nailing clip for the products are shown in Figures 1, 2, 3 and 4 respectively.

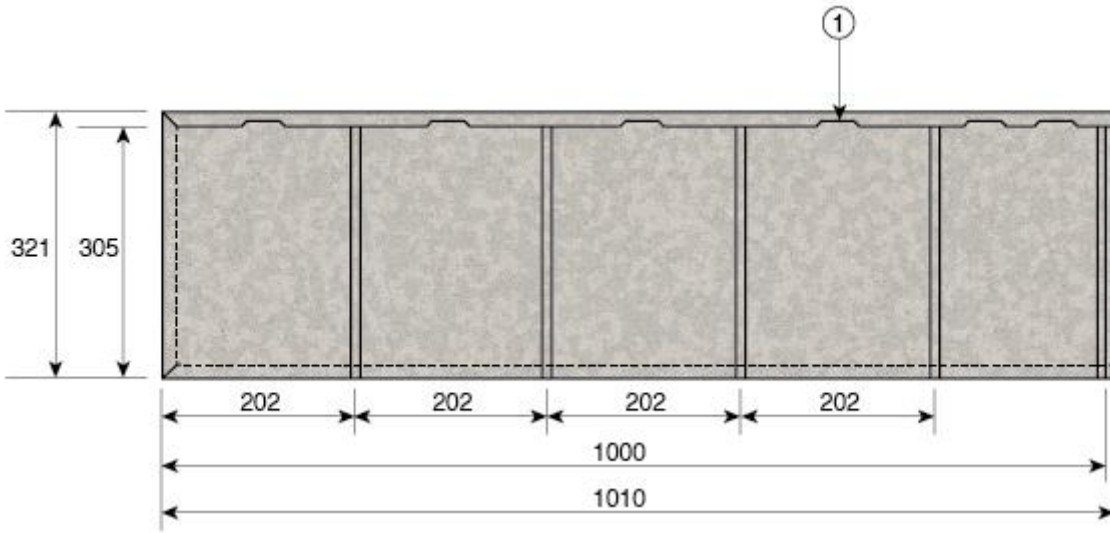


Figure 1. “MetalWorks® StoneCrest® Steel Shingles”*

- 1. potential clip location
- * measurements in mm.

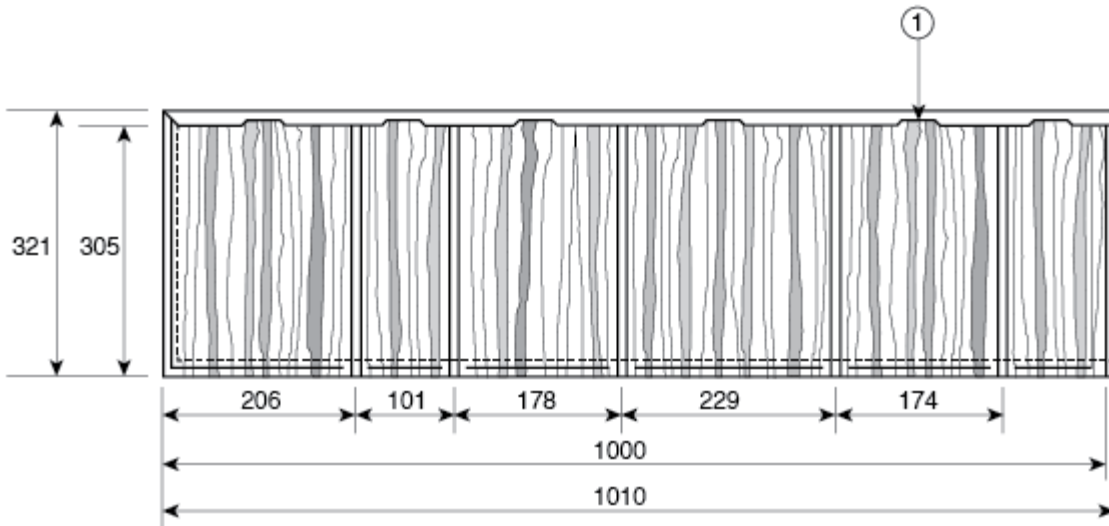


Figure 2. “MetalWorks® AstonWood® Steel Shingles”*

- 1. potential clip location
- * measurements in mm.

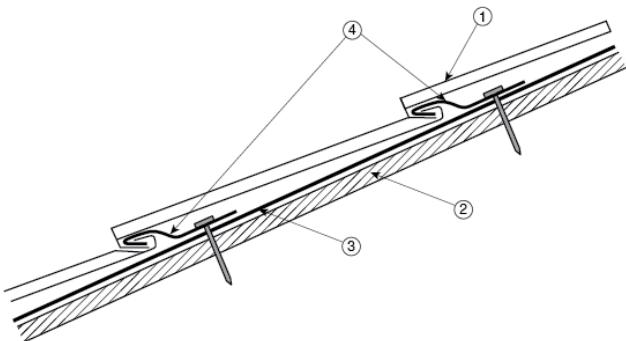


Figure 3. Installation detail for the products

1. “StoneCrest®” or “AstonWood®” steel shingle
2. roof sheathing
3. #30 felt or equivalent
4. nail clip

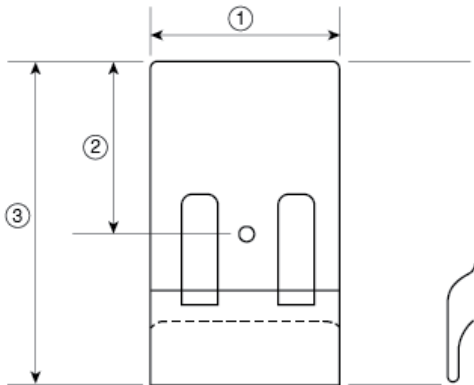


Figure 4. Fastening clip for the products

1. 32.7 mm
2. 28 mm
3. 54.4 mm

3. Conditions and Limitations

CCMC’s compliance opinion in Section 1 is bound by the “MetalWorks® StoneCrest® and MetalWorks® AstonWood® Steel Shingles” being used in accordance with the conditions and limitations set out below.

- The panels must be installed on roofs having a minimum slope of 1 in 4.
- The panels must be installed over solid sheathing complying with the requirements of Subsection 9.23.16, Roof Sheathing, of Division B of the NBC 2015.
- Flashing must be installed in compliance with the requirements of Subsection 9.26.4., Flashing at Intersections, of Division B of the NBC 2015.
- The panels must be installed with eave protection as indicated in Subsection 9.26.5., Eave Protection for Shingles and Shakes, of Division B of the NBC 2015.
- This evaluation report is based on the use of one layer of Type 30 organic felt underlay. This may not meet the underlayment requirements of the manufacturer at all roof slopes. Refer to the manufacturer’s installation instructions for proper underlayment usage.
- Only fasteners and accessories supplied by the manufacturer must be used with the products. The fasteners and accessories must be compatible with the base metal of the panels.
- The roofing system must be installed in strict conformance to the manufacturer’s instructions.
- The roofing systems are for use in locations where access is limited for maintenance or repair purposes. When access to the roof is needed, temporary walkways or roof boards are recommended to avoid any permanent damage to the panels.
- The products or their packaging must be clearly identified with “CCMC 13011-R.”

4. Technical Evidence

The Report Holder has submitted technical documentation for CCMC’s evaluation. Testing was conducted at laboratories recognized by CCMC. The corresponding technical evidence for this product is summarized below.

4.1 Material Requirements

Table 4.1.1 Material Properties of the Products

Property		Requirement	Test Method	Result
Base metal requirements	Thickness of base metal (mm)	≥ 0.33	–	0.37
	Thickness of zinc coating (g/m ²)	≥ 275	ASTM A 653/A 653M	315
Coating quality		Smooth and uniform, free of pinholes, cracks, blisters and flaking	CAN/CGSB-93.3	Pass

Property		Requirement	Test Method	Result
Coating thickness (thickness of PVDF), (µm)	AstonWood®	≥ 25	ASTM B 487	25
	StoneCrest® Tile	≥ 25	ASTM B 487	27
	StoneCrest® Slate	≥ 25	ASTM B 487	28
Coating adhesion	dry	No removal of film	ASTM D 3359 ⁽¹⁾	Pass
	wet	No removal of film	ASTM D 3359 ⁽²⁾	Pass
Coating hardness		No rupture	ASTM D 3363	Pass
Coating flexibility		No flaking or microcracking	CAN/CGSB-93.3	Pass
Coating humidity resistance		No formation of blisters	CAN/CGSB-93.3	Pass
Accelerated weathering (coating durability)		No sign of any change	ASTM G 153 ⁽³⁾	Pass
Salt spray resistance	AstonWood®	≥ 7 rating ⁽⁴⁾	ASTM B 117 ⁽⁵⁾	7
	StoneCrest® Tile/Slate	≥ 7 rating ⁽⁴⁾		10
Acid resistance	10% sulphuric acid	No loss of integrity or appreciable change	ASTM D 3260	Pass
	10% hydrochloric acid	No loss of integrity or appreciable change		Pass
	10% nitric acid	No loss of integrity or appreciable change		Pass
Impact resistance		No removal of film	ASTM D 4226 ⁽⁶⁾	Pass
Abrasion resistance	AstonWood®	Coefficient value ≥ 40	ASTM D 968	44.4
	StoneCrest® Tile/Slate	Coefficient value ≥ 40		41.7

Notes to Table 4.1.1:

- (1) The specimens were conditioned at 23±2°C and 50±5% RH for 48 hours.
- (2) The specimens were conditioned in distilled water 38±2°C for 24 hours.
- (3) The specimens were exposed to the Cycling schedule of CAN/CGSB 1-GP-71 Method 122.2.
- (4) The rating was determined in accordance with AAMA 621, Section 7.9.2.2.
- (5) The specimens were exposed to the salt spray in accordance with ASTM B 117 for 1 000 hours.
- (6) The specimens was deformed by using a 16-mm diameter round nose impact tester, to the depth of a minimum of 3 mm ± 0.3 mm. The tape was firmly applied over the area and sharply pulled.

4.2 Performance Requirements

4.2.1 Traffic Load

Table 4.2.1.1 Results of Traffic Load Testing

Property	Requirement	Result
Traffic load of 900 N	No signs of any plastic deformation or permanent openings at the lap that would adversely affect the function of the roofing system	Pass

4.2.2 Wind Uplift

Table 4.2.2 Results of Testing of Wind Uplift for the Products

Pressure (kPa)	Time (s)	Requirement	Result ⁽¹⁾
0.5	10	No evidence of deformation, permanent damage or failure	Pass
1.0	10		Pass
1.4	10		Pass
1.9	10		Pass
2.9	10		Pass
3.8	10		Pass
4.3	10		Shingle unclipped
4.8	10		–

Note to Table 4.2.2:

- (1) The panels were fastened onto a test frame measuring 1 220 mm × 2 440 mm using #10 – 25.4-mm galvanized steel zip screws. The test frame was constructed with 12.7-mm-thick plywood that was fastened to 50 mm × 100 mm Spruce-Pine-Fir (S-P-F) lumber spaced at 600 mm on centre (o.c.) using 76-mm 10d common nails.

4.2.3 Dynamic Pressure Water Infiltration

Table 4.2.3 Results of Testing of Dynamic Pressure Water Infiltration for the Products

Wind Speed (km/h)	Simulated Rainfall (L/m ² ·min)	Time (min)	Requirement	Result ⁽¹⁾
34–59	3.4	5	No leakage or damage	Pass
84–96	3.4	5		Pass
104–117	3.4	5		Pass
117–144	3.4	5		Pass
154–170	3.4	5		Pass

Note to Table 4.2.3:

- (1) The panels were fastened to a test frame with a 1 in 3 slope and a valley. The 11-mm-thick oriented strandboard (OSB) sheathing was fastened onto 50 mm × 150 mm S-P-F lumber rafters spaced at 600 mm o.c using 50-mm 6d common nails. The entire roof was covered with one layer of Type 30 organic felt fastened with staples.

Report Holder

TAMKO Building Products LLC
198 Four States Drive
P.O. Box 97
Galena, KS 66739-0097
USA

Telephone: 417-624-6644
Fax: 417-624-8935

Plant(s)

Joplin, MO, USA

Disclaimer

This Report is issued by the Canadian Construction Materials Centre, a program of the Construction Research Centre at the National Research Council of Canada. The Report must be read in the context of the entire CCMC Registry of Product Evaluations, including, without limitation, the introduction therein which sets out important information concerning the interpretation and use of CCMC Evaluation Reports.

Readers must confirm that the Report is current and has not been withdrawn or superseded by a later issue. Please refer to http://www.nrc-cnrc.gc.ca/eng/solutions/advisory/ccmc_index.html, or contact the Canadian Construction Materials Centre, Construction Research Centre, National Research Council of Canada, 1200 Montreal Road, Ottawa, Ontario, K1A 0R6. Telephone 613-993-6189. Fax 613-952-0268.

NRC has evaluated the material, product, system or service described herein only for those characteristics stated herein. The information and opinions in this Report are directed to those who have the appropriate degree of experience to use and apply its contents. This Report is provided without representation, warranty, or guarantee of any kind, expressed, or implied, and the National Research Council of Canada (NRC) provides no endorsement for any evaluated material, product, system or service described herein. NRC accepts no responsibility whatsoever arising in any way from any and all use and reliance on the information contained in this Report. NRC is not undertaking to render professional or other services on behalf of any person or entity nor to perform any duty owed by any person or entity to another person or entity.

Date modified:
2020-07-14