CCMC CANADIAN CODE COMPLIANCE EVALUATION

CCMC 13011-R

CCMC Canadian code compliance evaluation

CCMC number:	13011-R
Status:	Active
Issue date:	2001-03-06
Modified date:	2022-11-28
Evaluation holder:	**TAMKO Building Products LLC** 198 Four States Drive P.O. box 97 Galena KS 66739-0097 United States Website: www.tamko.com Telephone: 417-624-6644 / 800-641-4691
Product name:	MetalWorks® StoneCrest® and MetalWorks® AstonWood® Steel Shingles
Code compliance:	NBC 2015, OBC
Evaluation requirements:	CCMC-TG-074113-15A "CCMC Technical Guide for Metal Roof Panels"

In most jurisdictions this document is sufficient evidence for approval by Canadian authorities.
Learn more about CCMC recognition Look for the trusted CCMC mark on products to verify compliance.

Code compliance opinion

It is the opinion of the Canadian Construction Materials Centre that the evaluated product, when used as metal roofing systems in accordance with the conditions and limitations stated in this evaluation, complies with the following code:

National Building Code of Canada 2015

Code provision	Solution type
9.3.3.2. Galvanized Sheet Steel	Acceptable
9.26.1.2.(1) Roofs shall be protected with roofing, i ...	Acceptable
9.26.2. Roofing Materials	Alternative
9.26.13.1. Thickness	Acceptable

Ontario Building Code

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.

The above opinion is based on the evaluation by the CCMC of technical evidence provided by the evaluation holder, and is bound by the stated conditions and limitations. For the benefit of the user, a summary of the technical information that forms the basis of this evaluation has been included.

Product information

Product name

MetalWorks® StoneCrest® and MetalWorks® AstonWood® Steel Shingles

Product 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 4-way locking system and installed with a concealed nailing clip.

The longitudinal cross-section of the MetalWorks® StoneCrest® Steel Shingle consists of 5 modules, each with a stone-embossed profile.

The longitudinal cross-section of the MetalWorks® AstonWood® Steel Shingle consists of 6 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 the following figures.

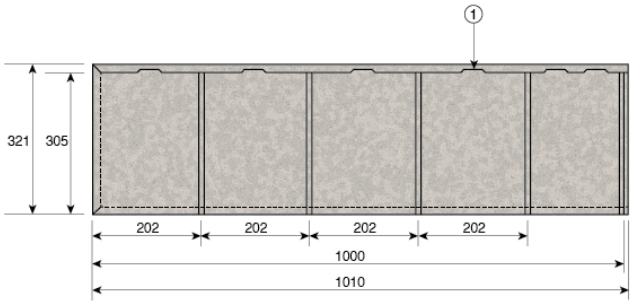

Figure 1. MetalWorks® StoneCrest® Steel Shingles

1. potential clip location

*measurements in mm.

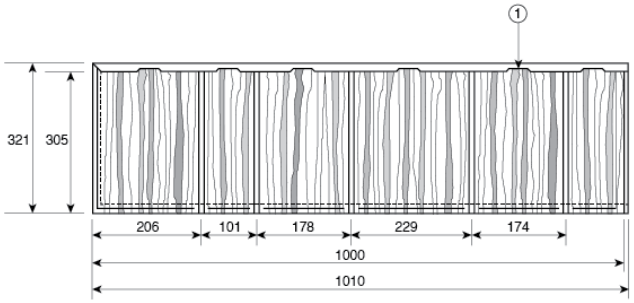

Figure 2. MetalWorks® AstonWood® Steel Shingles®

1. potential clip location

*measurements in mm.

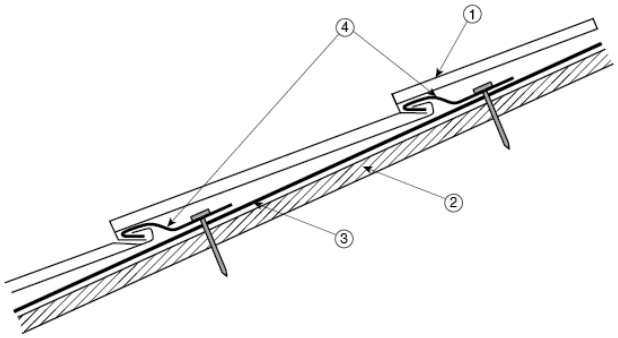

Figure 3. Installation detail for the products

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

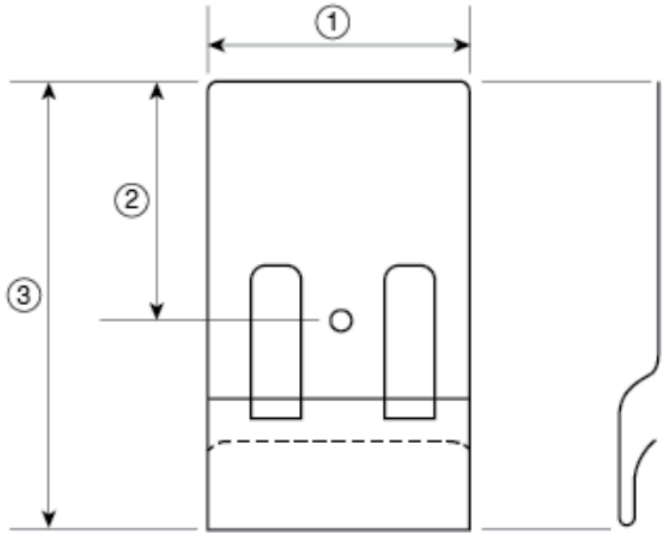

Figure 4. Fastening clip for the products

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

Manufacturing plant

This evaluation is valid only for products produced at the following plant:

Product name	Manufacturing plant
	Joplin, MO, US
MetalWorks® StoneCrest® and MetalWorks® AstonWood® Steel Shingles	⊘

⊘ Indicates that the product from this manufacturing facility has been evaluated by the CCMC

Conditions and limitations

The CCMC's compliance opinion is bound by this product 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."

Technical information

This evaluation is based on demonstrated conformance with the following criteria:

Criteria number	Criteria name
CCMC-TG-074113-15A	CCMC Technical Guide for Metal Roof Panels

Material requirements

Table 1. Material properties of the products

Property		Requirement	Test method	Result
Base metal requirements	**thickness of base metal (mm)**	≥ 0.33	N/A	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
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
Abraison resistance	**AstonWood®**	Coefficient value ≥ 40	ASTM D 968	44.4
	StoneCrest®	Coefficient value ≥ 40		41.7

Notes

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 were 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.

Performance requirements

Traffic load

Results of traffic load testing

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

Wind uplift

Table 2. Results of testing 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

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.

Dynamic pressure water infiltration

Table 3. Results of testing 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

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.

Administrative information

Disclaimer

This evaluation is issued by the Canadian Construction Materials Centre (CCMC), a part of the Construction Research Centre at the National Research Council of Canada (NRC). The evaluation must be read in the context of the entire CCMC Registry of Product Assessments and the legislated applicable building code in effect.

The CCMC was established in 1988 on behalf of the applicable regulator (i.e., the provinces and territories) to ensure—through assessment—conformity of alternative and acceptable solutions to regional building codes as determined by the local authority having jurisdiction (AHJ) as part of the issuance of a building permit.

It is the responsibility of the local AHJs, design professionals, and specifiers to confirm that the evaluation is current and has not been withdrawn or superseded by a later issue. Please refer to the website or contact:

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

The NRC has evaluated the material, product, system or service described herein only for those characteristics stated herein. The information and opinions in this evaluation are directed to those who have the appropriate degree of experience to use and apply its contents (i.e., AHJs, design professionals and specifiers). This evaluation is only valid when the product is installed in strict compliance with the stated conditions and limitations of evaluation and the applicable local building code. In circumstances where no applicable local building permit is issued and that no confirmation of compliance ‘for use in the intended field application’ is undertaken, this evaluation is null and void in all respects. This evaluation is provided without representation, warranty, or guarantee of any kind, expressed, or implied, and the NRC provides no endorsement for any evaluated material, product, system or service described herein. The NRC accepts no responsibility whatsoever arising in any way from any and all use and reliance on the information contained in this evaluation with respect to its compliance to the referenced code(s) and standard(s). The 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.

Language

Une version française de ce document est disponible.
In the case of any discrepancy between the English and French version of this document, the English version shall prevail.

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CCMC recognition

The Canadian Construction Materials Centre (CCMC) assesses compliance with Canadian building, energy and safety codes. We are the only construction code compliance service supported and operated by the Government of Canada. Trusted by over 6,000 regulators across Canada.

> Most Canadian authorities having jurisdiction (AHJs) consider CCMC product assessments acceptable as evidence for product approval.

CCMC assessments are recognized by construction authorities across Canada:

Alliance of Canadian Building Official Associations (ACBOA)	(Alliance of Canadian Building Official Associations (ACBOA))
First Nations National Building Officers Association (FNNBOA)	(First Nations National Building Officers Association (FNNBOA))
Canadian Home Builders' Association (CHBA)	(Canadian Home Builders' Association (CHBA))
Alberta Building Officials Association (ABOA)	(Alberta Building Officials Associations (ABOA))
Saskatchewan Building Officials Association (SBOA)	(Saskatchewan Building Officials Association (SBOA))
Manitoba Building Officials Association (MBOA)	(Manitoba Building Officials Association (MBOA))
Ontario Building Officials Association (OBOA)	(Ontario Building Officials Association (OBOA))
New Brunswick Building Officials Association (NBBOA)	(New Brunswick Building Officials Association (NBBOA))
Nova Scotia Building Officials Association (NSBOA)	(Nova Scotia Building Officials Association (NSBOA))

The CCMC provides code compliance assessments to Canadian code requirements, consulting nationwide with construction regulators to elicit regional variations in code requirements as well as provincial and local interpretations. Users are advised to review the technical information presented in CCMC assessments when making approval decisions. Learn more about how the CCMC provides a unique service for Canada.

For more information, contact the CCMC by phone at (613) 993-6189 or by email at ccmc@nrc-cnrc.gc.ca

Code compliance as an acceptable solution

Code Compliance via Acceptable Solutions

> If a building design (e.g. material, component, assembly or system) can be shown to meet all provisions of the applicable **acceptable solutions** in Division B (e.g. it complies with the applicable provisions of a referenced standard), it is deemed to have satisfied the objectives and functional statements linked to those provisions and thus to have complied with that part of the Code.
>
> — **National Building Code of Canada, Sentence A-1.2.1.1.(1)(a)**

The CCMC has determined that compliance with this provision of the Code has been demonstrated as an **Acceptable Solution**. The evaluation report provides a summary of the basis of CCMC's compliance opinion.

CCMC's code compliance opinions

All CCMC evaluation reports are opinions of code compliance established in accordance with the National Building Code of Canada, Subsection 1.2.1. "Compliance with this Code," which requires compliance to be achieved by:

- complying with the applicable acceptable solutions in Division B, or
- using an alternative solution that will achieve at least the minimum level of performance required by Division B in the areas defined by the objective and functional statements attributed to the applicable acceptable solutions.

The CCMC assesses compliance with Canadian building, energy and safety codes, and is trusted by over 6,000 regulators across Canada.

Code compliance as an alternative solution

Code Compliance via Alternative Solutions

> Where a design differs from the acceptable solutions in Division B, then it should be treated as an "**alternative solution**." A proponent of an alternative solution must demonstrate that the alternative solution addresses the same issues as the applicable acceptable solutions in Division B and their attributed objectives and functional statements. However, because the objectives and functional statements are entirely qualitative, demonstrating compliance with them in isolation is not possible. Therefore, Clause 1.2.1.1.(1)(b) identifies the principle that Division B establishes the quantitative performance targets that alternative solutions must meet. In many cases, these targets are not defined very precisely by the acceptable solutions [...] Nevertheless, Clause 1.2.1.1.(1)(b) makes it clear that an effort must be made to demonstrate that an alternative solution will perform as well as a design that would satisfy the applicable acceptable solutions in Division B—not “well enough” but “as well as.”
>
> — **National Building Code of Canada, Sentence A-1.2.1.1.(1)(b)**

The CCMC has determined that compliance with this provision of the Code has been demonstrated as an **Alternative Solution**. The evaluation report provides a summary of the basis of CCMC's compliance opinion.

CCMC's code compliance opinions

All CCMC evaluation reports are opinions of code compliance established in accordance with the National Building Code of Canada, Subsection 1.2.1. "Compliance with this Code," which requires compliance to be achieved by:

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