APPROVAL REPORT

Project No:	PR450908
Class:	4471
Product Name:	MS-200 STANDING SEAM ROOF PANEL, MS-200 FLOAT CLIP, MS-200 BEARING PLATE
Name of Listing Company:	Taylor Metal Products
Address of Listing Company:	4566 Ridge Drive NE Salem, OR 97301
Customer ID:	244778-1
Customer website:	https://taylormetal.com/

Prepared by

Matthew J Repetto
Associate Engineer

Reviewed by

Joanna Blaney
AVP, Technical Team Manager, Materials

Phillip Smith
VP, Manager of Materials

12/6/18
Date of Approval

FM Approvals
1151 Boston-Providence Turnpike
PO Box 9102
Norwood, MA 02062

1 INTRODUCTION

1.1 Taylor Metal Products requested Approval of a standing seam roof system consisting of MS-200 Standing Seam Roof Panel, MS-200 Bearing Plate and MS-200 Float Clip. Testing was conducted to determine if meets the Approval requirements of the standard listed Section 1.3.

1.2 This report may be freely reproduced only in its entirety and without modification.

1.3 Standard

Title	Number	Issue Date
Approval Standard for Class 1 Panel Roofs	4471	3/2010

1.4 Listing

The products and assemblies will be listed in RoofNav, an on-line resource of FM Approvals. Formulations, drawings and specifications are on file at FM Approvals.

2 DESCRIPTION

The MS-200 Panel, MS-200 Bearing Plate, and MS-200 Float Clip are described as follows:

2.1 The MS-200 is a steel standing seam panel, minimum 0.024 in (0.61 mm) base metal thickness. The Panel is 16 in (406 mm) wide and in available in varying lengths. The panel is coated in 0.01-0.011 in (0.25-0.28 mm) PVFD paint.

2.2 The MS-200 Bearing Plate is a 4 x 5 in (102 x 127 mm) rectangular steel plate made from 22 ga (0.76 mm) steel. The plate is used under the MS-200 Float Clip. There are pre drilled holes in the bearing plate for the fasteners to pass through

2.3 The MS-200 Float Clip is 2.375 in (60 mm) tall and 4.3 in (109 mm) wide. There are two pre-drilled holes in the clip that line up with the holes in the MS 200 Bearing Plate.

2.4 All other products are as described in RoofNav.

3 EXAMINATIONS AND TESTS

3.1 All components, except those in Sections 2.1 – 2.3, were produced under the FM Approvals Surveillance Audit program as indicated by FM Approvals labels. All samples were considered to be representative of standard production and were examined and tested as indicated below. Components incorporated into test samples were selected by FM Approvals personnel. Test samples were prepared by, or under the supervision of, FM Approvals personnel. All data is on file at FM Approvals along with other documents and correspondence applicable to this program.

3.2 No testing was conducted under this project ID. All performance requirements and tests required by the Standard have been waived due to previous successful testing. See Table 1 below for details.

Table 1

FM Standard 4471 Performance Requirement	Original Project ID(s)
Combustibility From Above the Roof Deck	3060284
Combustibility From Below the Roof Deck	Waived[1]
Hail Damage Resistance Test	3060284
Foot Traffic Resistance Test	3060284
Wind Uplift Resistance	3060284

[1]A data release is on file under Project ID 3060284.

3.3 ASTM E 108 - Spread of Flame testing

3.3.1 One set of ASTM E108 - Spread of Flame testing was completed with the sample construction and results noted below.

Roof Cover:	MS-200 Standing Seam Roof Panel, 16 in (406 mm) wide
Insulation	2.0 in (50 mm) thick Mule Hide Poly-Iso 2
Deck:	Plywood

Results:

Sample	Slope	Class Tested	Max. Flame Spread	Class Passed
1	5 in 12	A	23 in. (0.58 m)	A
2	5 in 12	A	23 in. (0.58 m)	A*

* Confirmation sample

3.4 FM Approvals Susceptibility to Hail Damage Testing

3.4.1 One set of Hail Testing was completed for Severe Hail. The sample construction and result is noted below.

Panel	0.024 in (0.61 mm) thick MS-200 Roof Panel

Results: Passed

3.5 FM Approvals Foot Traffic Resistance Testing

3.5.1 One set of foot traffic resistance testing was conducted on the 12 x 24 (3.7 x 7.3 m) simulated wind uplift test outlined in 3.6.1.

Results: Passed

3.6 FM Approvals 12 x 24 (3.7 x 7.3 m) Simulated Wind Uplift Test

3.6.1 One 12 x 24 (3.7 x 7.3 m) wind uplift test was completed with the sample construction and results noted below.

Roof Cover:	MS-200 Standing Seam Roof Panel, 16 in (406 mm) wide. Base Metal Thickness 0.024 in (0.61 mm). Panels are steel and coated with PVFD Paint. Hand crimped over each clip, then seamed with an automatic seamer.
Clip:	MS-200 Float Clip, spaced 24 in o.c. (610 mm) Clips staggered 6 in (152.4 mm) oc. Each clip is placed over a MS-200 Bearing Plate secured to the deck with two fasteners.

Fasteners: (Clip to Deck)	SFS Intec Deckfast DF-#14-PH3
Insulation:	Mule-Hide Poly Iso 2 2.0 in. (51 mm) thick
Deck:	FM Approved 33 ksi (227 N/mm^2) steel deck
Deck Laps:	ITW # 10 HWH TEKS 1, spaced 6 in (152.4 mm) o.c.
Fasteners: (Deck to Structure)	FM Approved ITW # 12 HWH TEKS 5, spaced 6 in (152.4 mm) o.c.
Structure:	0.25 in (6.35 mm) thick, 60 in (1524 mm) o.c.

Results: The test sample met the 120 (5.7 kPa) minimum requirement for Class 1-120 windstorm classification. The sample failed in the next pressure level due to seams opening up and exposing clips.

4 MARKING

4.1 The manufacturer shall mark each product and/or packaging with the manufacturer's name and product trade name. In addition, product and/or packaging must be marked with the Approval Mark of FM Approvals.

4.2 Markings denoting Approval by FM Approvals shall be applied by the manufacturer only within and on the premises of manufacturing locations that are under the FM Approvals Surveillance Audit program.

4.3 The manufacturer agrees that use of the FM Approvals name or Approval Mark is subject to the conditions and limitations of the Approval by FM Approvals. Such conditions and limitations must be included in all references to Approval by FM Approvals.

5 REMARKS

5.1 The securement of the roof system must be enhanced at the building corners and perimeter as outlined in FM Global Property Loss Prevention Data Sheet 1-29.

5.2 The roof cover must be installed using a roof perimeter flashing system Approved by FM Approvals. See RoofNav.

6 SURVEILLANCE AUDIT

The manufacturing facilities at the following locations shall be visited on a routine basis. The facility processes and quality control procedures in place have been determined to be satisfactory to manufacture products identical to that tested and Approved. An FM Approved Products/Specification Tested Revision Request Form shall be submitted to FM Approvals for requesting to manufacture products at any additional or alternate manufacturing facilities which are not listed below.

Audit Locations

5711 Perrin Ave,
McClellan CA 95642, United States

4566 Ridge Dr NE

Salem OR 97301, United States

Spring St & Van Reed Rd, BOX 6326
Wyomissing PA 19610, United States

7 MANUFACTURER'S RESPONSIBILITIES

7.1 The manufacturer shall notify FM Approvals of any planned change in the Approved products, prior to general sale or distribution, using the FM Approved Products/Specification Tested Revision Request Form. No changes of any nature shall be made unless notice of the proposed change has been given and written authorization obtained from FM Approvals.

7.2 To ensure compliance with his procedures in the field, the manufacturer shall supply to the installer such necessary instruction or assistance required to produce the desired performance achieved in the tests.

7.3 In accordance with the Master Agreement, the manufacturer shall make full and immediate disclosure to FM Approvals of all information concerning any defect in, or potential hazard of, the product or service manufactured or provided by the Customer which is Approved by, or being examined by, FM Approvals. The manufacturer shall make all necessary arrangements for the investigation of complaints / anomalies applicable to this approval and shall keep records of all complaints / anomalies including actions taken.

8 DOCUMENTATION

The following document describes the components of the MS-200 Standing Seam Roof System and is on file at FM Approvals.

Document Titles	**Issue Date**
Surveillance Audit Manual for:	
McClellan, CA	December 2018
Salem, OR	December 2018
Wyomissing, PA	August 2017

9 CONCLUSIONS

9.1 Test results from previous programs indicate that the standing seam roof system, as evaluated, meets the requirements FM Approvals Standard listed in section 1.3 when installed as follows:

Roof Panel:	MS-200 Standing Seam Roof Panel, 16 in (406 mm) wide. Base metal thickness 0.024 in (0.60 mm with PVFD paint) Seams are hand crimped over each clip, then mechanically seamed.
Clip:	MS-200 Float Clip, in 16 in (406 mm) rows, spaced maximum 24 in (610 mm) o.c. Clips are staggered 6 in (152 mm). Each clip is placed

	over a Bearing Plate and secured to the deck with two fasteners per clip.
Fasteners: (Clip to deck)	SFS Intec Dekfast # 14-PH3
Insulation:	Minimum 2.0 in. (51 mm) to maximum 12.5 in. (317 mm) thick Poly ISO 2 or ACFoam-II, loose laid
Deck:	FM Approved, minimum 33 ksi (227 N/mm^2) steel deck
Deck Laps:	FM Approved ITW #10 HWH TEKS 1, Spaced 6 in. (152 mm) o.c.
Fasteners: (Deck to Structure)	FM Approved ITW #12 HWH TEKS 5, Spaced 6 in. (152 mm) o.c.
Structure:	0.25 in. (6.35 mm) thick, maximum 60 in. (1524 mm) o.c.
Wind Uplift:	120 psf
E-108:	Class A at 5 in 12
Hail:	SH

9.2 Tests show that the tested roof constructions in and of themselves would not create a need for automatic sprinklers.

9.3 Since a duly signed Master Agreement is on file for this customer, Approval is effective as of the date of this report.

9.4 Continued Approval will depend upon satisfactory field experience and periodic Facilities and Procedures Audits.

PROJECT DATA RECORD: PR450908

ORIGINAL TEST DATA See PDRs in table 1