Farabaugh Engineering and Testing Inc.

Project No. T147-05A

Report Date: April 25, 2005
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No. Pages: 8 (inclusive)

ASTM E-1680-95 AIR LEAKAGE TEST
ASTM E-1646-95 WATER PENETRATION TEST

TREMLOCK VP 180 216 ROOF PANEL

16" WIDE / 24 GA STEEL

FOR

TREMCO, INC.
3735 GREEN RD.
BEACHWOOD, OH 44122

Report Prepared By:

Patrick J. Farabaugh

Reviewed and Approved By:

Daniel G. Farabaugh

Project No. T147-05A

AIR LEAKAGE AND WATER PENETRATION TESTING

Purpose

The purpose of this testing is to establish air and water infiltration rates on 16" w X 24 ga steel TremLok VP 180 216 Standing Seam Roof Panel in accordance with ASTM E-1680-95 " Rate of Air Leakage Through Exterior Metal Roof Panel Systems", and ASTM E-1646-95," Water Penetration of Exterior Metal Roof Panel Systems by Uniform Static Air Pressure Difference".

Test Date

4/21/05

Test Specimen

Customer: TREMCO. Inc.
3735 Green Rd.
Beachwood, OH 44122

Panel: TremLock VP 180 216 Standing Seam Roof Panel, 16" wide, 24 ga thick steel
Panel Clip: Low Floating Clip (as shown)
Panel Joint Seal: 3/8" wide X 3/32" thick butyl tape sealer

Test Apparatus

Test Chamber: 9' X 9' vacuum chamber composed of structural aluminum and Plexiglas.

Manometer: Inclined manometer from Dwyer Instruments, 6" capacity with a certified scale reading accuracy to one tenth of an inch

Flowmeter: 300 scfm capacity mass flow meter from Sierra Instruments, Serial # 28607

Reference

This test report is referenced to the original report, Project No. T147-05 as prepared by FET for McElroy Metal, Inc.. As per McElroy Metal, Inc., TREMCO, Inc. is licensed for the product originally tested under the product name given in this report.

Theory of Procedure

The tests were conducted in accordance with ASTM E-1680-95 " Rate of Air Leakage Through Exterior Metal Roof Panel System", and ASTM E-1646-95," Water Penetration of Exterior Metal Roof Panel Systems by Uniform Static Air Pressure Difference" and as provided here-in.

Installation

The panels were installed on the chamber frame using (2) #12-14 hex head self drill fasteners per clip at intermediate support. Butyl tape sealer (3/8"w X 3/32" thk.) was applied to the top of the panel male leg and underside of the clips (as shown). The side joints were seamed with a mechanical seamer to a 180 deg. position. The panels were attached and sealed to the perimeter of the test chamber frame with silicone sealant. Foam strips were installed at panel ends to allow for ½" of water ponding. The test chamber was set for panels to be on a horizontal position (no slope).

Air Leakage Test Procedure

The test procedure is as per ASTM 1680-95 and as provided herein.

The intermediate support was traversed 1 inch in both directions (from initial location) and returned to initial location. This was done twice for a total of 2 cycles.

A positive preload pressure of 15 psf was applied for 10 seconds. Panels were allowed to recover for a period of 2 minutes. A negative preload pressure of 15 psf was applied for 10 seconds. Panels were allowed to recover for a period of 2 minutes. The positive and negative preload cycle was repeated two additional times for a total of 3 cycles.

All panel joints were taped off for initial datum readings. Tape was removed from joints for final readings.

Water Penetration Test Procedure

The test procedure is as per ASTM 1646-95 and as provided herein.

The intermediate support was traversed 1 inch in both directions (from initial location) and returned to initial location. This was done twice for a total of 2 cycles.

Due to the panels being preloaded during the Air Leakage Test, no additional preload was preformed for the Water Penetration Test.

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Ambient Temp. = 65 deg.F
Barometric Pressure = 30.0" Hg

Test Date: 4/21/05

ASTM E-1680-95
AIR LEAKAGE TEST
Summary

Test Specimen	Static Pressure Differential (psf)	Air Leakage Rate (cfm/lf)	Air Leakage Rate (cfm/sf)
TremLock VP 180 216	+6.24	0.002	0.001
Metal Roof Panel	+12.0	0.007	0.006
24 ga thk X 16" w	-6.24	0.004	0.003
	-12.0	0.015	0.011

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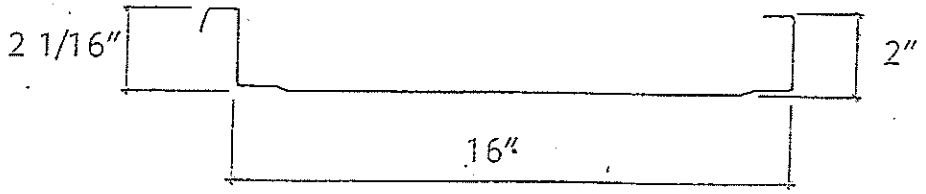
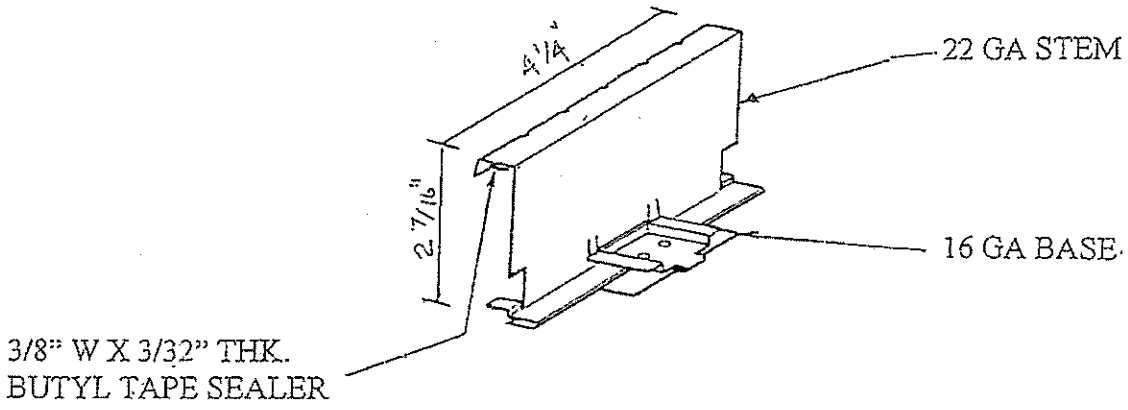
Test Date 4/21/05
Panel Surface Temperature Prior To Test = 71 deg. F
Panel Surface Temperature During Test = 62 deg. F
Ponded Water Depth During Test = 1/2"

ASTM E-1646-95
WATER PENETRATION TEST
Summary

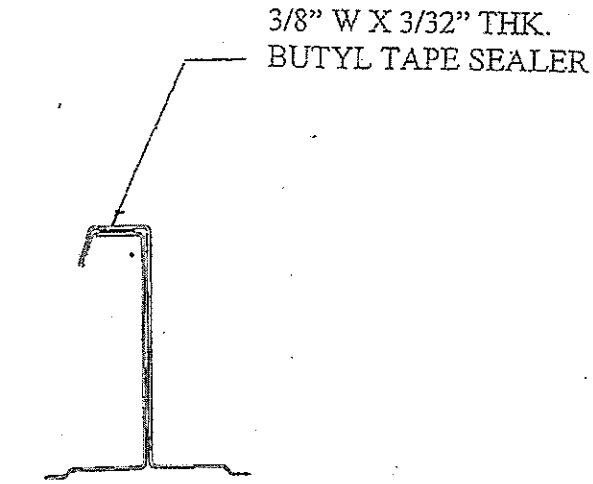
Test Specimen	Static Pressure Differential	Rate	Test Duration	Water Infiltration
TremLock VP 180 216 Metal Roof Panel 24 ga thk X 16" w	12.0 psf	5 gal./hr/sq.ft.	15 min	None
	20.0 psf	5 gal./hr/sq.ft.	15 min	None



TREMLOCK VP 180 216 ROOF PANEL



LOW FLOATING CLIP



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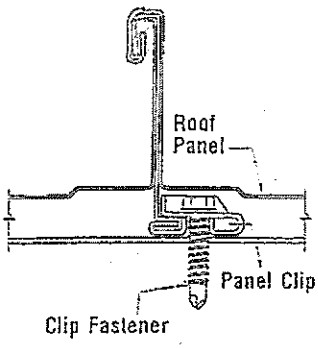

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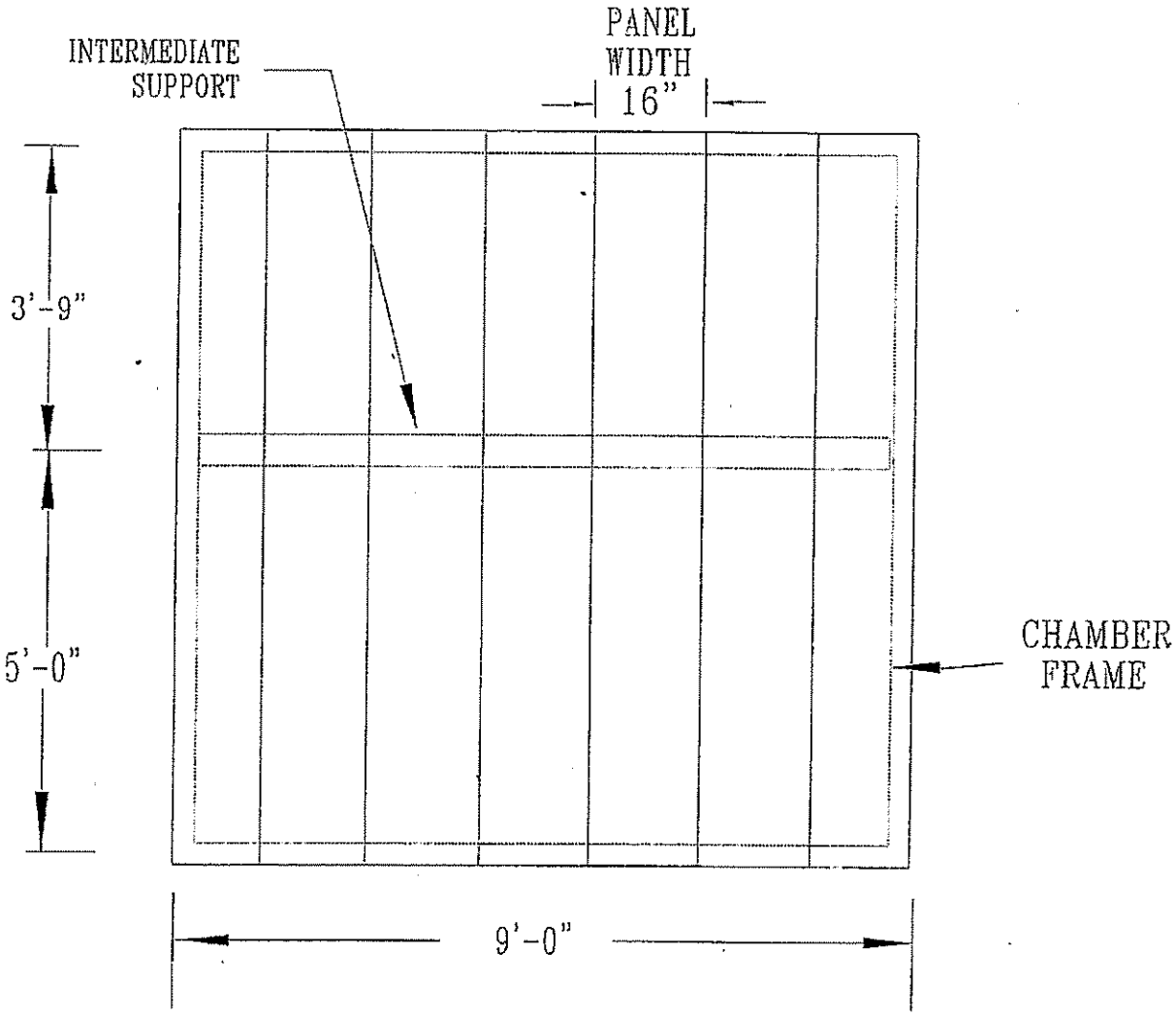

PLAN VIEW