

TEST REPORT

ASTM E283, ASTM E330, ASTM E331

REPORT NO.: 1517.01-106-11-R0

RENDERED TO: DESANA PARTNERS
Cranston, Rhode Island

PRODUCT TYPE: Back Drained and Ventilated Wall System

SERIES / MODEL: Glen-Gery Rainscreen System

Test	Summary of Results
Design Pressure	±2880 Pa (±60.15 psf)
Air Infiltration	<0.1 L/s/m ² (<0.01 cfm/ft ²)
Water Penetration Resistance Test Pressure	1200 Pa (25.06 psf)

Test Completion Date: 5/31/2018

Reference must be made to Report No. 1517.01-106-11-R0, dated 7/23/2018 for complete test specimen description and detailed test results.

CLIENT INFORMATION: DESANA PARTNERS
68 Fox Run
Cranston, Rhode Island 02920

TEST LABORATORY: Molimo, LLC
1410 Eden Road
York, Pennsylvania 17402
717-900-6034

PROJECT SUMMARY:

PRODUCT TYPE: Back Drained and Ventilated Wall System

SERIES/MODEL: Glen-Gery Rainscreen System

PROJECT SUMMARY:

Molimo, LLC was contracted to perform testing on the above referenced product.
The results are tested values and were secured by using the designated test methods.

PROJECT DETAILS:

Test Dates: 5/30/2018 – 5/31/2018

Test Record Retention End Date: 5/31/2022

Test Location: Molimo, LLC test facility in York, Pennsylvania.

Test Specimen Source: The test specimens were provided by the client. Representative samples of the test specimens will be retained by Molimo for a minimum of four years from the test completion date.

Drawing Reference: The test specimen drawings were supplied by the client. The test specimen construction was verified by Molimo and was found to be representative of the product tested. Test specimen drawings are located in Appendix B of this report.

WITNESSES:

The following representatives witnessed all or part of the testing.

Name	Company
Steve Collins	Desana Partners
Joe Allison	Molimo, LLC
Lance Cunningham	Molimo, LLC
Michael D. Stremmel, P.E.	Molimo, LLC

TEST METHODS:

ASTM E283-04(12) – *Standard Test Method for Determining Rate of Air Leakage Through Exterior Windows, Curtain Walls, and Doors Under Specified Pressure Differences Across the Specimen*

ASTM E330/E330M-14 – *Standard Test Method for Structural Performance of Exterior Windows, Doors, Skylights and Curtain Walls by Uniform Static Air Pressure Difference*

ASTM E331-00(09) – *Standard Test Method for Water Penetration of Exterior Windows, Skylights, Doors and Curtain Walls by Uniform Static Air Pressure Difference*

TEST SPECIMEN DESCRIPTION:**PRODUCT SIZES:**

Test Specimen #1 & 2:

Overall Size: 2438 mm x 2438 mm (96" x 96")

Overall Area: 5.95 m² (64 ft²)

Individual Brick Size: 194 mm x 57 mm (7⁵/₈" x 2¹/₄")

Test Specimen #2:

Overall Size: 1219 mm x 1219 mm (48" x 48")

Overall Area: 1.49 m² (16.0 ft²)

Individual Brick Size: 194 mm x 57 mm (7⁵/₈" x 2¹/₄")

RAIN SCREEN PANEL CONSTRUCTION:

The specimen was constructed of thin brick secured to a steel track. The steel track was mounted to an aluminum framing system. The thin brick was snap-fit into the steel track and all joints were filled with mortar.

TEST SPECIMEN DESCRIPTION: (Continued)

BASE WALL CONSTRUCTION:

The base wall was constructed of 6", 18 ga. steel studs, spaced 16" on center inside a 2 x12 Spruce-Pine-Fir wood wrap. Each stud was secured to the top and bottom tracks with #8 x $\frac{3}{4}$ " pancake head screws. The stud wall was sheathed with nominal $\frac{1}{2}$ " thick fiberglass-reinforced gypsum sheathing. The base wall was secured to the 2 x12 wood wrap with #10 x $1\frac{1}{2}$ " pan head screws to facilitate testing. The exterior face of the gypsum sheathing was sealed to the wood wrap to eliminate extraneous air leakage during testing.

RAIN SCREEN SYSTEM INSTALLATION:

The rain screen system was installed by representatives of Desana Partners.

Aluminum angle clips, measuring 1" x 3" x $\frac{1}{8}$ " thick, $3\frac{1}{4}$ " long, were secured to the base wall using two #12 x 1" stainless steel hex head screws per clip. The clips were spaced 32" on center horizontally and 32" on center vertically. Full-length, vertical aluminum angles, measuring 1" x 2" x $\frac{1}{8}$ " thick, were secured to the aluminum clips using two #12 x 1" stainless steel, self-drilling hex head screws per clip. Painted steel Glen-Gery trays were secured to the vertical aluminum angles using #8-18 x $\frac{3}{4}$ " T-2 Lath, 410 SS screws. One screw was utilized at each vertical angle location. Each brick tray was stacked on the tray below.

The Glen-Gery anchored bricks were snap-fit into the steel trays, with an approximate $\frac{3}{8}$ " wide joint between bricks. The mortar joints were manually pointed with Glen-Gery mortar.

CAVITY DEPTH: 95.3 mm ($3\frac{3}{4}$ ")

TEST RESULTS: The temperature during testing was 22oC (72oF).

Specimen #1:

AIR LEAKAGE TESTING: (per ASTM E 283)

Test	Results
Infiltration @ 300 Pa (6.24 psf)	<0.1 L/s/m ² (<0.01 cfm/ft ²)

WATER PENETRATION TESTING: (per ASTM E 331)

Test	Results	Allowable
1200 Pa (25.06 psf)	Pass	No Leakage

Specimen #2:

Note #1: Uniform Load testing was performed on Specimen #2 after three cycles of AAMA 501.5 thermal cycling was completed.

UNIFORM LOAD TESTING AT DESIGN PRESSURE: (per ASTM E 330)

Design Pressure Test	Results	Allowable
Deflection measured on the exterior brick at a vertical member +2880 Pa (+60.15 psf) -2880 Pa (-60.15 psf)	0.5 mm (0.02") 0.5 mm (0.02")	4.3 mm (0.17") 4.3 mm (0.17")
Deflection measured on the exterior brick at a horizontal member +2880 Pa (+60.15 psf) -2880 Pa (-60.15 psf)	0.8 mm (0.03") 1.3 mm (0.05")	4.6 mm (0.18") 4.6 mm (0.18")

Note 1: Allowable deflection of the vertical member is based on L/175 of a 30" span.

Note 2: Allowable deflection of the horizontal member is based on L/175 of a 32" span.

Note 3: All loads were held for 10 seconds.

Note 4: Tape and film were used to seal against air leakage.

TEST RESULTS: (Continued)**Specimen #2:****UNIFORM LOAD TESTING AT STRUCTURAL TEST PRESSURE:** (per ASTM E 330)

Design Pressure Test	Results	Allowable
Permanent Set measured on the exterior brick at a vertical member +4320 Pa (+90.23 psf) -4320 Pa (-90.23 psf)	0.3 mm (0.01") 0.5 mm (0.02")	1.5 mm (0.06") 1.5 mm (0.06")
Permanent Set measured on the exterior brick at a horizontal member +4320 Pa (+90.23 psf) -4320 Pa (-90.23 psf)	0.5 mm (0.02") 0.3 mm (0.01")	1.5 mm (0.06") 1.5 mm (0.06")

Note 5: Allowable deflection of the vertical member is based on 0.2% of a 30" span.

Note 6: Allowable deflection of the horizontal member is based on 0.2% of a 32" span.

Note 7: All loads were held for 10 seconds.

Note 8: Tape and film were used to seal against air leakage.

General Note: All testing was performed in accordance with reference test methods.

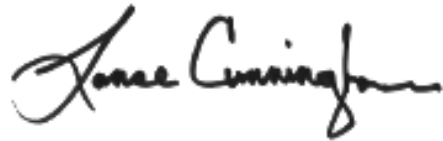
A copy of this report, detailed drawings, datasheets, representative samples of test specimens, or other pertinent project documentation will be retained by Molimo, LLC for the entire test record retention period. At the end of this retention period, the service life of this report will expire.

Results obtained are tested values and were secured by using the designated test methods. This test report does not constitute certification of this product nor an opinion or endorsement by this laboratory. It is the exclusive property of the client so named herein and relates only to the specimen(s) tested. This report may not be reproduced, except in full, without the written permission of Molimo, LLC.

For MOLIMO, LLC:



Michael D. Stremmel, P.E.
Senior Project Engineer



Lance Cunningham
Manager – Operations / Sales

MDS;jld

Attachments (pages): This report is complete only when all attachments listed are included.

Appendix-A: Photographs (4)

Appendix-B: Drawings (7)

This report was produced from controlled document template MMO 00014, Rev 1, 11/28/2016.

Appendix A

Photographs



Photo 1

Typical base wall with vertical members installed.

Appendix A

Photographs



Photo 2

Typical Test Specimen with steel trays installed.

Appendix B

Photographs



Photo 3

Typical Test specimen with bricks partially installed.

Appendix B

Photographs



Photo 4

Typical Test Specimen after mortar application.

Appendix B

Drawings



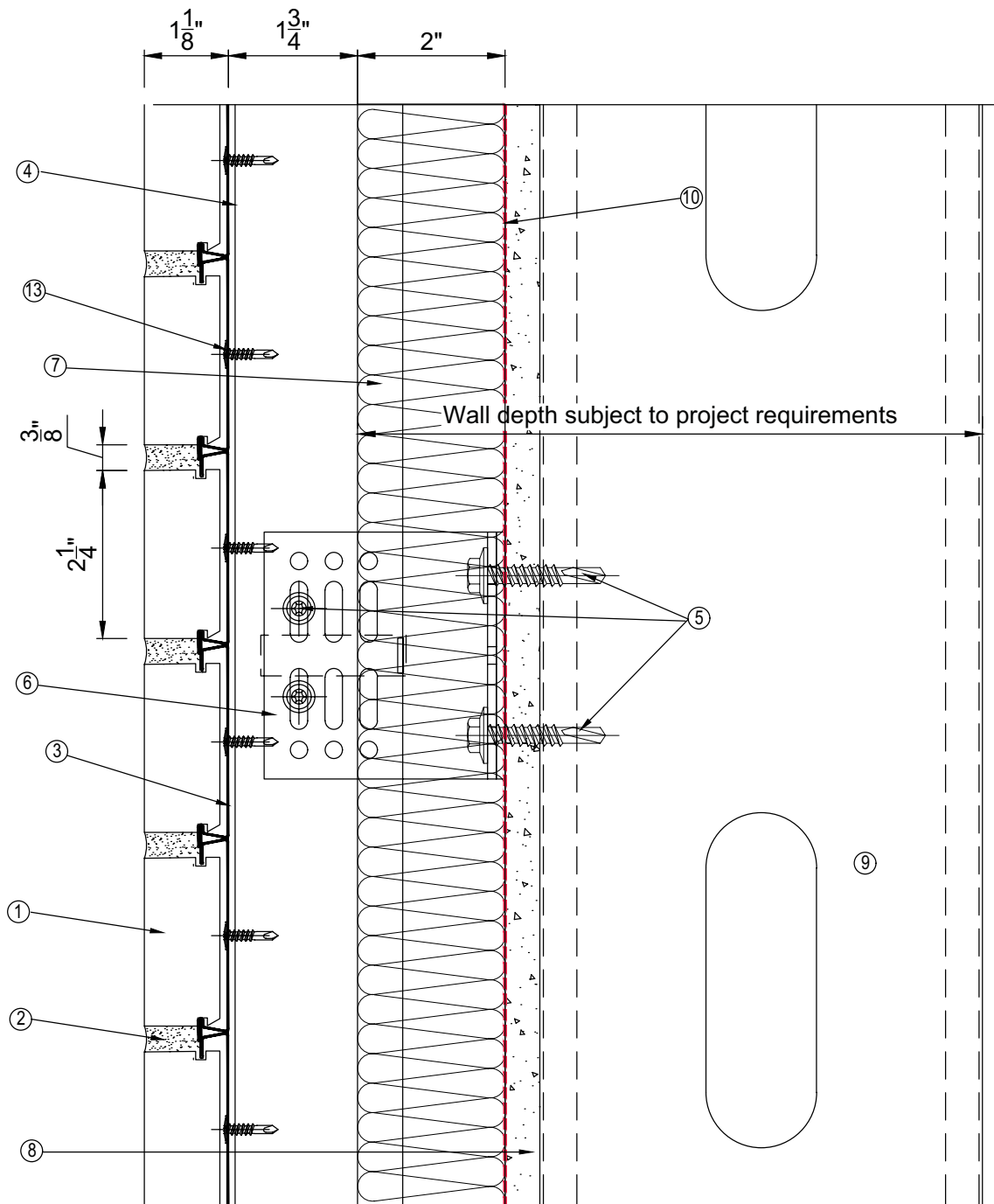
**Tru-Brix Rainscreen System
Typical Drawings Set**



Report #: 1517.01-106-11

Date: 6/14/2018

By: M Stremmel



ALL ELEVATIONS ARE VIEWED FROM OUTSIDE
UNLESS OTHERWISE STATED

- ① Tru-Brix anchored brick
- ② Tru-Brix mortar
- ③ Tru-Brix tray
- ④ Vertical aluminium angle
- ⑤ Stainless Steel fixing by others subject to engineers calculations
- ⑥ Aluminium bracket with thermal shim subject to engineers calculations
- ⑦ Insulation (by others) thickness subject to U-value calculations
- ⑧ Sheathing board (by others)
- ⑨ Metal framing (by others)
- ⑩ Air/ Water barrier (by others)
- ⑪ Metal flashing (by others)
- ⑫ Caulk joint and backer rod (by others)
- ⑬ 8-18x $\frac{3}{4}$ " T-2 Lath 410 Stainless Steel

Rev.	Date	By	Comments

Drawing Status :

FOR INFORMATION

Contract :
TRU-BRIX RAINSCREEN
FACADE SYSTEM



Do not scale from this drawing. If in doubt ask

Drawing Title :
Vertical section detail through
brick on metal frame

Scale :	Checked :	Drawn : CB
NTS	Date :	Date : 06-07-17

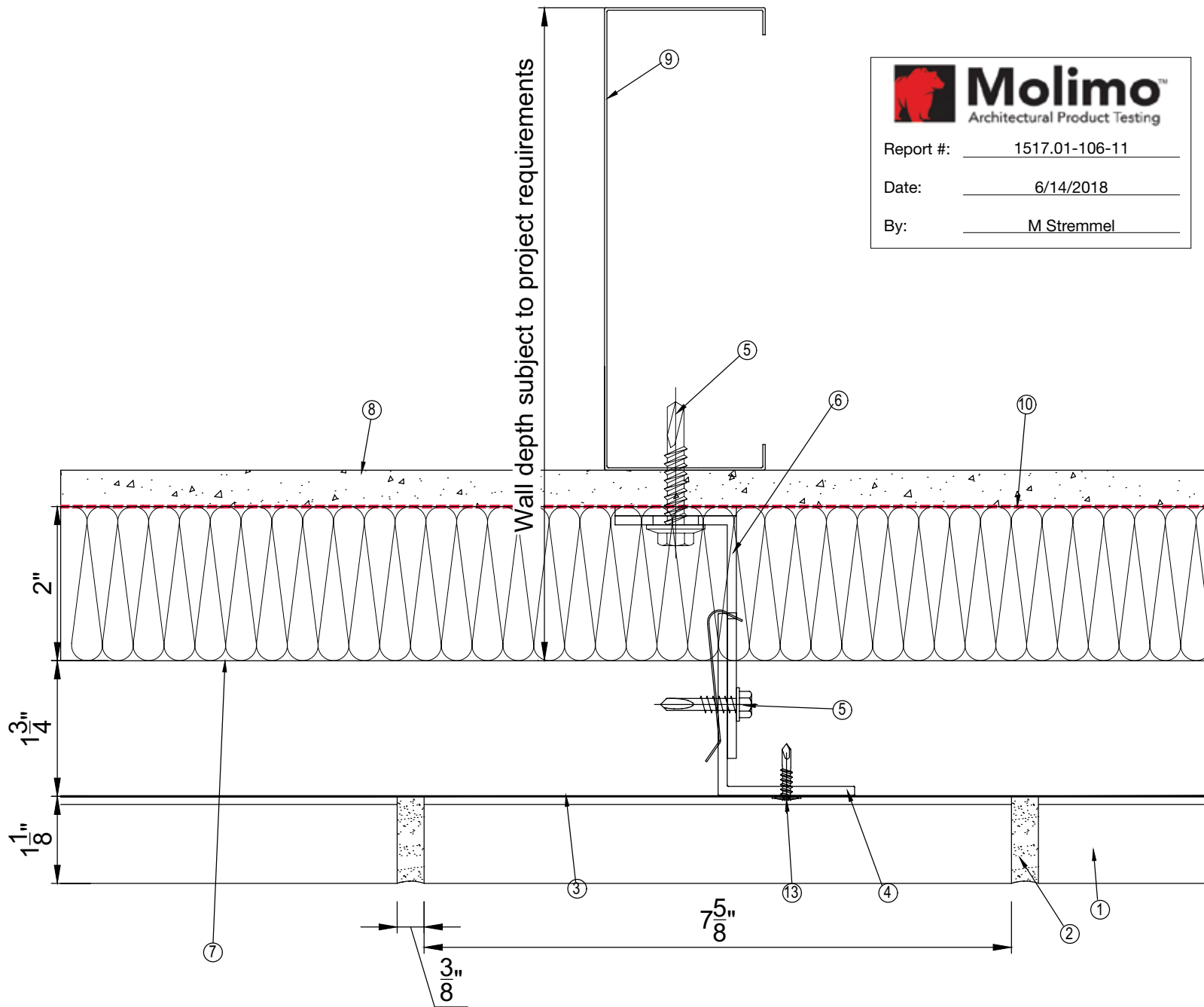
Size	Drawing No.	Rev.
A3	DET-001	/



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- ⑫ Caulk joint and backer rod (by others)
- ⑬ 8-18x3/4" T-2 Lath 410 Stainless Steel

Rev. 06-07-17 CDB Approval

Rev. Date By Comments

Drawing Status :

FOR INFORMATION

Contract :
TRU-BRIX RAINSCREEN
FACADE SYSTEM

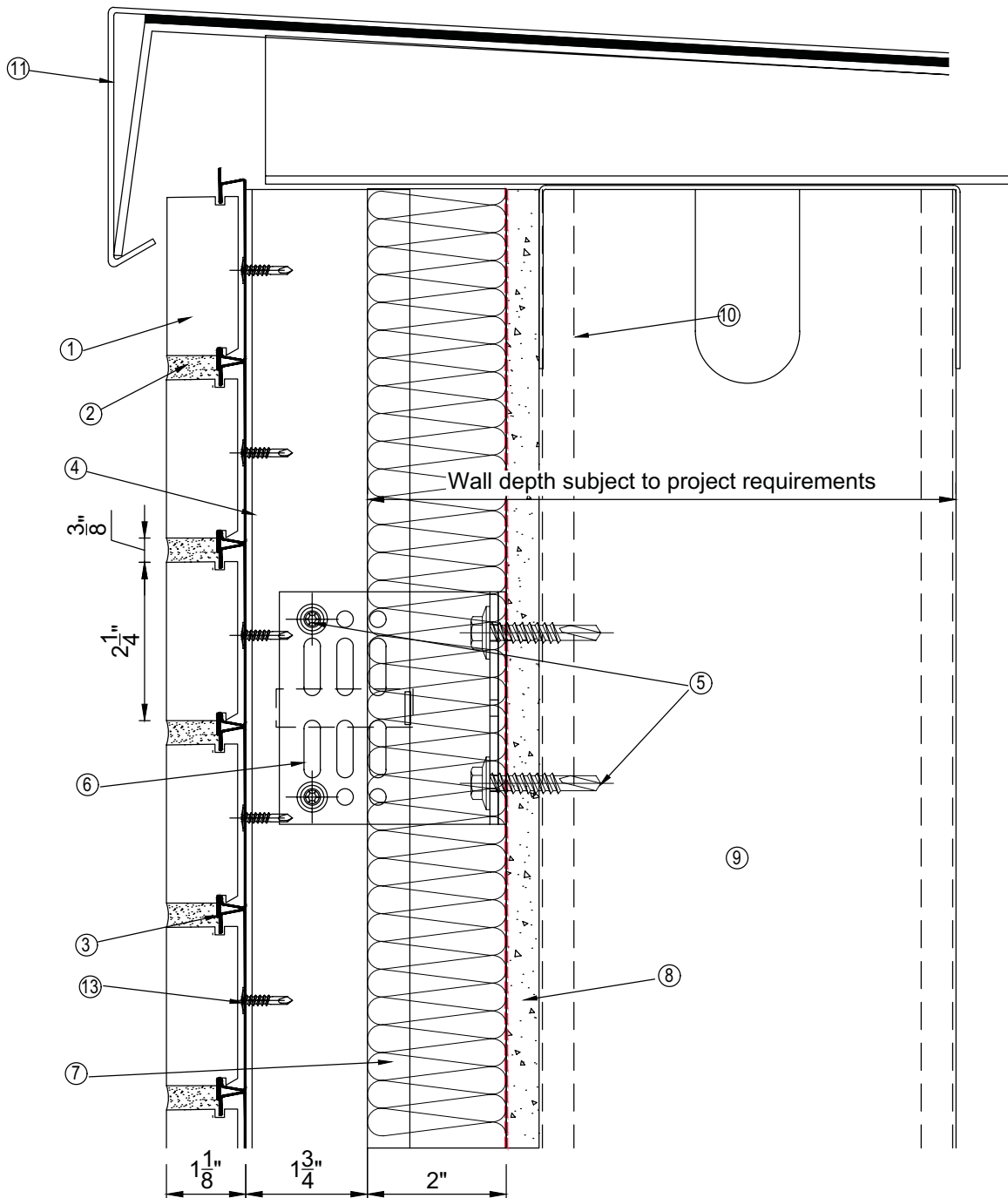


Do not scale from this drawing. If in doubt ask

Drawing Title :
Horizontal section detail
through brick on metal frame

Scale : NTS Checked : Drawn : CB
Date : 06-07-17

Size	Drawing No.	Rev.
A3	DET-002	/



ALL ELEVATIONS ARE VIEWED FROM OUTSIDE
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- ⑬ 8-18x3/4" T-2 Lath 410 Stainless Steel

Rev. Date By Comments

Drawing Status :

FOR INFORMATION

Contract :
TRU-BRIX RAINSCREEN
FACADE SYSTEM



Do not scale from this drawing. If in doubt ask

Drawing Title :
Vertical section detail through
brick on metal frame to capping

Scale :
NTS

Checked :
Date : 06-07-17

Size Drawing No. Rev.

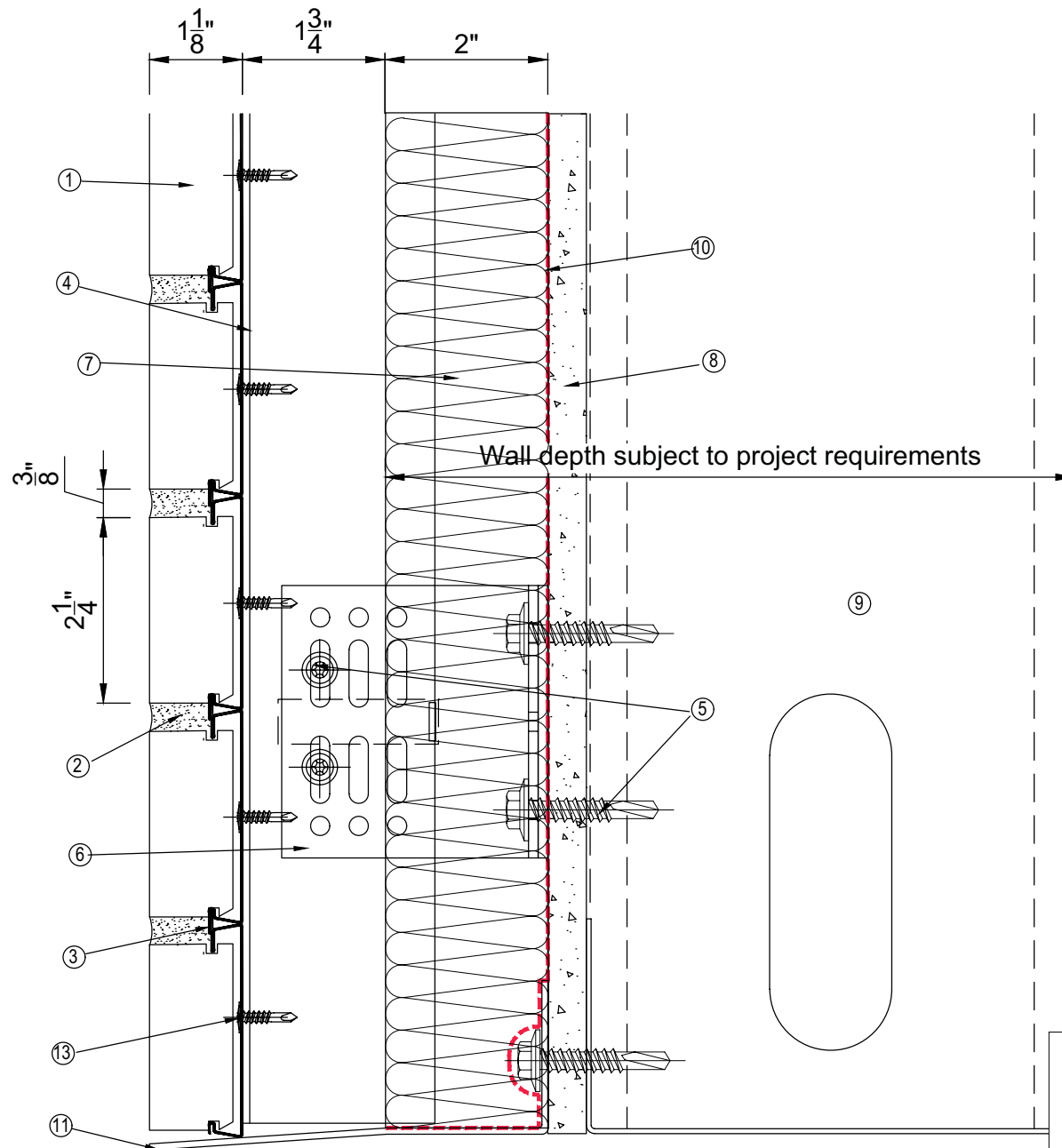
A3 DET-003 /




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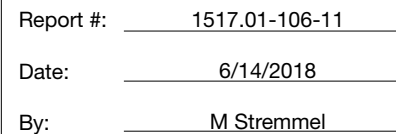
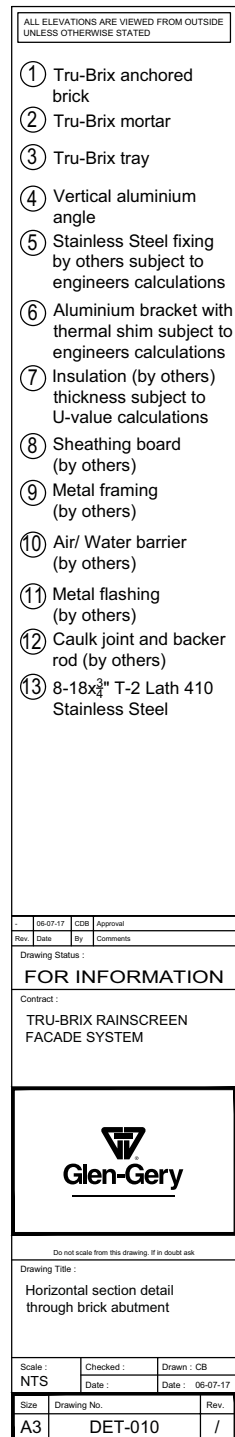
ALL ELEVATIONS ARE VIEWED FROM OUTSIDE UNLESS OTHERWISE STATED			
①	Tru-Brix anchored brick		
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Rev.	Date	By	Comments
06-07-17	06-07-17	CCB	Approval
Drawing Status :			
FOR INFORMATION			
Contract :			
TRU-BRIX RAINSCREEN FACADE SYSTEM			
			
Do not scale from this drawing. If in doubt ask			
Drawing Title :			
Vertical section detail through base of brick on metal frame			
Scale :	Checked :	Drawn : CB	
NTS	Date :	06-07-17	
Size	Drawing No.	Rev.	
A3	DET-004	/	



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