

TEST REPORT

AAMA 501.5

REPORT NO.: 1517.02-106-11-R0

RENDERED TO: DESANA PARTNERS
Cranston, Rhode Island

PRODUCT TYPE: Back Drained and Ventilated Wall System

SERIES / MODEL: Tru-Brix Rainscreen System

Test Completion Date: 6/11/2018

Reference must be made to Report No. 1517.02-106-11-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: Tru-Brix 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: 5/22/2018 – 6/11/2018

Test Record Retention End Date: 6/11/2022

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 C 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:

AAMA 501.5-07 – *Test Method for Thermal Cycling of Exterior Walls*

TEST SPECIMEN DESCRIPTION:**PRODUCT SIZES:**

Test Specimen #1:

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.

BASE WALL CONSTRUCTION:

The base wall was constructed of 6", 18 ga. steel studs, spaced 16" on center inside a 2 x 12 Spruce-Pine-Fir wood wrap. Each stud was secured to the top and bottom tracks with #8 x 3/4" pancake head screws. The stud wall was sheathed with nominal 1/2" thick fiberglass-reinforced gypsum sheathing. The base wall was secured to the 2 x 12 wood wrap with #10 x 1 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.

TEST SPECIMEN DESCRIPTION: (Continued)

RAIN SCREEN SYSTEM INSTALLATION:

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

Aluminum angle clips, measuring 1" x 3" x 1¹/₈" thick, 3¹/₄" 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 1¹/₈" thick, were secured to the aluminum clips using two #12 x 1" stainless steel, self-drilling hex head screws per clip. Painted steel Tru-Brix trays were secured to the vertical aluminum angles using #8-18 x 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 Tru-Brix anchored bricks were snap-fit into the steel trays, with an approximate 3/8" wide joint between bricks. The mortar joints were manually pointed with Tru-Brix mortar.

Specimen #2:

Several bricks were intentionally omitted during the construction of specimen #2 to allow the water spray during the thermal cycling to get between the bricks and steel trays. The mortar joints in several locations were also omitted. Reference Photo 10 for details on which bricks and mortar joints were omitted from the specimen during construction.

CAVITY DEPTH: 95.3 mm (3³/₄")

TEST RESULTS: The temperature during testing was 22°C (72°F).

THERMAL CYCLING TESTING: (per AAMA 501.5)

Specimen #1:

Three thermal cycles were performed from 0°F to 180°F with 1 hour of water spray at 75°F, (Reference Chart in Appendix A for details.)

Cycle	Results
1	No bricks loosed or became dislodged from the specimen. No visible change to the specimen was observed.
2	No bricks loosed or became dislodged from the specimen. No visible change to the specimen was observed.
3	No bricks loosed or became dislodged from the specimen. No visible change to the specimen was observed.

Note 1: Reference Appendix B for photos during thermal cycling.

TEST RESULTS: (Continued)**THERMAL CYCLING TESTING:** (per AAMA 501.5)**Specimen #2:**

Ten thermal cycles were performed from 0°F to 180°F with 1 hour of water spray at 75°F (Reference Chart in Appendix A for details.)

Cycle	Results
1	No bricks loosed or became dislodged from the specimen. No additional decolorization was observed.
2	No bricks loosed or became dislodged from the specimen. No additional decolorization was observed.
3	No bricks loosed or became dislodged from the specimen. No additional decolorization was observed.
4	No bricks loosed or became dislodged from the specimen. No additional decolorization was observed.
5	No bricks loosed or became dislodged from the specimen. No additional decolorization was observed.
6	No bricks loosed or became dislodged from the specimen. No additional decolorization was observed.
7	No bricks loosed or became dislodged from the specimen. No additional decolorization was observed.
8	No bricks loosed or became dislodged from the specimen. No additional decolorization was observed.
9	No bricks loosed or became dislodged from the specimen. No additional decolorization was observed.
10	No bricks loosed or became dislodged from the specimen. No additional decolorization was observed.

Note 1: Reference Appendix B for photos during thermal cycling.

Final Observations:

At the completion of the thermal cycle test, the specimen was visually inspected. There were no signs of bricks loosening or becoming dislodged from the specimen. Over the duration of the testing, the bricks experienced some slight decolorization.

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

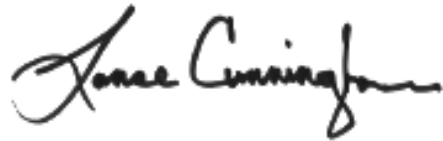
A copy of this report, detailed drawings, data sheets, representative samples of test specimens, or other pertinent project documentation will be retained by Molimo, LLC for the entire test record retention period. At the end of this retention period, the service life of this report will expire.

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: Thermal Cycling Chart (1)

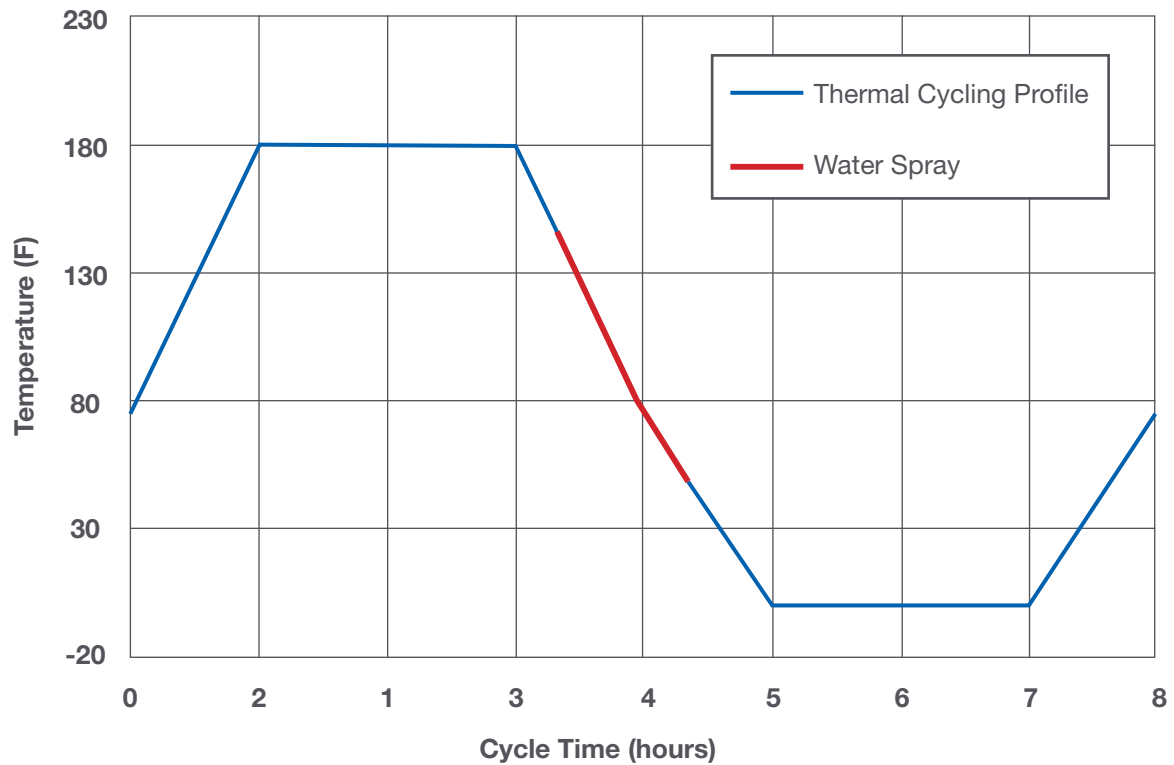
Appendix-B: Photographs (15)

Appendix-D: Drawings (7)

Appendix A

Thermal Cycling Chart

Thermal Cycling Profile



Appendix B

Photographs



Photo 1

Typical base wall with vertical members installed.

Appendix B

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

Photographs



Photo 5

Test Specimen prior to mortar application.

Appendix B

Photographs



Photo 6

Thermal chamber during the "hot" cycle.

Appendix B

Photographs



Photo 7

Thermal chamber during the "cold" cycle.

Appendix B

Photographs



Photo 8

Specimen #2 during water spray of thermal cycling.

Appendix B

Photographs



Photo 9

Specimen #2 after 3 thermal cycles.

Appendix B

Photographs



Photo 10

Specimen #2 after 5 thermal cycles.

Appendix B

Photographs



Photo 11

Specimen #2 after 6 thermal cycles.

Appendix B

Photographs



Photo 12

Specimen #2 after 7 thermal cycles.

Appendix B

Photographs



Photo 13

Specimen #2 after 8 thermal cycles.

Appendix B

Photographs



Photo 14

Specimen #2 after 9 thermal cycles.

Appendix B

Photographs



Photo 15

Specimen #2 after 10 thermal cycles .

Appendix C

Drawings



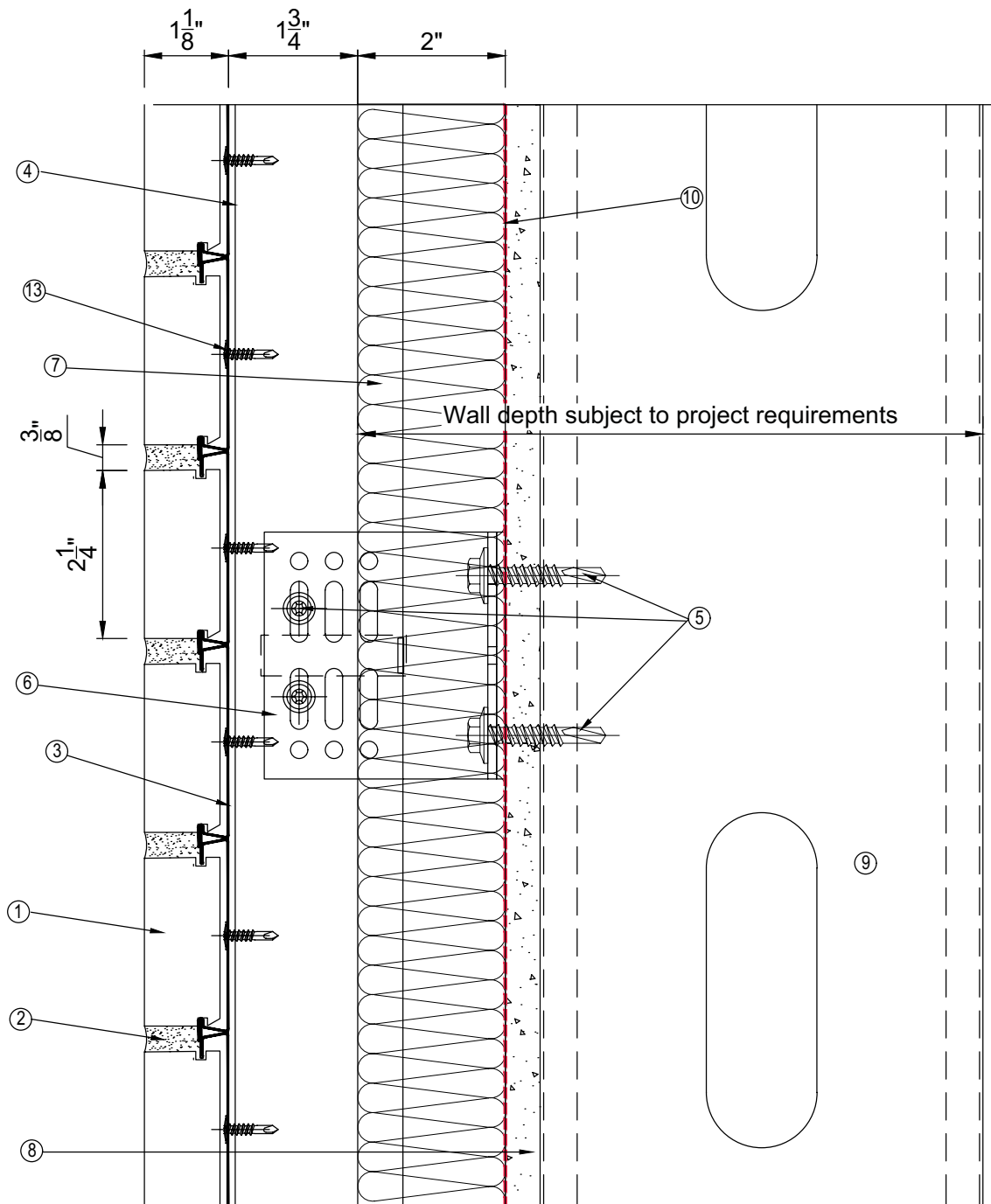
**Tru-Brix Rainscreen System
Typical Drawings Set**



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

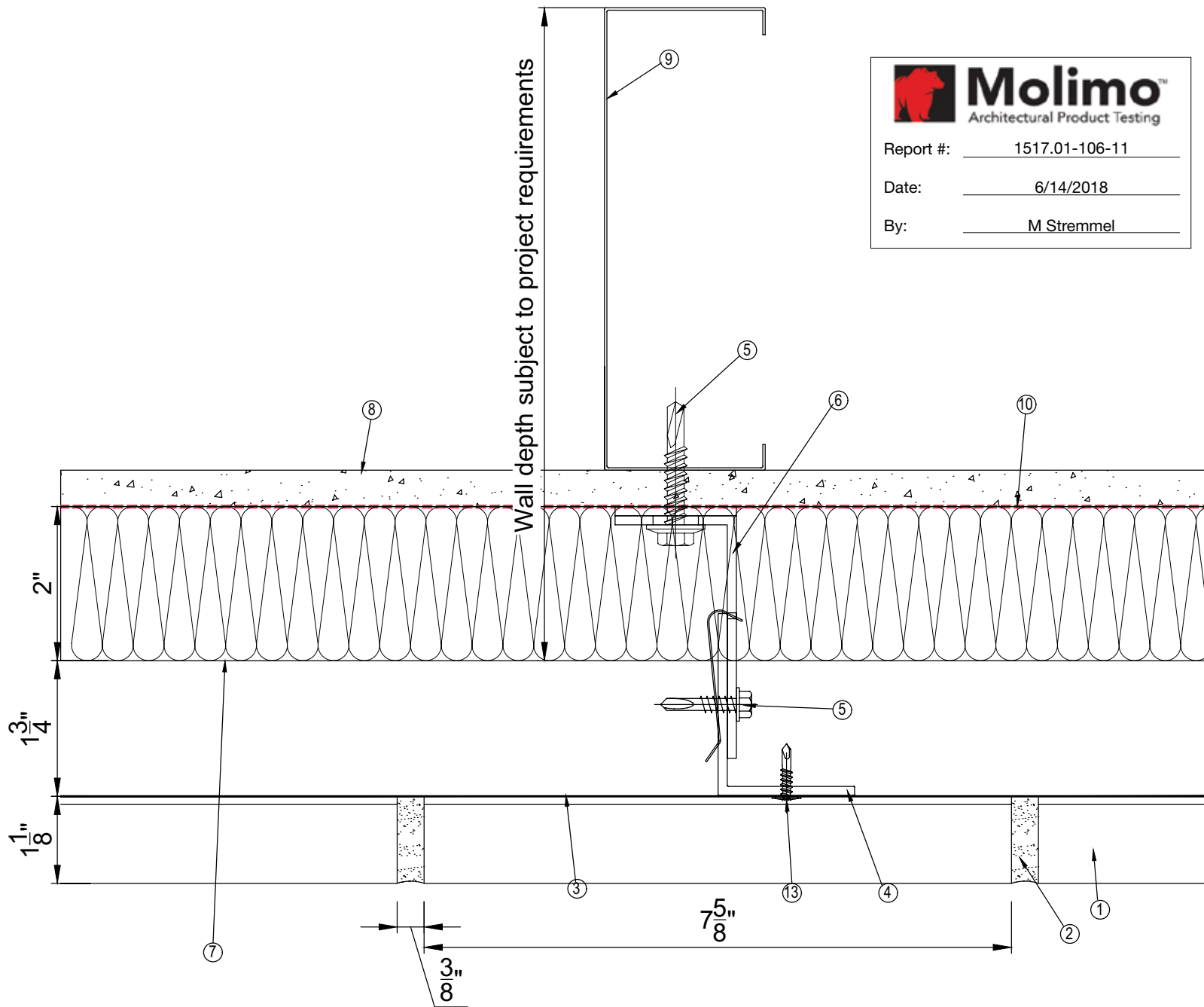
Size	Drawing No.	Rev.
A3	DET-001	/



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Molimo™
Architectural Product Testing

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- ④ Vertical aluminium angle
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- 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)
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- ⑩ Air/ Water barrier (by others)
- ⑪ Metal flashing (by others)
- 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

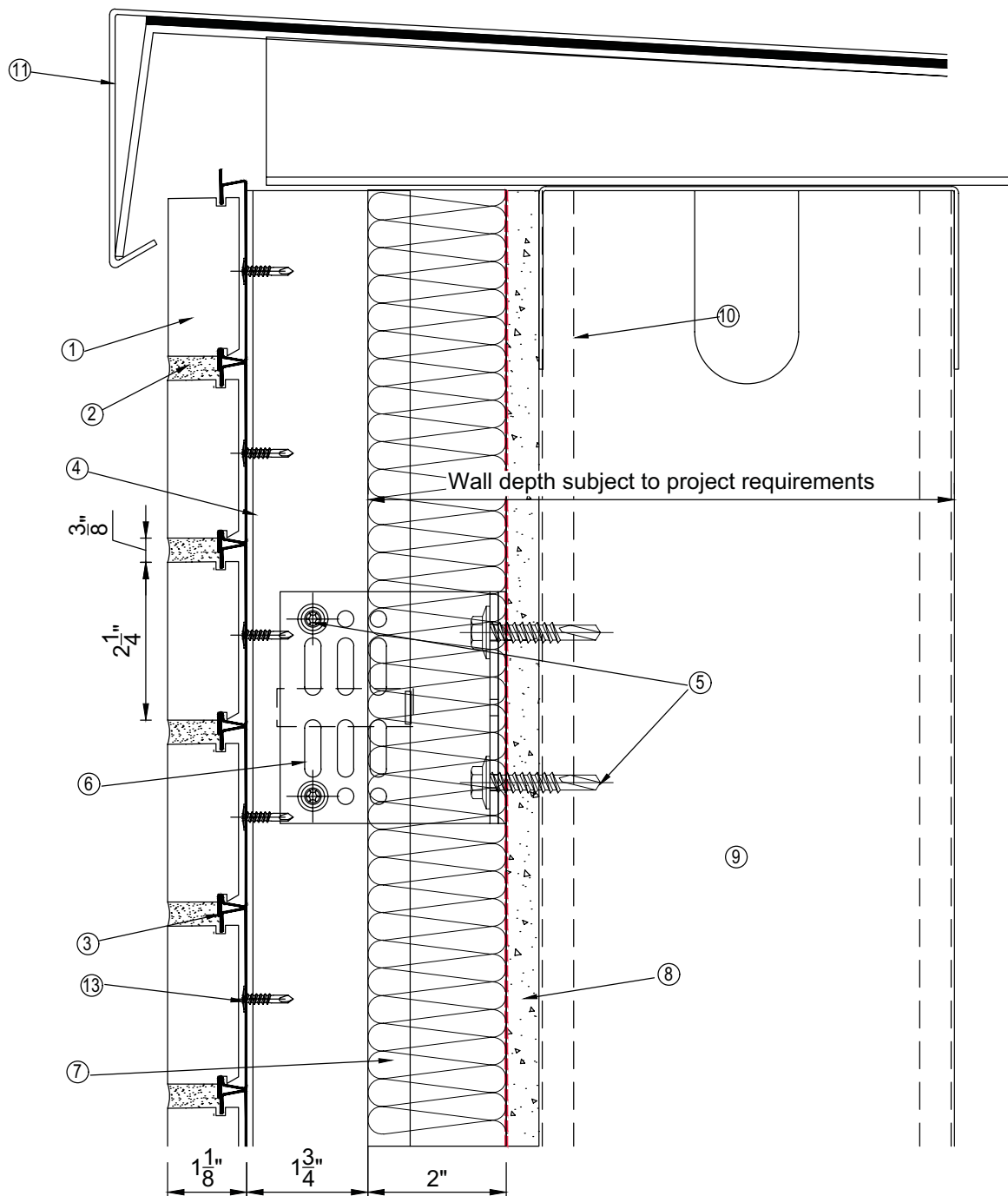
Drawing Title :
Horizontal section detail
through brick on metal frame

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 8-18x $\frac{3}{4}$ " 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 to capping

Scale :
NTS

Checked :
Date : 06-07-17

Size Drawing No. Rev.

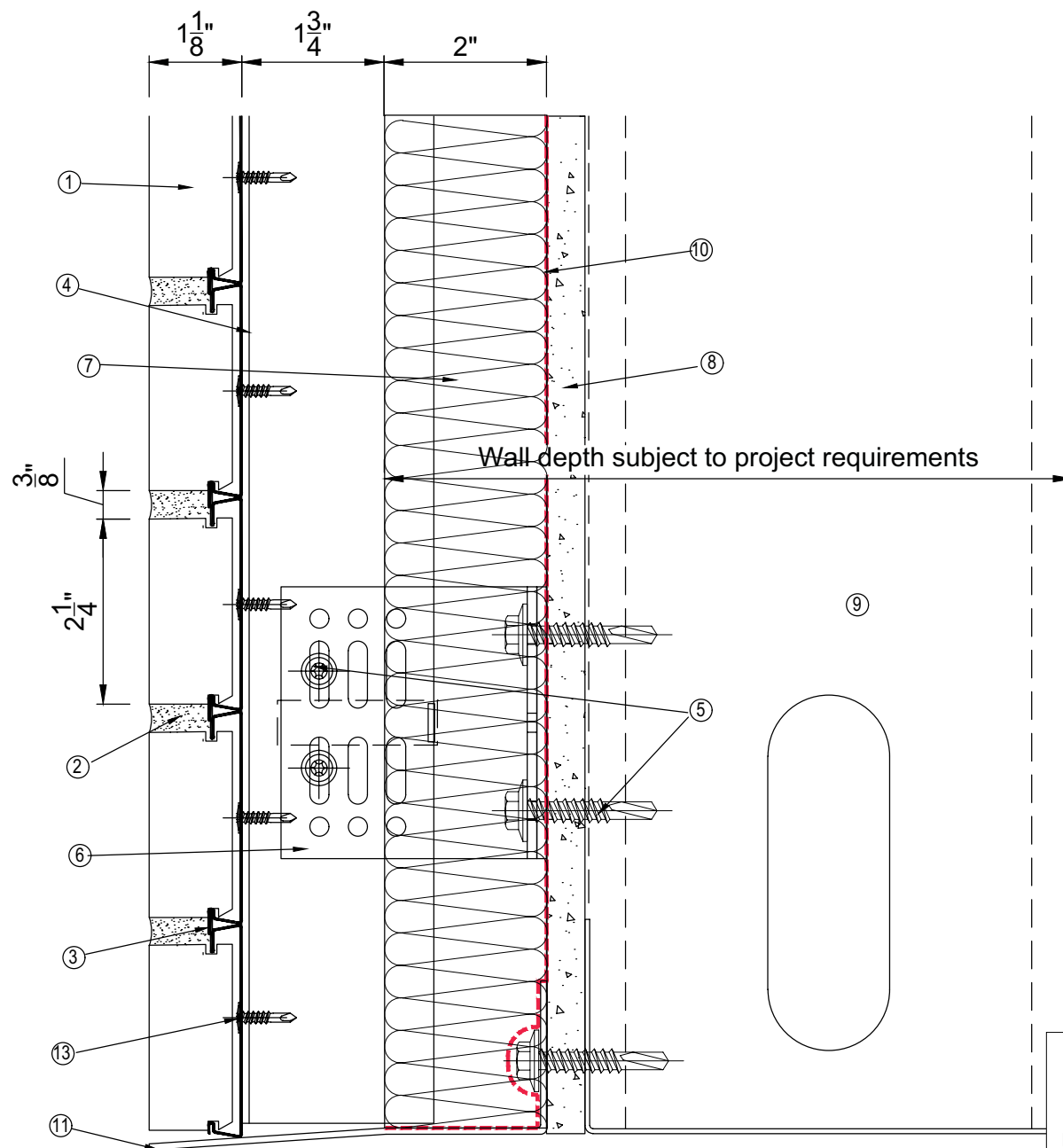
A3 DET-003 /



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Date: 6/14/2018

By: M Stremmel



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UNLESS OTHERWISE STATED

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- ⑪ Metal flashing (by others)
- ⑫ Caulk joint and backer rod (by others)
- 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
base of brick on metal frame

Scale :
NTS

Checked :
Date : 06-07-17

Size Drawing No. Rev.

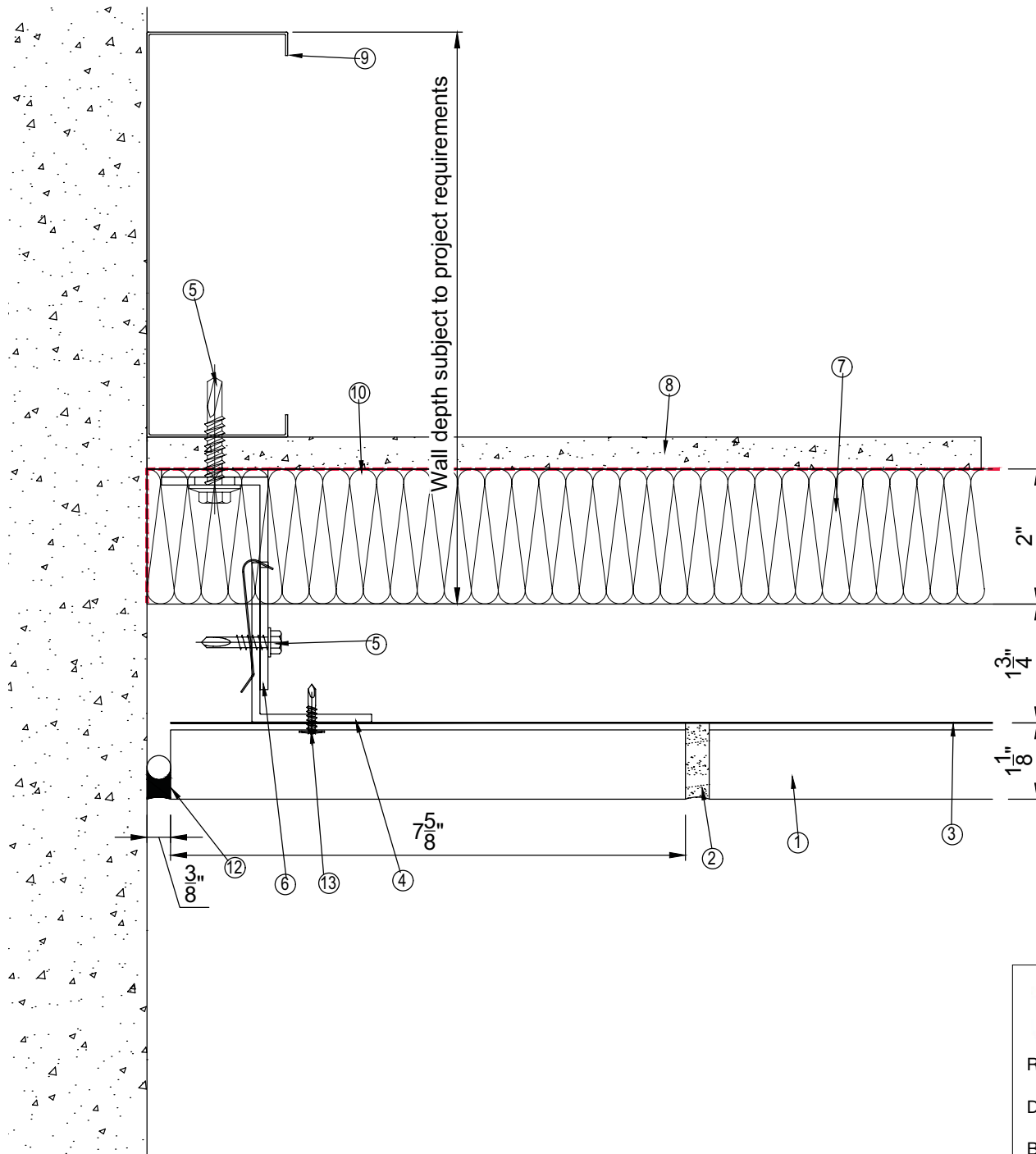
A3 DET-004 /



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Rev.	Date	By	Comments
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 :
Horizontal section detail
through brick abutment

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

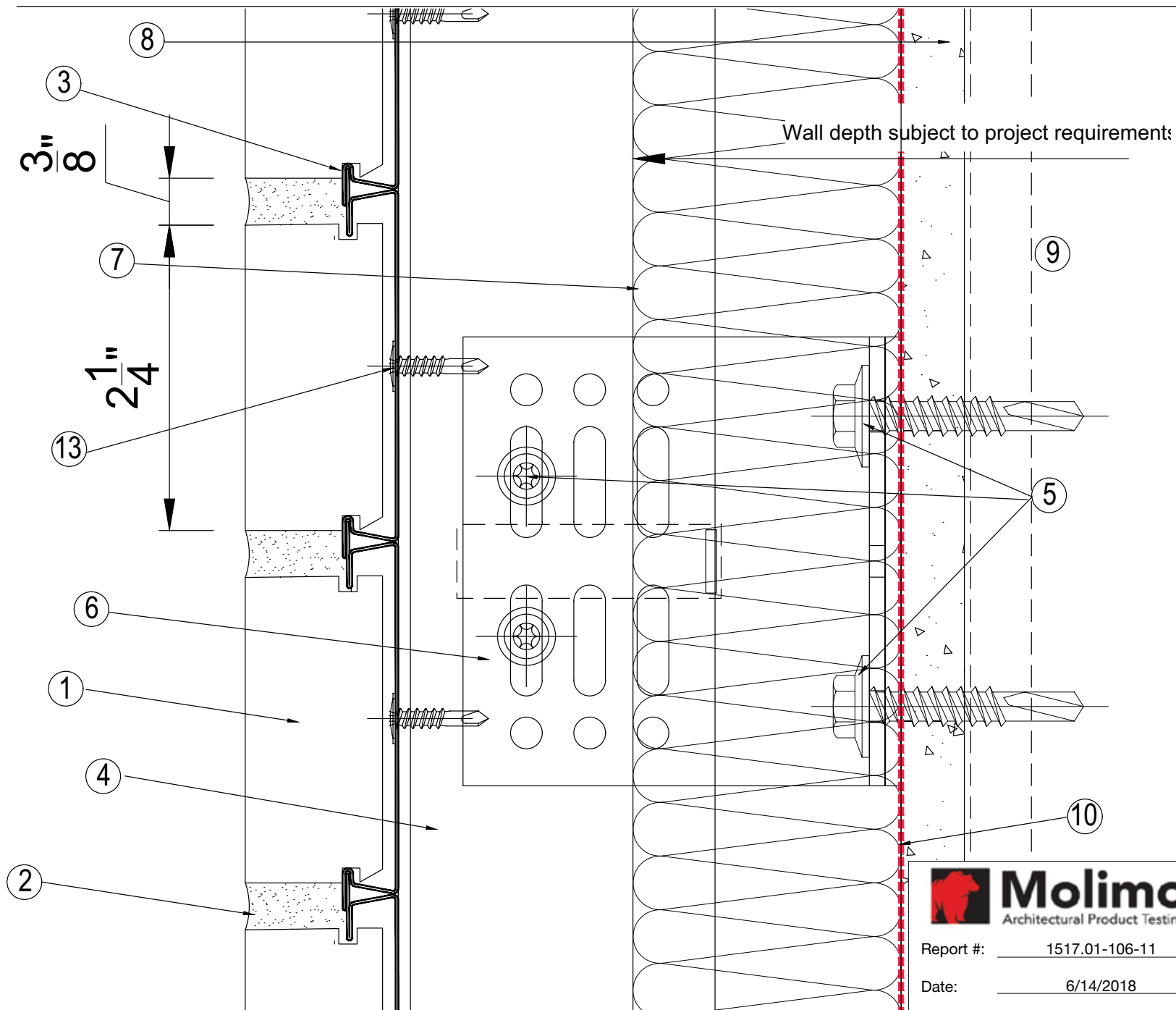
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A3	DET-010	/



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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 :
Enlarged Vertical section detail
through brick on metal frame

Scale :	Checked :	Drawn :
NTS		CB
Date :	Date :	Rev.
06-07-17	06-07-17	
Size	Drawing No.	
A3	DET-013	/



Report #: 1517.01-106-11

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