Architectural Testing

ANSI/SPRI ES-1 2003 PERFORMANCE TEST REPORT

Rendered to:

SENTRICLAD ARCHITECTURAL METAL SYSTEMS

For:

Roof Edge Coping

Report No.: D5865.01-119-16
Report Date: 04/09/14
Test Record Retention Date: 03/05/14

130 Derry Court
York, PA 17406-8405
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Architectural Testing

ANSI/SPRI ES-1 2003 PERFORMANCE TEST REPORT

Rendered to:

SENTRICLAD ARCHITECTURAL METALS
65 10th Street
Lynchburg, Virginia 24504

Report No.:	D5865.01-119-16
Test Date:	03/03/14
Through:	03/05/14
Report Date:	04/09/14
Test Record Retention Date:	03/05/18

1.0 General Information

1.1 Product

Roof Edge Coping

1.2 Project Summary

Architectural Testing was contracted by Fabral Metal Wall and Roof Systems to perform SPRI Test RE-3 on formed aluminum and steel edge coping materials in accordance with ANSI/SPRI ES-1 2003.

This report is a reissue of the original Report No. D5865.01-119-R0. This report is issued in the name of Sentriclad Architectural Metals through written authorization of Fabral Metal Wall and Roofing Systems.

1.3 Qualifications

Architectural Testing in York, Pennsylvania has demonstrated compliance with ANSI/ISO/IEC Standard 17025 and is consequently accredited as a Testing Laboratory (TL-144) by International Accreditation Service, Inc.

1.4 Witnessing

Mr. Mark Mullins (03/03/14), Mr. Bill Croucher (03/03/14 - 03/05/14) and Mr. Steve Maule (03/03/14 - 03/05/14) each of Fabral Metal Wall and Roofing Systems were present to install coping specimens and witness testing on the dates listed behind each of their names.

1.5 Conditions of Testing

All testing reported herein was conducted in a laboratory set to maintain temperature in the range of 68 ± 4°F and humidity in the range of 50 ± 5% RH.

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2.0 SPRI Test RE-3, Pull-Off Test for Copings

2.1 Specimen Description

10 ft long sections of:

- 16.75 in wide top face by 6 in high front face by 4 in high back face formed aluminum (0.040 in) coping;
- 16.75 in wide top face by 6 in high front face by 4 in high back face formed steel (24 GA) coping;

were attached to roof edge mock-ups constructed of SPF dimension lumber with one of the following connection methods:

- 12 in long by 16-1/2 in wide top face by 6 in high front face by 4 in high back face by 0.034 in thick steel cleats spaced at 24 in on center
- 12 in long by 16-1/2 in wide top face by 6 in high front face by 4 in high back face by 0.034 in thick steel cleats spaced at 40 in on center
- Continuous 5-13/16 in high by 2-3/16 in wide by 0.034 in thick steel cleat for the 6 in high front face and direct fastening of the 4 in high back face to the roof edge mock-up

The top face of the intermittent cleat was screwed to the face of 2x dimensional lumber member with four #10-13 x 1-1/2 in (0.138 in minor diameter), square drive, type 17 point, 305 stainless steel screws with a 0.447 in diameter by 0.055 in thick pancake head and sealing washers. The 6 in high front face of the cleat was attached to the edge of 2x dimensional lumber with two #10-13 x 1-1/2 in (0.138 in minor diameter), square drive, type 17 point, 305 stainless steel screws with a 0.447 in diameter by 0.055 in thick pancake head and sealing washers. The 4 in high back face of the cleat was attached to the edge of 2x dimensional lumber with two #10-13 x 1-1/2 in (0.138 in minor diameter), square drive, type 17 point, 305 stainless steel screws with a 0.447 in diameter by 0.055 in thick pancake head and sealing washers.

The top face of the continuous cleat was screwed to the face of 2x dimensional lumber member with #10-13 x 1-1/2 in (0.138 in minor diameter), square drive, type 17 point, 305 stainless steel screws with a 0.447 in diameter by 0.055 in thick pancake head and sealing washers at 12-1/4 in on center. The front face of the cleat was attached to the edge of 2x dimensional lumber with #10-13 x 1-1/2 in (0.138 in minor diameter), square drive, type 17 point, 305 stainless steel screws with a 0.447 in diameter by 0.055 in thick pancake head and sealing washers at 12-1/4 in on center.

Prior to assembly, the top and front or back faces of the coping were drilled and each fitted with ten 5/16 in eyebolts, fender washers (one each side) and hex nuts (one each side), 6 in from each end and 12 in on center, on the longitudinal centerlines.

2.1 Specimen Description (Continued)

For the systems utilizing the intermittent cleat, the coping was hooked onto the front bend of the intermittent cleat, wrapped over the top of the mock-up, and its back face was snapped onto the back bend of the intermittent cleat.

For the systems utilizing the continuous cleat, the coping was hooked onto the front bend of the continuous cleat, wrapped over the top of the mock-up, and its back face was attached to the edge of 2x dimensional lumber with #10-13 x 1-1/2 in (0.138 in minor diameter), square drive, type 17 point, 305 stainless steel screws with a 0.447 in diameter by 0.055 in thick pancake head and sealing washers at 12-1/4 in on center.

See Photographs in Appendix A and Drawings in Appendix B for additional details.

2.2 Test Procedure

Load was applied to the ten eye bolts of the coping top surface using equal-length chains, a spreader beam, steel cable and an electric winch. Load applied to the top surface was measured with an in-line 5000 pound load cell. Center-point deflection of the coping face was measured with an electronic linear displacement transducer.

Load was applied to the ten eye bolts of the coping face surface using equal-length chains, a spreader beam, steel cable and a mechanical winch. Load applied to the face surface was measured with an in-line 2000 pound load cell.

The two loads were applied simultaneously, proportionally and incrementally and held ("Sustained") for a minimum of 60 seconds with intermediate load relaxation periods for specimen deflection to stabilize.

See Photographs in Appendix A for test setup.

2.3 Test Results

16 in Wide Formed Coping
With Intermittent Cleats Spaced 24 in On Center

Test Dates: 03/03/14 - 03/04/14

	Coping Material											
	Steel - 24 GA						Aluminum - 0.040 in					
Surface [1]	**Top**	**Face**	**Top**	**Face**	**Top**	**Face**	**Top**	**Face**	**Top**	**Face**	**Top**	**Face**
Surface Width (in)	16.75	6	16.75	6	16.75	4	16.75	6	16.75	6	16.75	4
Peak Load at Failure [2] **(lb)**	1626	349	--	--	--	--	--	--	--	--	1941	241
Max. Sustained Load Prior to Failure (lb)	1535	280	1675	311	1675	188	838	127	977	158	1815	209
Equivalent Sustained Pressure [3] **(psf)**	110	67	120	73	120	73	60	37	70	43	130	79

[1] *Testing conducted on 4 in face to prove that testing was conducted on the worst case (6 in) face creating the most conservative loads.*

[2] *Where no peak load is listed, the mode of failure was release of the coping from the cleat during removal of test load. Where peak loads are listed, the mode of failure was cleat failure during application of test load.*

[3] *Top and face pressures are in the ratio of 1.8 to 1.1 as specified by ANSI/SPRI ES-1 for roof height 60 ft or less.*

2.3 Test Results (Continued)

16 in Wide Formed Coping
With Intermittent Cleats Spaced 40 in On Center

Test Dates: 03/04/14

	Coping Material											
	Steel - 24 GA						Aluminum - 0.040 in					
Surface [1]	**Top**	**Face**	**Top**	**Face**	**Top**	**Face**	**Top**	**Face**	**Top**	**Face**	**Top**	**Face**
Surface Width (in)	16.75	6	16.75	6	16.75	4	16.75	6	16.75	6	16.75	4
Peak Load at Failure [2] (lb)	--	--	1427	292	1571	183	--	--	--	--	--	--
Max. Sustained Load Prior to Failure (lb)	1256	219	1396	250	1396	148	977	158	838	127	1256	127
Equivalent Sustained Pressure [3] (psf)	90	55	100	61	100	61	70	43	60	37	90	55

[1] *Testing conducted on 4 in face to prove that testing was conducted on the worst case (6 in) face creating the most conservative loads.*

[2] *Where no peak load is listed, the mode of failure was release of the coping from the cleat during removal of test load. Where peak loads are listed, the mode of failure was cleat failure during application of test load.*

[3] *Top and face pressures are in the ratio of 1.8 to 1.1 as specified by ANSI/SPRI ES-1 for roof height 60 ft or less.*

2.3 Test Results (Continued)

16-3/4 in Wide Formed Coping
With Continuous Cleat

Test Dates: 03/04/14 - 03/05/14

	Coping Material											
	Steel - 24 GA						Aluminum - 0.040 in					
Surface [1]	**Top**	**Face**	**Top**	**Face**	**Top**	**Face**	**Top**	**Face**	**Top**	**Face**	**Top**	**Face**
Surface Width (in)	16.75	6	16.75	6	16.75	4	16.75	6	16.75	6	16.75	4
Peak Load at Failure [2] **(lb)**	2310	506	2308	455	--	--	1032	210	1366	264	--	--
Max. Sustained Load Prior to Failure (lb)	2233	433	2233	433	2373	290	977	158	1256	219	2373	290
Equivalent Sustained Pressure [3] **(psf)**	160	98	160	98	170	104	70	43	90	55	170	104

[1] *Testing conducted on 4 in face to prove that testing was conducted on the worst case (6 in) face creating the most conservative loads.*

[2] *Where no peak load is listed, the mode of failure was release of the coping from the cleat during removal of test load. Where peak loads are listed, the mode of failure was cleat failure during application of test load.*

[3] *Top and face pressures are in the ratio of 1.8 to 1.1 as specified by ANSI/SPRI ES-1 for roof height 60 ft or less.*

3.0 Closing Statement

Architectural Testing will service this report for the entire test record retention period. Test records that are retained such as detailed drawings, datasheets, representative samples of test specimens, or other pertinent project documentation will be retained by Architectural Testing, Inc. for the entire test record retention period.

Results obtained are tested values and were secured using the designated test methods. This 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 specimens tested. This report may not be reproduced, except in full, without the written approval of Architectural Testing, Inc.

For ARCHITECTURAL TESTING, INC.:

Digitally Signed by: Adam J. Schrum

Adam J. Schrum
Technician I
Structural Systems Testing

Digitally Signed by: Virgal Thomas Mickley, Jr.

V. Thomas Mickley, Jr., P.E.
Senior Project Engineer
Structural Systems Testing

AJS:vtm/jas

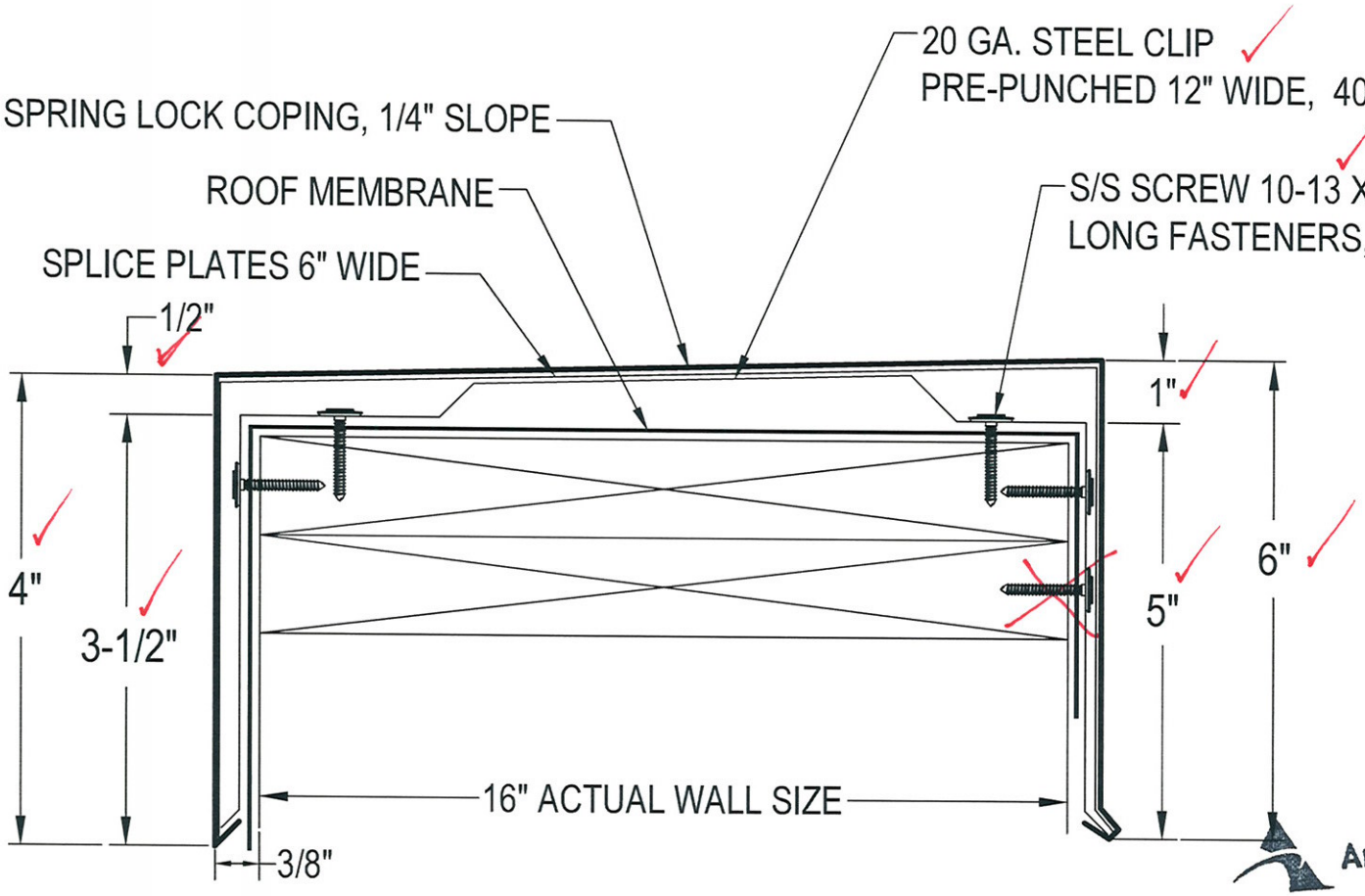
Attachments (pages): This report is complete only when all attachments listed are included
Appendix A - Drawings (4)
Appendix B - Photographs (3)

Revision Log

Rev. #	Date	Page(s)	Revision(s)
0	08/21/18	N/A	Original report issue- changed report no. D5865.01-119-16 to reflect company name change from Fabral Metal Wall and Roofing Systems to Sentriclad Architectural Metals.

APPENDIX A

Drawings



COPING TO BE FABRICATED 3/8" LARGER THAN WALL SIZE
FOR WALL VARIATION AND TO FACILITATE INSTALLATION

ANSI/ SPRI ES-1 TESTED

METAL TYPE	
.040 ALUM. KYNAR 500	
.050 ALUM. KYNAR 500	
22GA. KYNAR 500	
24GA. KYNAR 500	
OTHER	
COLOR	

QUANTITIES:
TOTAL LFT *(10' SECTIONS)*
UNDER PLATES
MITER

Architectural Testing

Test sample complies with these details.
Deviations are noted.

Report # D5865.01-119-16

Date 4/3/14 Tech AJS

CUSTOMER	
JOB NAME	
JOB ADDRESS	
CONTACT #	
APPROVAL	

NOTE: CONTRACTOR OR INSTALLER IS RESPONSIBLE FOR FIELD VERIFICATION & QUANTITIES BEFORE FABRICATION.

TSM PROGRAM (OFFICE USE ONLY):

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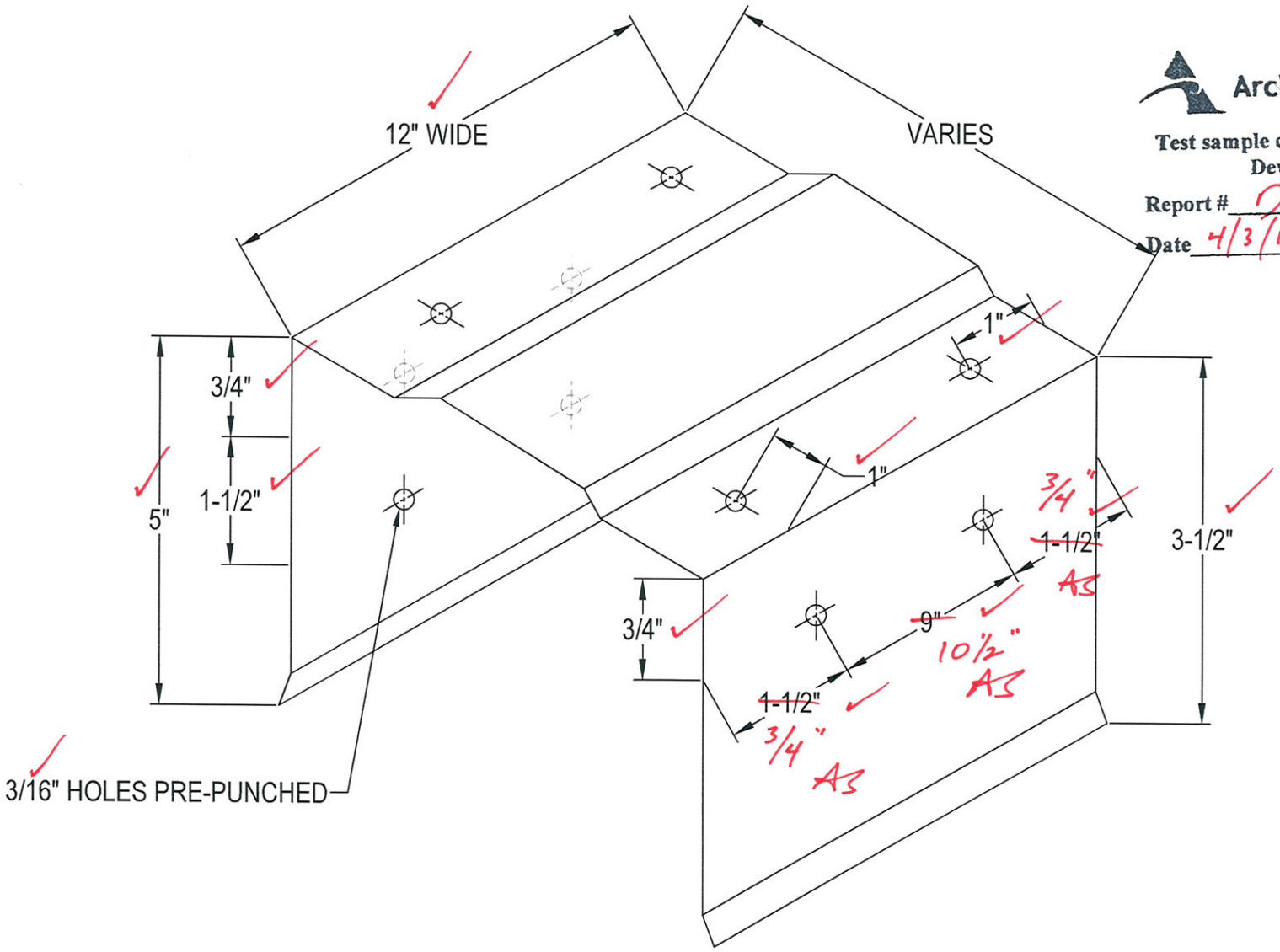
architectural metals



Architectural Testing

Test sample complies with these details.
Deviations are noted.

Report # 05865.01-119-16

Date 4/3/14 Tech AJS

QUANTITIES:
EACH *(3 CLIPS/ 10' SECTION)*
MITER

TSM PROGRAM (OFFICE USE ONLY):

CUSTOMER	
JOB NAME	
JOB ADDRESS	
CONTACT #	
APPROVAL	

NOTE: CONTRACTOR OR INSTALLER IS RESPONSIBLE FOR FIELD VERIFICATION & QUANTITIES BEFORE FABRICATION.

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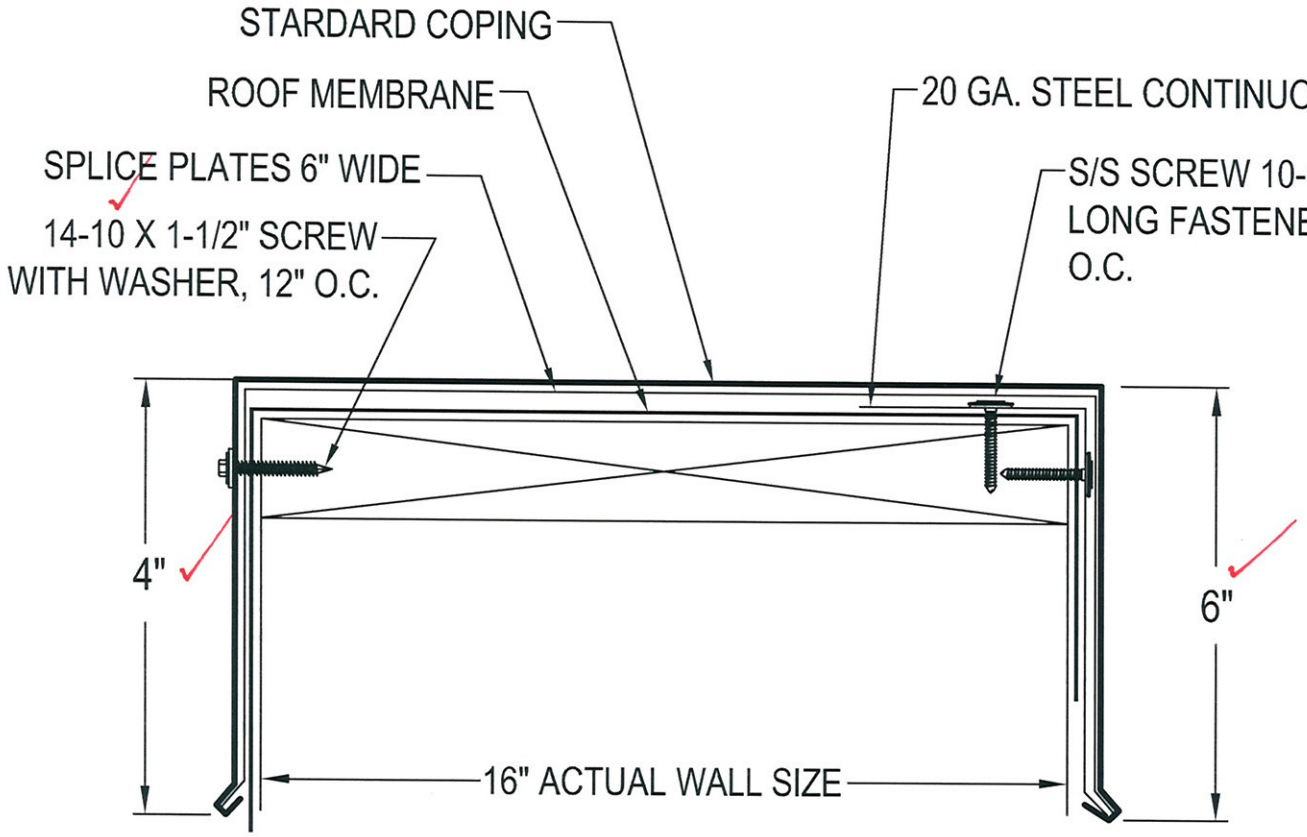

COPING TO BE FABRICATED 3/8" LARGER THAN WALL SIZE FOR WALL VARIATION AND TO FACILITATE INSTALLATION

METAL TYPE	
.040 ALUM. KYNAR 500	
.050 ALUM. KYNAR 500	
22GA. KYNAR 500	
24GA. KYNAR 500	
OTHER	
COLOR	

QUANTITIES:
TOTAL LFT *(10' SECTIONS)*
UNDER PLATES
MITER

STANDARD COPING

TSM PROGRAM (OFFICE USE ONLY):

CUSTOMER	
JOB NAME	
JOB ADDRESS	
CONTACT #	
APPROVAL	

Architectural Testing

Test sample complies with these details.
Deviations are noted.

Report # 05865.01-119-16

Date 4/3/14 Tech AJS

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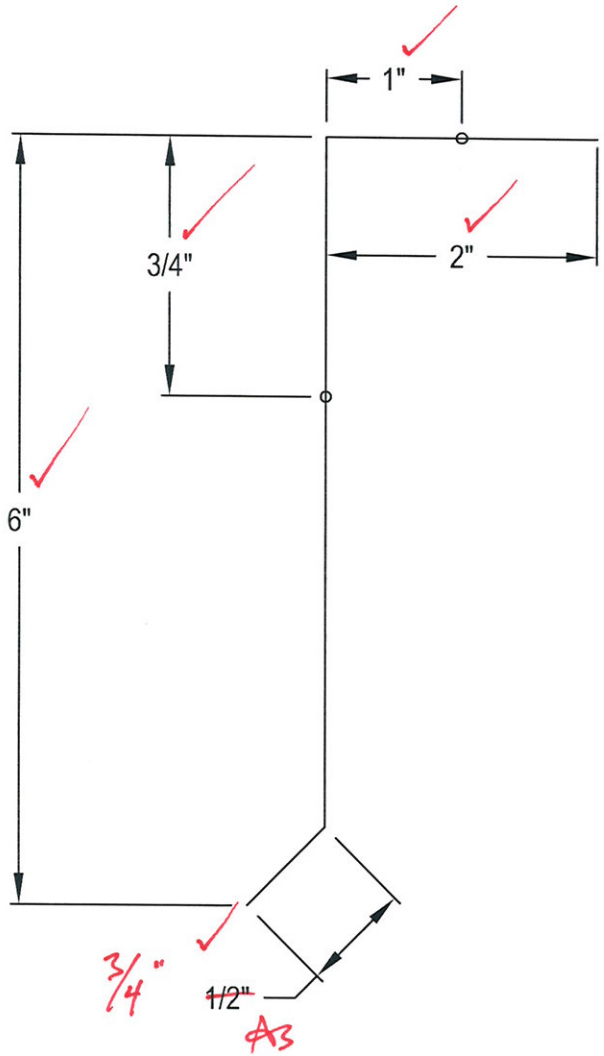
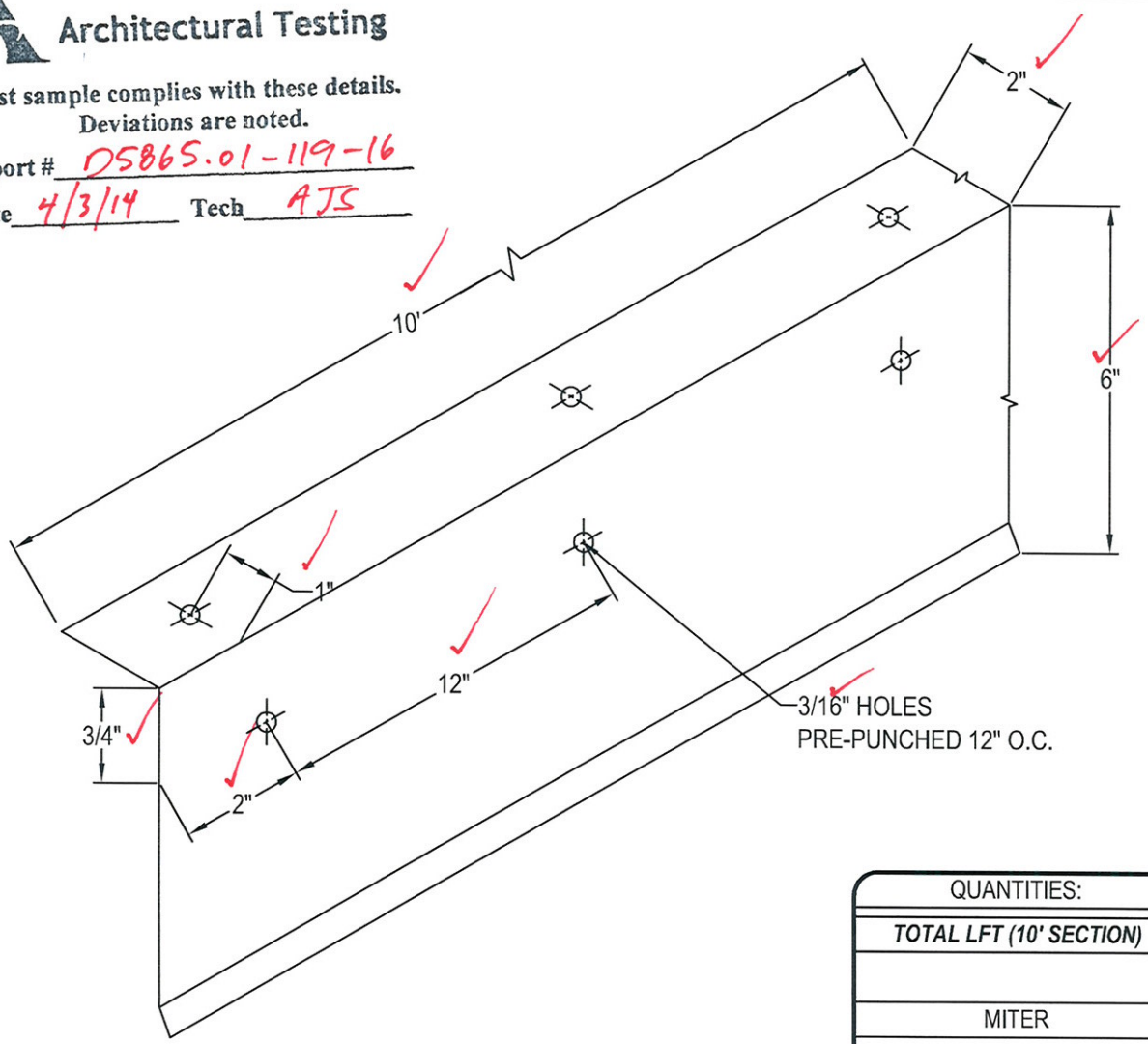


Architectural Testing

Test sample complies with these details.
Deviations are noted.

Report # D5865.01-119-16

Date 4/3/14 Tech AJS



QUANTITIES:
TOTAL LFT (10' SECTION)
MITER

TSM CONTINUOUS CLEAT

TSM PROGRAM (OFFICE USE ONLY):

CUSTOMER	
JOB NAME	
JOB ADDRESS	
CONTACT #	
APPROVAL	

NOTE: CONTRACTOR OR INSTALLER IS RESPONSIBLE FOR FIELD VERIFICATION & QUANTITIES BEFORE FABRICATION.

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APPENDIX B

Photographs

Photo No. 1
Typical SPRI Test RE-3, Coping Pull-Off Test Setup

Photo No. 2
Typical SPRI Test RE-3 Mode of Failure;
Cleat Failure During Load Application

Photo No. 3
Typical SPRI Test RE-3 Mode of Failure;
Cleat Failure During Load Application

Photo No. 4
Typical SPRI Test RE-3 Mode of Failure;
Release of the Coping from the Cleat During Removal of Test Load

Photo No. 5
Typical Coping Cleat Fastener