

RIOT GLASS, INC.

MIAMI-DADE TEST REPORT

SCOPE OF WORK

TAS 201, TAS 202, AND TAS 203 TESTING ON AP-25 FULL FRAME MOUNT, PROTECTIVE SYSTEM

REPORT NUMBER

L4169.01-303-18

TEST DATE(S)

01/22/21 – 02/27/21

ISSUE DATE

03/05/21

RECORD RETENTION END DATE

02/27/31

MIAMI-DADE COUNTY NOTIFICATION NO.

ATI LA21001

LABORATORY CERTIFICATION NO.

20-0831.07

PAGES

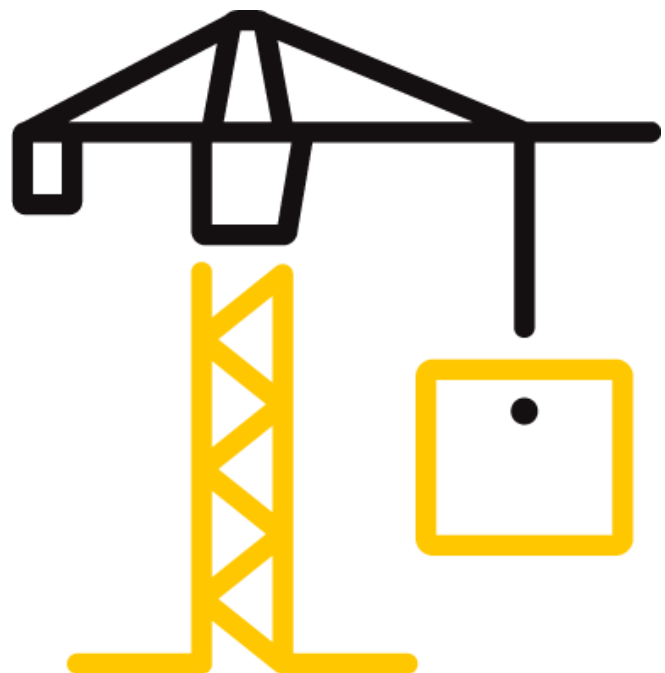
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DOCUMENT CONTROL NUMBER

ATI 00651 (07/24/17)

RT-R-AMER-Test-2816

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TEST REPORT FOR RIOT GLASS, INC.

Report No.: L4169.01-303-18

Date: 03/04/21

REPORT ISSUED TO

RIOT GLASS, INC.

17941 Brookshire Lane

Huntington Beach, California 92647

SECTION 1

SCOPE

Intertek Building & Construction (B&C) was contracted by Riot Glass, Inc. to perform TAS 201, TAS 202, and TAS 203 testing in accordance with Miami-Dade County requirements on their AP-25 Full Frame Mount, Protective System. Results obtained are tested values and were secured by using the designated test method(s). Testing was conducted at the Intertek B&C test facility in Lake Forest, California. This report does not constitute certification of this product nor an opinion or endorsement by this laboratory.

SECTION 2

SUMMARY OF TEST RESULTS

The specimen(s) tested met the performance requirements set forth in the protocols.

Product Type: Protective System

Series/Model: AP-25 Full Frame

SPEC.	TEST PROTOCOL	DESIGN PRESSURE
1	TAS 202	+40 / -40 psf
1	TAS 201/203 (Large Missile)	+40 / -40 psf
2	TAS 201/203 (Large Missile)	+40 / -40 psf
3	TAS 201/203 (Large Missile)	+40 / -40 psf

For INTERTEK B&C:

COMPLETED BY: Aaron Baker
TITLE: Technician Team Lead
SIGNATURE:
DATE: 03/05/21

REVIEWED BY: Tyler Westerling, P.E.
TITLE: Operations Manager
SIGNATURE:
DATE: 03/05/21

jsh:ab

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SECTION 3

TEST METHOD(S)

The specimens were evaluated in accordance with the following:

TAS 201-94, *Impact Test Procedures*

TAS 202-94, *Criteria for Testing Impact & Non Impact Resistant Building Envelope Components Using Uniform Static Air Pressure (Air/Loads Only)*

TAS 203-94, *Criteria for Testing Products Subject to Cyclic Wind Pressure Loading*

SECTION 4

MATERIAL SOURCE/INSTALLATION

Test specimen were provided by the client. Representative samples of the test specimen(s) will be retained by Intertek B&C for a minimum of ten years from the test completion date.

Then specimen was installed into a Spruce-Pine-Fir wood test buck. The rough opening allowed for a 1/4" shim space. The exterior perimeter of the door was sealed with sealant. Installation of the tested product was performed by the client.

LOCATION	ANCHOR DESCRIPTION	ANCHOR LOCATION
Through head and sill	2" lag screw	Through head per installation instructions.

SECTION 5

EQUIPMENT

Cannon: Constructed from steel piping utilizing compressed air to propel the missile

Missile: 2x4 Southern Pine

Timing Device: Electronic beam type

Cycling Mechanism: Computer controlled centrifugal blower with electronic pressure measuring device

Deflection Measuring Device: Linear transducers

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SECTION 6

LIST OF OFFICIAL OBSERVERS

NAME	COMPANY
Brad Campbell	Riot Glass, Inc.
Aaron Baker	Intertek B&C
Jarod Hardman	Intertek B&C

SECTION 7

TEST SPECIMEN DESCRIPTION

Product Type: Protective System

Series/Model: AP-25 Full Frame Mount

Product Size(s):

OVERALL AREA:	WIDTH		HEIGHT	
	millimeters	inches	millimeters	inches
6.1 m ² (65.6 ft ²)				
Storefront Size	1934	76-1/8	3153	124-1/8
Panel Size	1829	72	3048	120

Storefront Frame Construction:

FRAME MEMBER	MATERIAL	DESCRIPTION
Head	Aluminum	Base extrusion, see attached Drawings Section 12.
Head	Aluminum	Glass stop extrusion, clipped to base extrusion, see attached Drawings Section 12.
Sill	Aluminum	Base extrusion, see attached Drawings Section 12.
Sill	Aluminum	Glazing channel insert extrusion, clipped to base extrusion, see attached Drawings Section 12.
Jambs	Aluminum	Base extrusion, clipped to base clip see attached Drawings Section 12.
Jambs	Aluminum	Base clip, see attached Drawings Section 12.
	JOINERY TYPE	DETAIL
All Corners	Flush	Dry fit corner

Note 1: Base curtain wall assembly consisted of non-impact rated system to confirm performance and compliance of tested AP-25 system for protection.

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Protective System Frame Construction:

FRAME MEMBER	PART #	MATERIAL	DESCRIPTION
Base	A-09003	Aluminum	0.060" extrusion, secured to system with self-tapping tamper resistant screws, see attached Drawings Section 12.
Wedge	A-09902	Aluminum	Secured to face of AP-25 system into base with supplied self-tapping tamper resistant screws 6" on center and 2" from end spacing, see attached Drawings Section 12.
Cap	A-09005	Aluminum	0.040" extrusion, press fit over wedge, see attached Drawings Section 12.
		JOINERY TYPE	DETAIL
All Corners	Flush		Dry fit corners

Reinforcement: *No reinforcement was utilized.*

Weatherstripping: *No weatherstripping was utilized.*

Glazing: *No conclusions of any kind regarding the adequacy or inadequacy of the glass in any glazed test specimen(s) can be made.*

GLASS TYPE	GLAZING	GLAZING METHOD
Monolithic	1/4" Clear Tempered	Exterior set, dry fit with wedge gasket.

PROTECTIVE SYSTEM	GLAZING	GLAZING METHOD
Armorplast 25 (AP-25)	1/4" Clear Polycarbonate	Dry fit with wedge and cover cap.

LOCATION	QUANTITY	DAYLIGHT OPENING		GLASS BITE
		millimeters	inches	
Fixed lite	1	1708 x 3007	70-3/8 x 118-3/8	13/16"

Drainage: *No drainage was utilized.*

Hardware: *No hardware was utilized.*

Screen Construction: *No screen was utilized.*

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SECTION 8
TEST RESULTS

Protocol TAS 202-94, Static Air Pressure

Test Date(s): 01/22/21 through 02/27/21

The temperature during testing was 21°C (70°F). The results are tabulated as follows:

Test Specimen #1

TITLE OF TEST	RESULTS	ALLOWED	NOTE
Air Leakage, Infiltration per TAS 202 at 1.57 psf (25 mph)	<0.1 L/s/m ² (<0.01 cfm/ft ²)	1.5 L/s/m ² (0.30 cfm/ft ²) max.	1
Air Leakage, Infiltration per TAS 202 at 6.24 psf (50 mph)	<0.1 L/s/m ² (<0.01 cfm/ft ²)	1.5 L/s/m ² (0.30 cfm/ft ²) max.	1
Forced Entry Resistance, per ASTM F588	Pass	No entry	

Note 2: Test Date 01/22/21 / Time: 09:00 AM

Test Specimen #1: Preload and Design Load per TAS 202

LOAD (psf)	INDICATOR LOCATION	DEFLECTION (in.)		PERMANENT SET (in.)	
		MEASURED	ALLOWED	MEASURED	ALLOWED
+20.0 50% of Test Pressure	1	0.12	N/A	0.06	N/A
	2	0.29	N/A	0.06	N/A
	3	0.14	N/A	0.04	N/A
+40.0 Design Pressure	1	0.19	N/A	0.03	N/A
	2	0.45	N/A	0.03	N/A
	3	0.21	N/A	0.03	N/A
-20.0 50% of Test Pressure	1	0.17	N/A	0.12	N/A
	2	0.29	N/A	0.09	N/A
	3	0.22	N/A	0.05	N/A
-40.0 Design Pressure	1	0.12	N/A	0.04	N/A
	2	0.19	N/A	0.16	N/A
	3	0.19	N/A	0.16	N/A

TEST REPORT FOR RIOT GLASS, INC.

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Test Specimen #1: Structural Overload Load per TAS 202

LOAD (psf)	INDICATOR LOCATION	DEFLECTION (in.)		PERMANENT SET (in.)	
		MEASURED	ALLOWED	MEASURED	ALLOWED
+60.0 Test Pressure	1	0.14	N/A	0.04	N/A
	2	0.24	N/A	0.05	N/A
	3	0.15	N/A	0.04	N/A
-60.0 Test Pressure	1	0.21	N/A	0.06	N/A
	2	0.25	N/A	0.07	N/A
	3	0.21	N/A	0.07	N/A

Note 3: Positive and negative uniform static load test loads were held for 30 seconds.

Note 4: Tape and film were used to seal against air leakage during structural testing. In our opinion, the tape and film did not influence the results of the test.

Note 5: See Sketch #1 for indicator locations. Deflection/permanent set reported is the overall deflection between three points (longest unsupported span) which accounts for support movement.

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Protocol TAS 201-94, Large Missile Impact Procedures

Test Date(s): 01/22/21 through 02/27/21

The temperature during testing was 21°C (70°F). The results are tabulated as follows:

Test Specimen #1

IMPACT #	MISSILE WEIGHT (lbs.)	MISSILE LENGTH (in.)	MISSILE VELOCITY (ft./sec.)
1	9.5	96	50.1
2	9.5	96	50.4

Test Specimen #2

IMPACT #	MISSILE WEIGHT (lbs.)	MISSILE LENGTH (in.)	MISSILE VELOCITY (ft./sec.)
1	9.5	96	49.6
2	9.5	96	50.1

Test Specimen #3

IMPACT #	MISSILE WEIGHT (lbs.)	MISSILE LENGTH (in.)	MISSILE VELOCITY (ft./sec.)
1	9.5	96	49.8
2	9.5	96	49.6

Note 6: See Sketch #2-4 for impact locations.

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Protocol TAS 203-94, Cyclic Wind Pressure Loading

Test Date(s): 01/22/21 through 02/27/21

The temperature during testing was 21°C (70°F). The results are tabulated as follows:

Test Specimen #1: Cyclic Test Spectrum and Average Cycle Time per TAS 203

DESIGN PRESSURE	STAGE			
+40.0 / -40.0 psf	1	2	3	4
POSITIVE PRESSURE RANGE (psf)	8.0 – 20.0	0 – 24.0	20.0 – 32.0	12.0 – 40.0
AVERAGE CYCLE TIME (sec.)	4.18	4.40	4.76	4.28
NUMBER OF CYCLES	3500	300	600	100
	5	6	7	8
NEGATIVE PRESSURE RANGE (psf)	12.0 – 40.0	20.0 – 32.0	0 – 24.0	8.0 – 20.0
AVERAGE CYCLE TIME (sec.)	4.64	4.99	4.69	4.80
NUMBER OF CYCLES	50	1050	50	3350

Test Specimen #2: Cyclic Test Spectrum and Average Cycle Time per TAS 203

DESIGN PRESSURE	STAGE			
+40.0 / -40.0 psf	1	2	3	4
POSITIVE PRESSURE RANGE (psf)	8.0 – 20.0	0 – 24.0	20.0 – 32.0	12.0 – 40.0
AVERAGE CYCLE TIME (sec.)	4.18	4.46	4.76	4.28
NUMBER OF CYCLES	3500	300	600	100
	5	6	7	8
NEGATIVE PRESSURE RANGE (psf)	12.0 – 40.0	20.0 – 32.0	0 – 24.0	8.0 – 20.0
AVERAGE CYCLE TIME (sec.)	4.64	4.99	4.67	4.80
NUMBER OF CYCLES	50	1050	50	3350

Test Specimen #3: Cyclic Test Spectrum and Average Cycle Time per TAS 203

DESIGN PRESSURE	STAGE			
+40.0 / -40.0 psf	1	2	3	4
POSITIVE PRESSURE RANGE (psf)	8.0 – 20.0	0 – 24.0	20.0 – 32.0	12.0 – 40.0
AVERAGE CYCLE TIME (sec.)	4.59	4.70	4.93	4.52
NUMBER OF CYCLES	3500	300	600	100
	5	6	7	8
NEGATIVE PRESSURE RANGE (psf)	12.0 – 40.0	20.0 – 32.0	0 – 24.0	8.0 – 20.0
AVERAGE CYCLE TIME (sec.)	4.94	4.23	4.56	4.94
NUMBER OF CYCLES	50	1050	50	3350

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SECTION 9**CONCLUSIONS**

The large missiles impacted each intended target. Each impact location was carefully inspected. No signs of penetration, rupture, or opening after the large missile impact test were observed; as such, each test specimen satisfies the large missile requirements of TAS 201. Upon completion of testing, specimens tested for TAS 201-94 met the requirements of Section 1626 of the Florida Building Code, Building.

AND

No signs of failure were observed in any area of the test specimen during the TAS 202 testing; as such, the test specimen satisfies the requirements of TAS 202. Upon completion of testing, specimens tested for TAS 202-94 met the requirements of Section 1620 of the Florida Building Code, Building.

AND

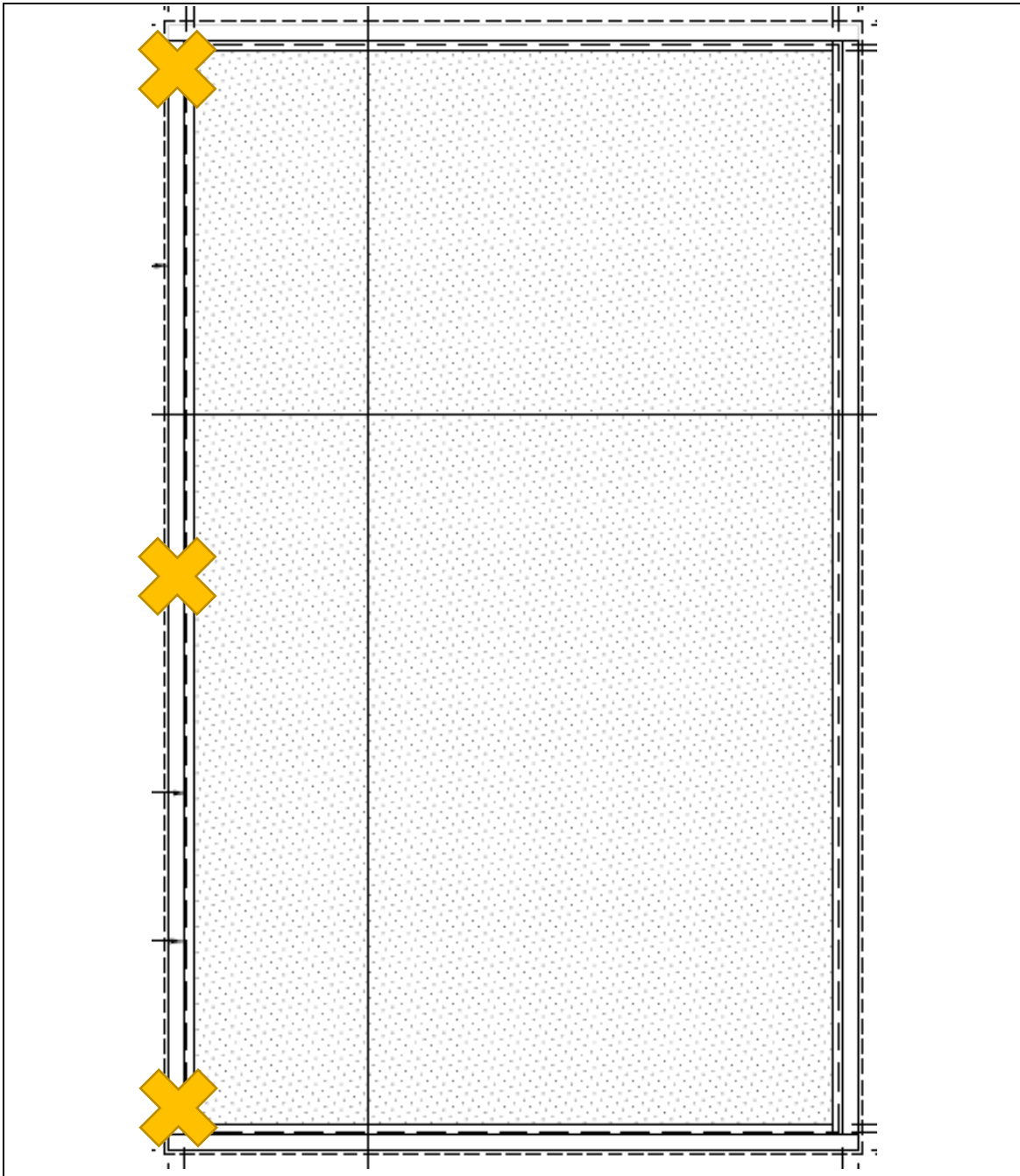
No signs of failure were observed in any area of the test specimens during the cyclic load test; as such, the test specimens satisfy the cyclic load requirements of TAS 203. Upon completion of testing, specimens tested for TAS 203-94 met the requirements of Section 1626 of the Florida Building Code, Building.

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SECTION 10
SKETCH(ES)

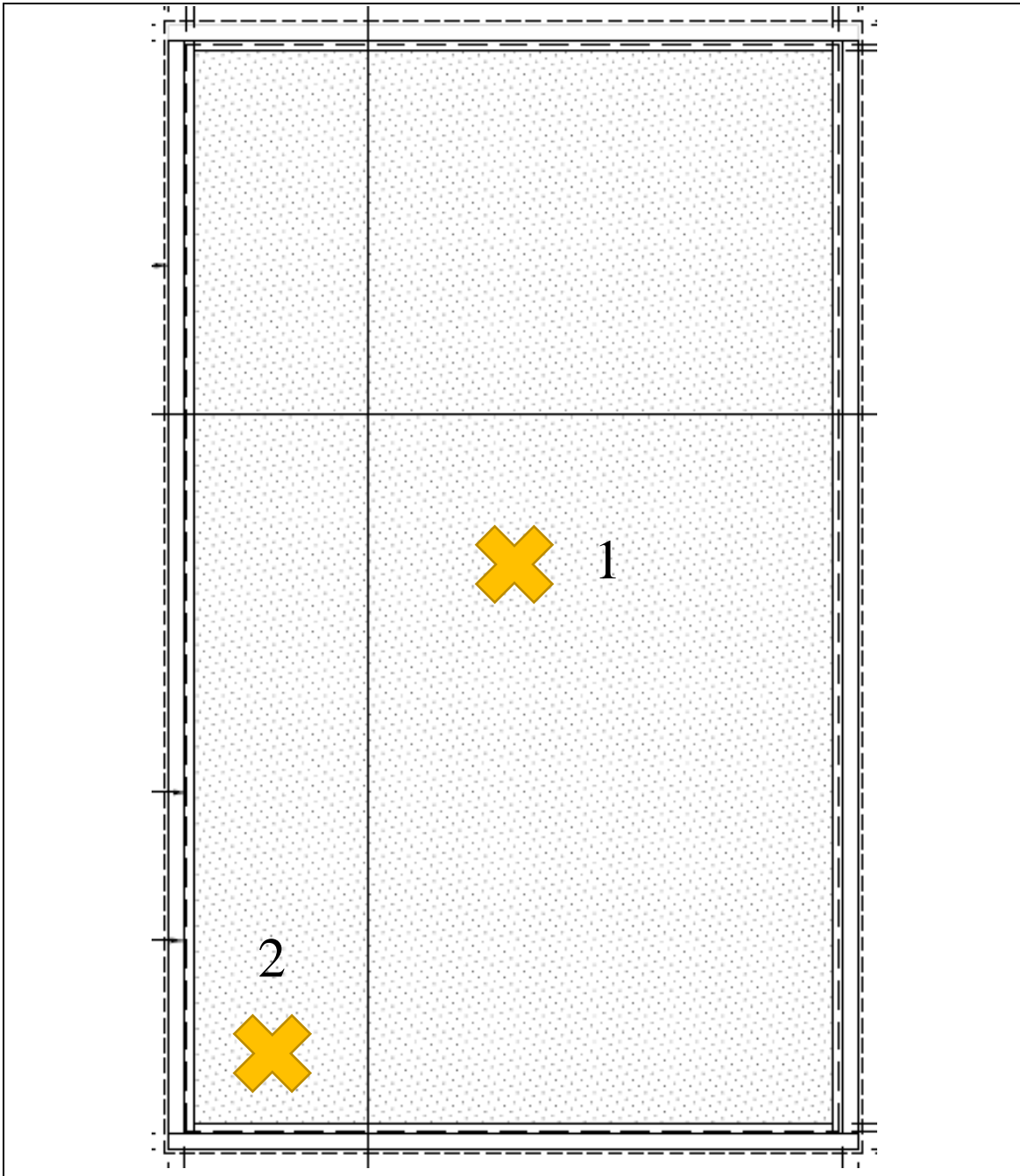


Sketch No. 1
TAS 202 Indicator Locations

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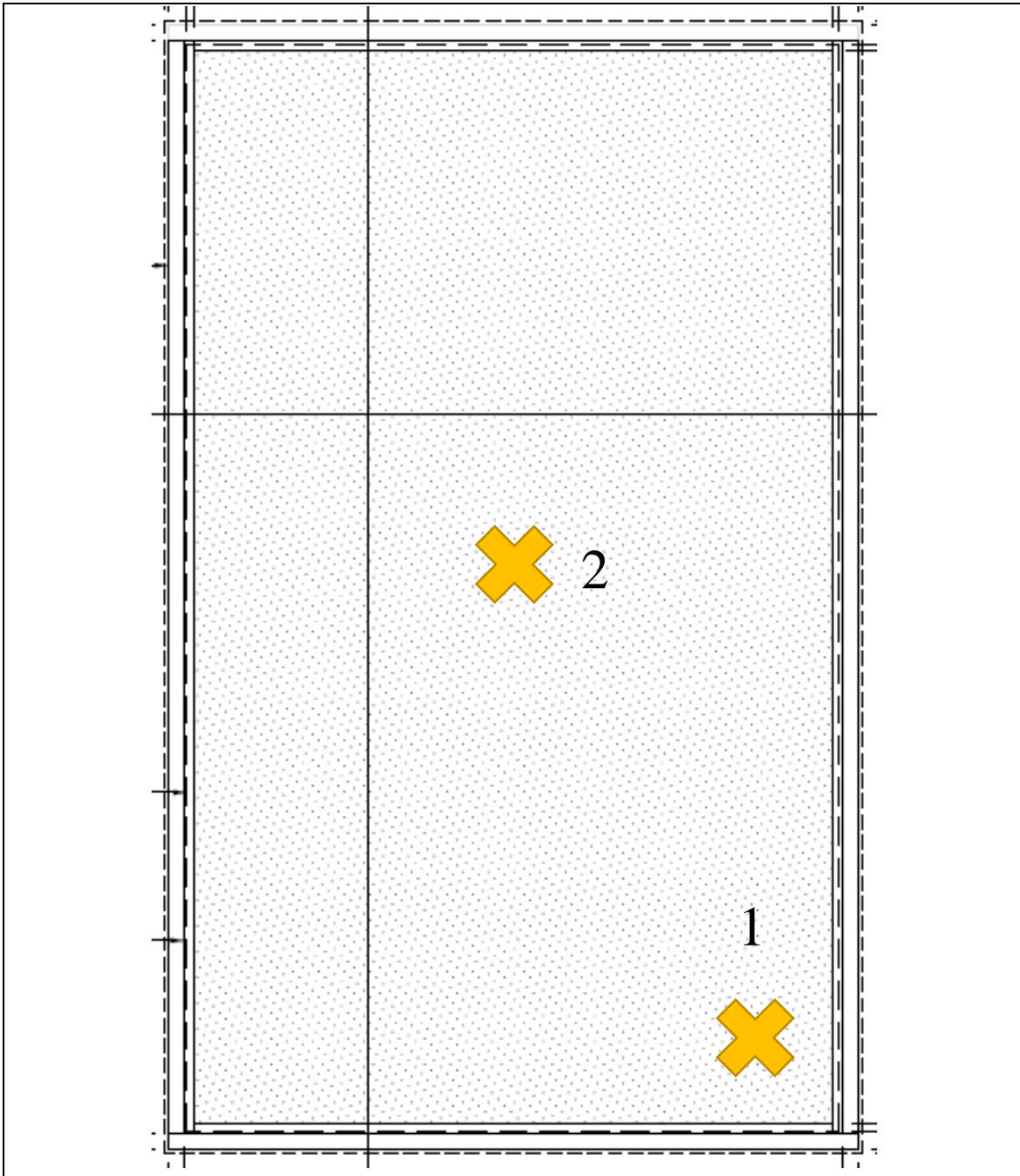


Sketch No. 2
TAS 201 Impact Locations Spec #1

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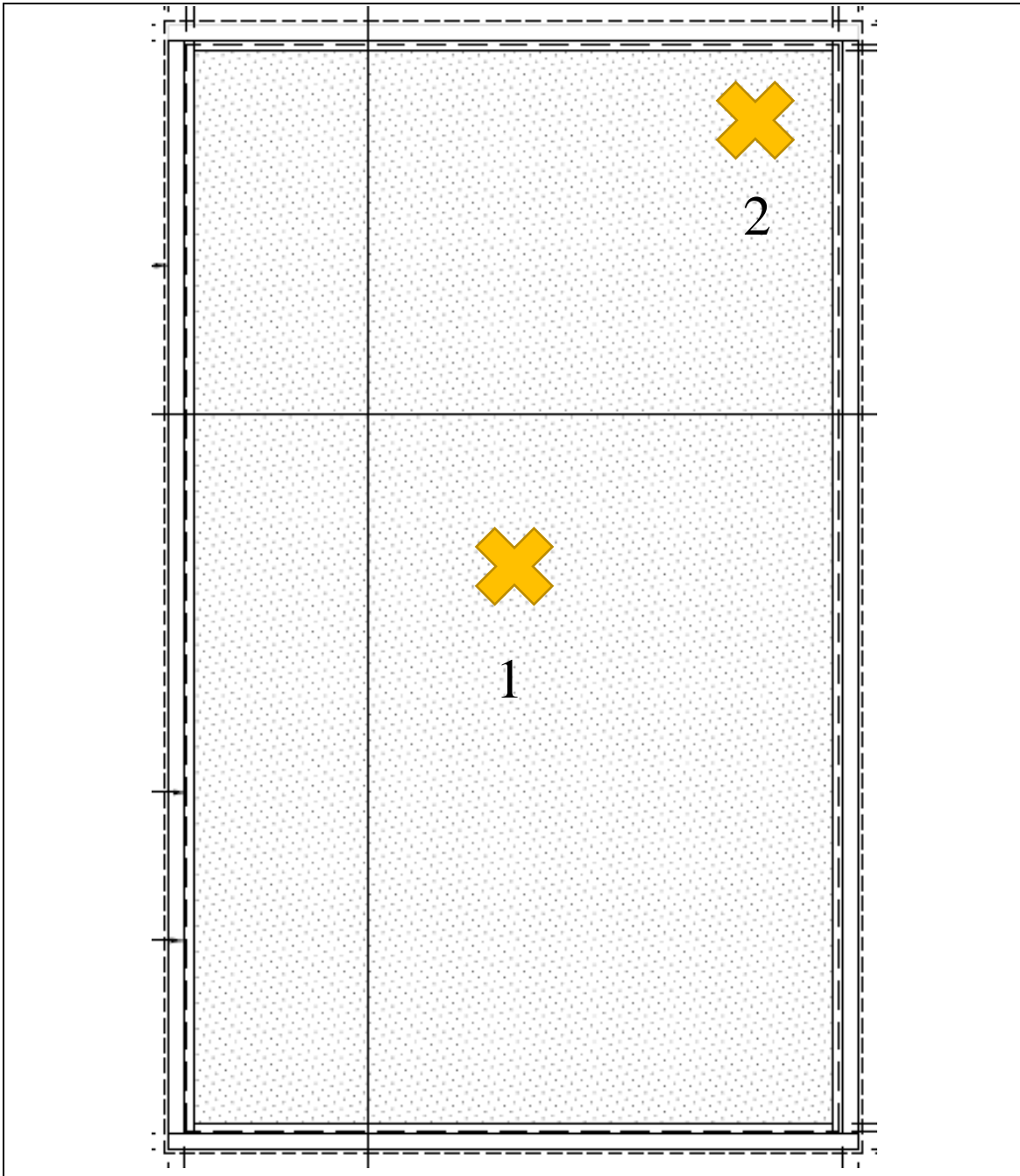
Sketch No. 3

TAS 201 Impact Locations Spec #2

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Sketch No. 4
TAS 201 Impact Locations Spec #3

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SECTION 11

PHOTOGRAPHS



Photo No. 1
Test specimen from exterior



Photo No. 2
Detail photo of corner of AP-25 Installed



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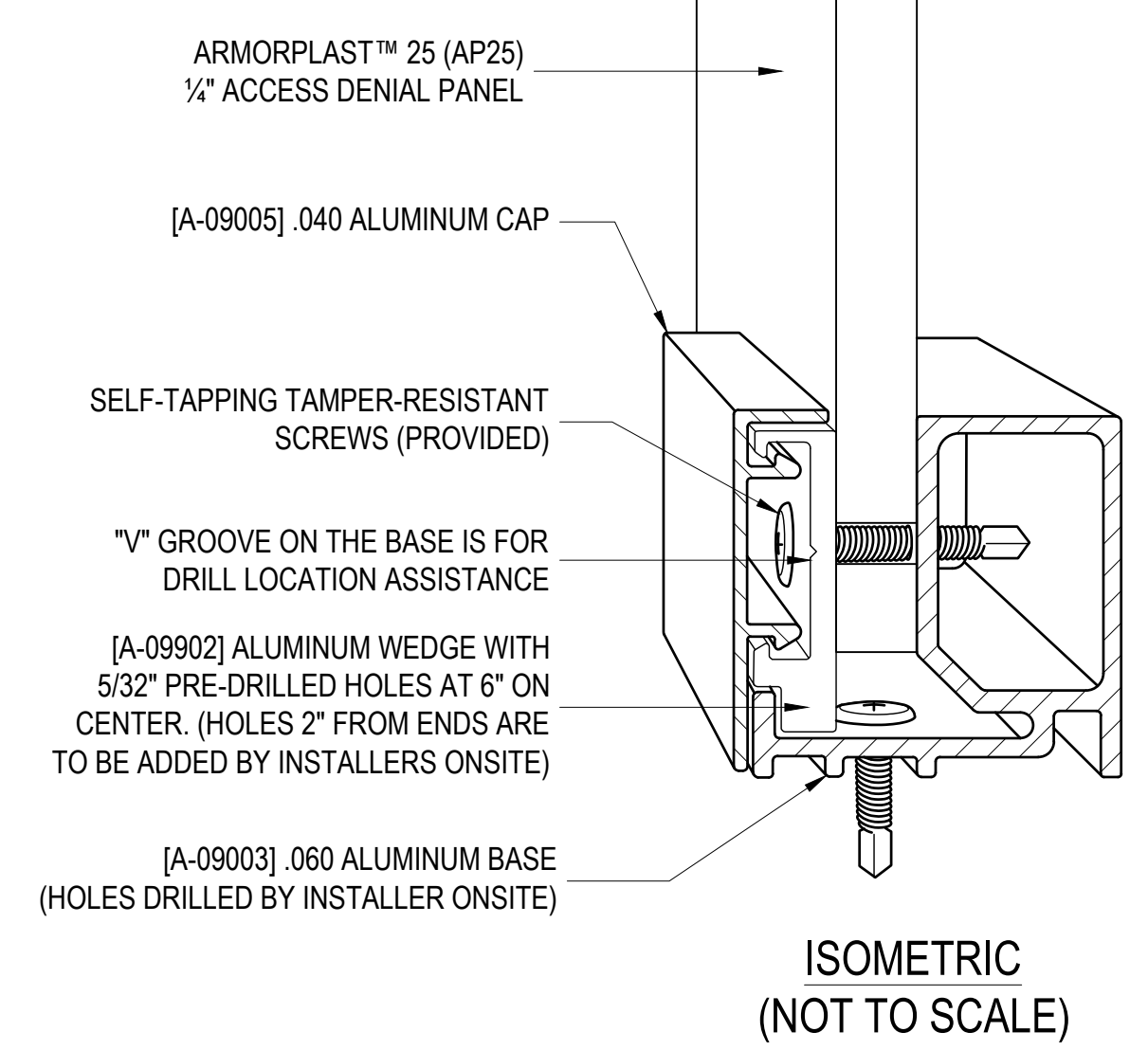
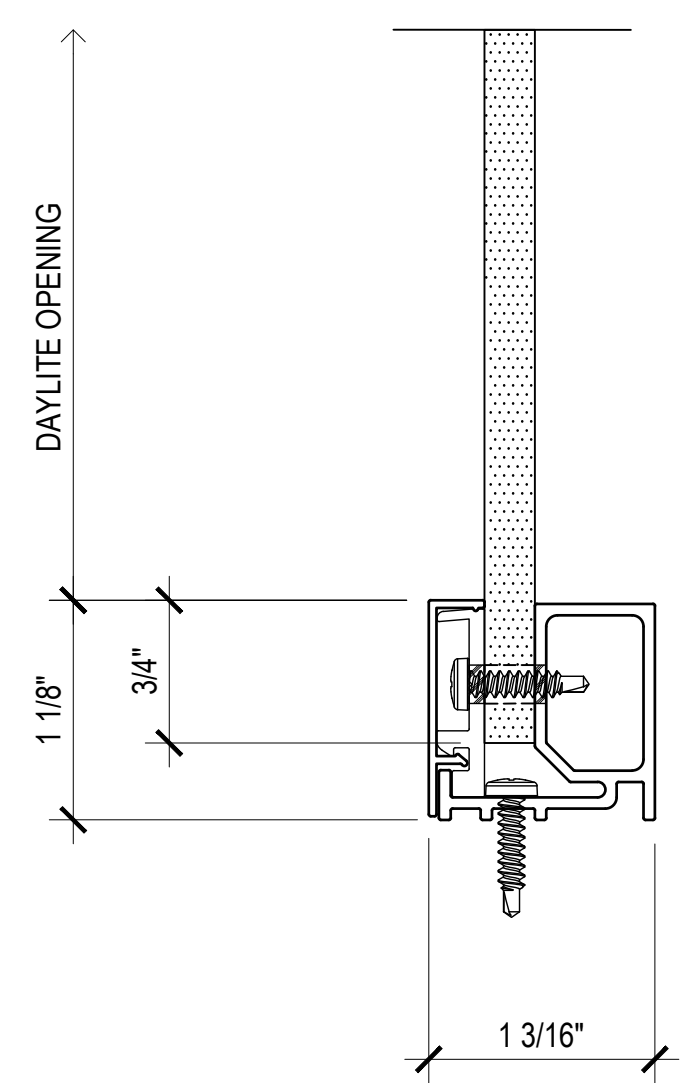
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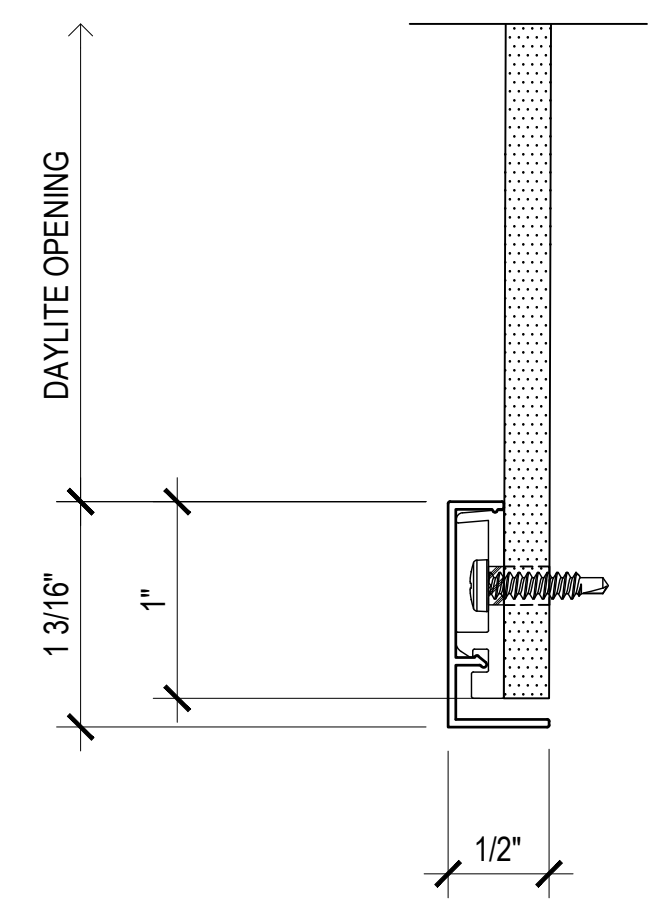
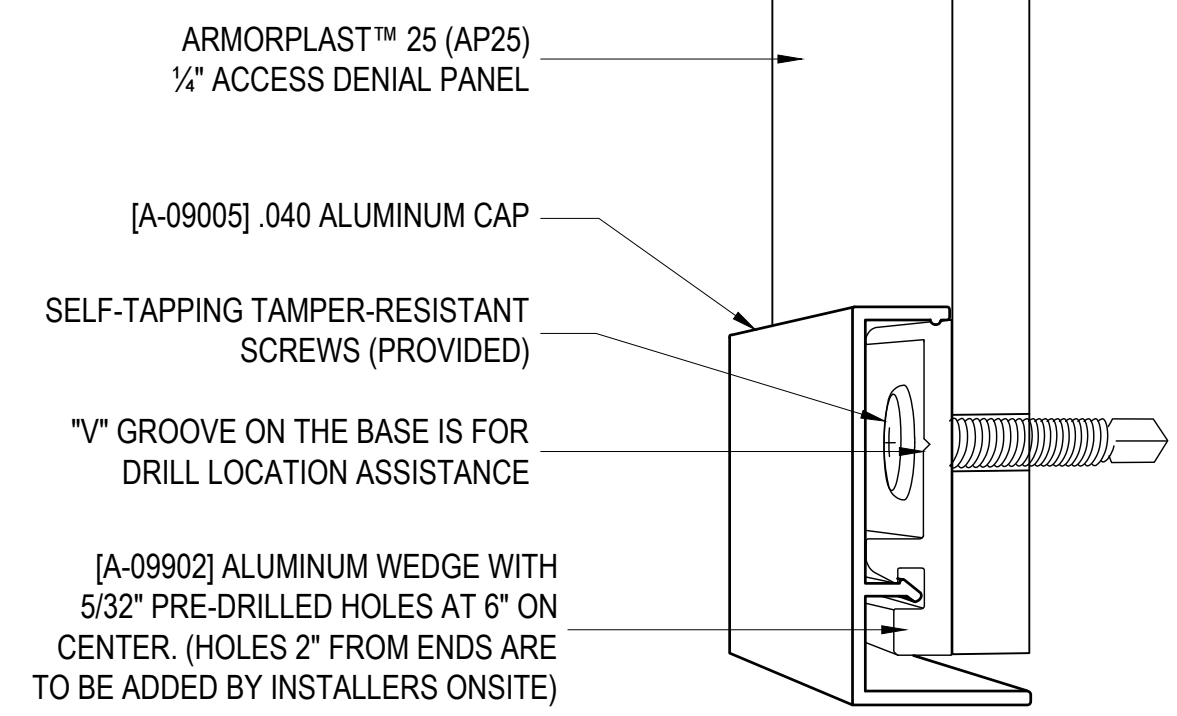
SECTION 12

DRAWINGS

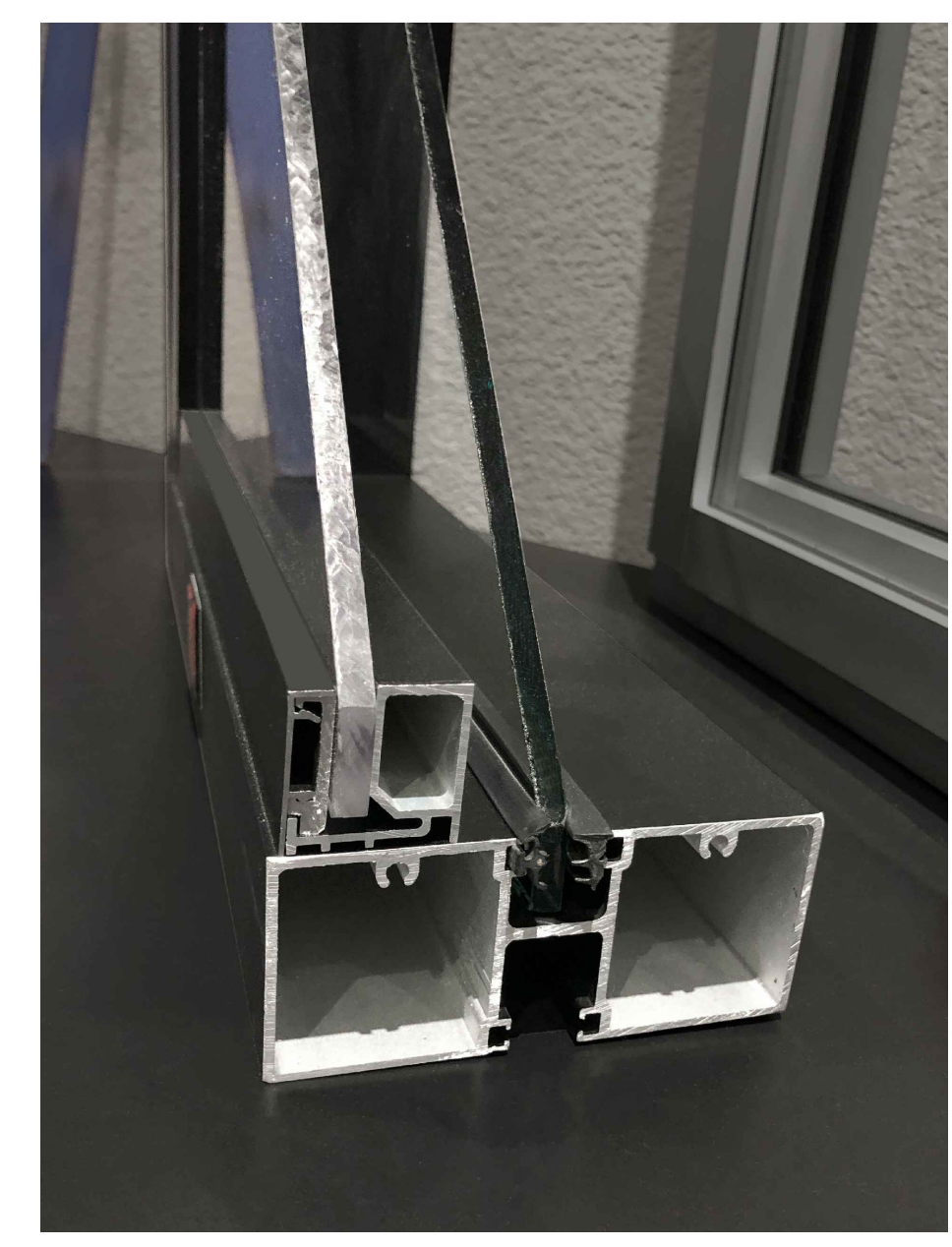
The test specimen drawings have been reviewed by Intertek B&C and are representative of the test specimen(s) reported herein. Test specimen construction was verified by Intertek B&C per the drawings included in this report. Any deviations are documented herein or on the drawings.



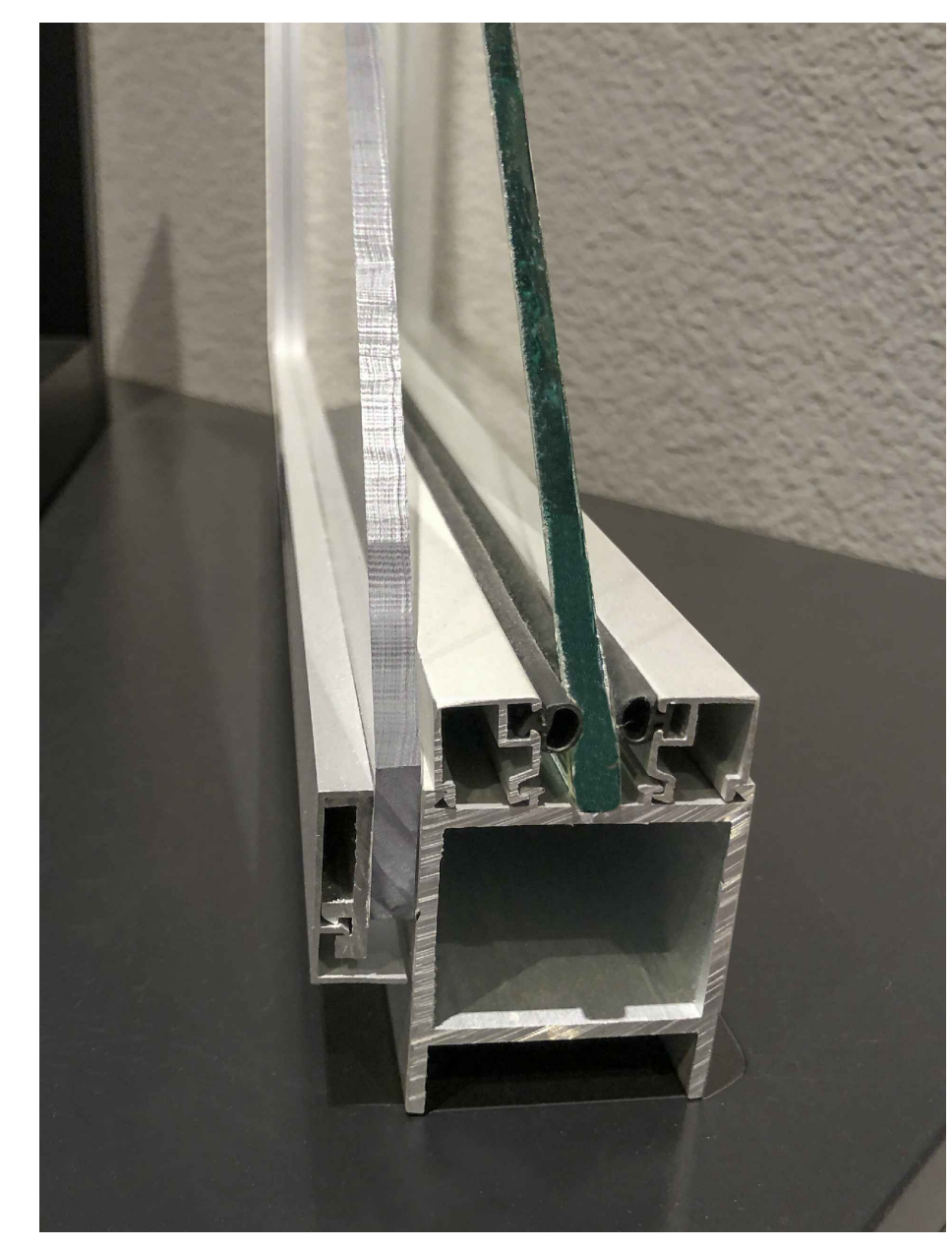
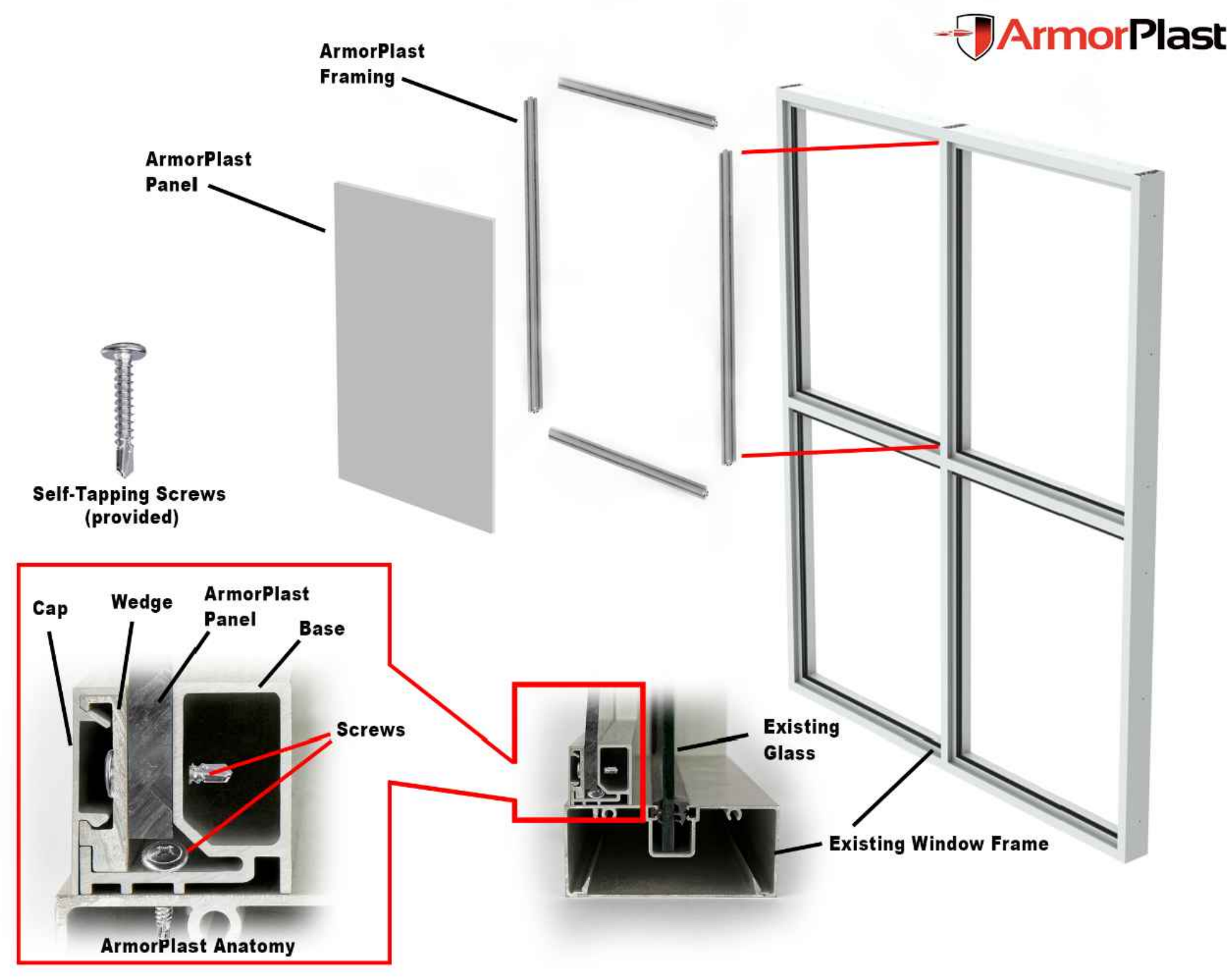
FULL FRAME



SURFACE MOUNT



FULL FRAME



SURFACE MOUNT

ARCHITECT OF RECORD'S APPROVAL

STRUCTURAL ENGINEER OF RECORD'S APPROVAL

STRUCTURAL ENGINEER'S APPROVAL

GENERAL CONTRACTOR'S APPROVAL

REVISIONS	BY
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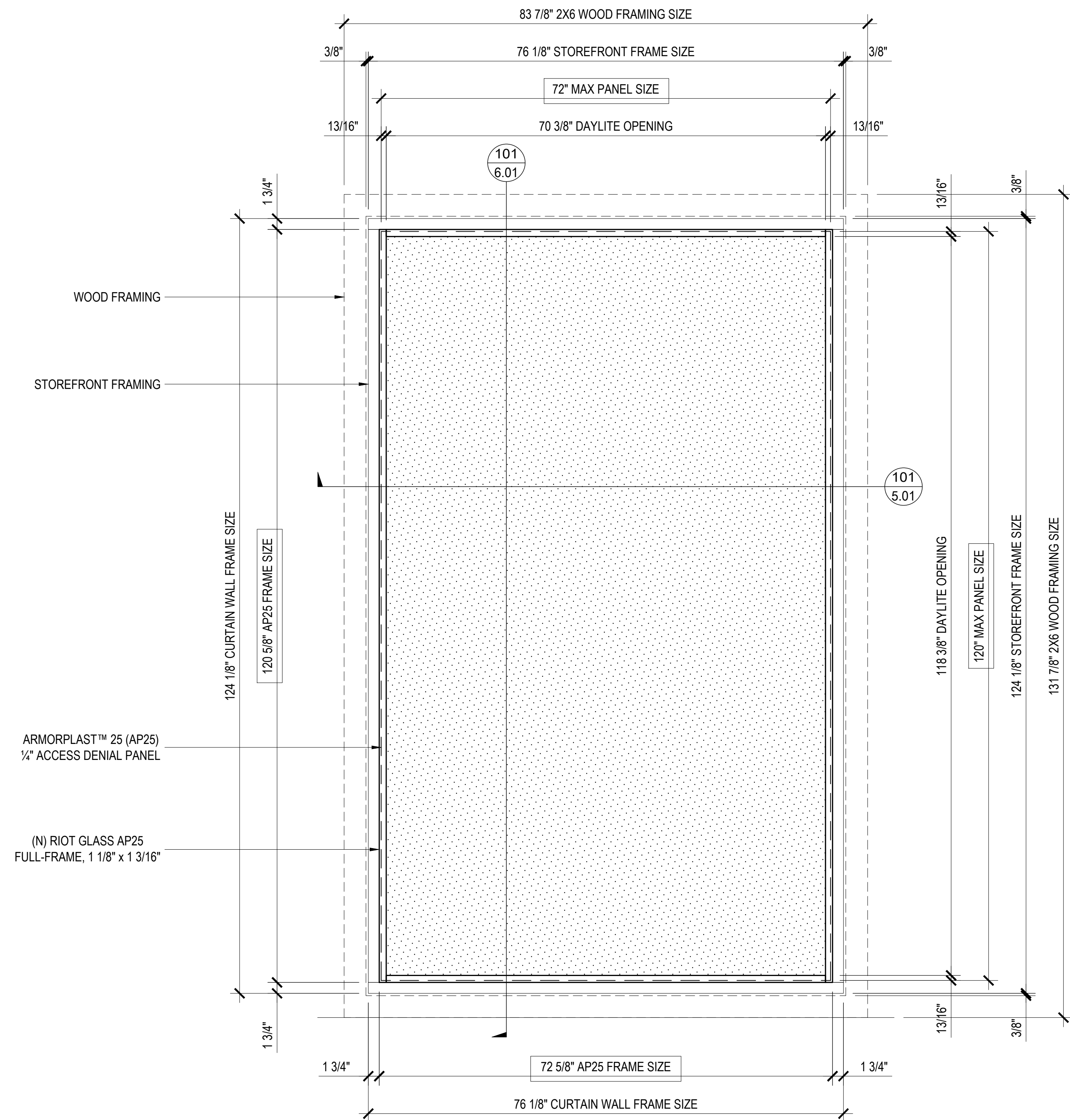
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RIOT GLASS
FRAMING DETAILS
AVAILABLE IN USA & CANADA

FULL FRAME
SURFACE MOUNT

DATE	1/15/2021
SCALE	N/A
DRAWN	TGM
JOB	N/A
SHEET	

THIS DRAWING IS NOT TO SCALE IF NOT PRINTED AT 100% OF SIZE



A	(E) STOREFRONT FRAMING
4 THUS	RIOT GLASS AP25 FULL-FRAME, 1 1/8" x 1 3/16"
	ARMORPLAST™ 25 (AP25) 1/4" ACCESS DENIAL PANEL
	FINISH TO BE DETERMINED

ARCHITECT OF RECORD'S APPROVAL

STRUCTURAL ENGINEER OF RECORD'S APPROVAL

STRUCTURAL ENGINEER'S APPROVAL

GENERAL CONTRACTOR'S APPROVAL

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STOREFRONT
ELEVATION
AP-25 FULL FRAME

DATE: 1/15/2021
SCALE: 1" = 1' - 0"
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JOB: N/A
SHEET:

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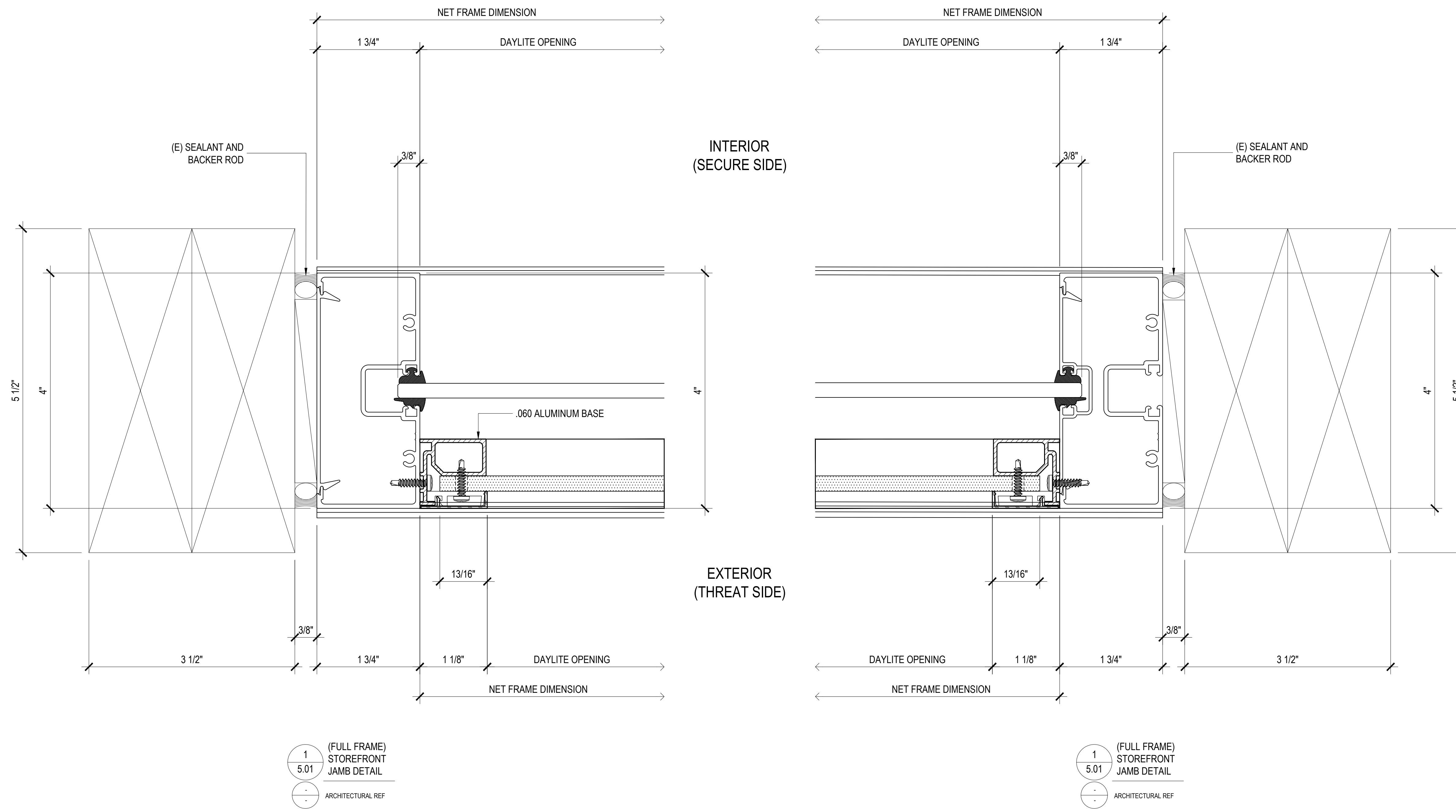
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STOREFRONT
DETAILS
AP-25 FULL FRAME

DATE: 1/15/2021
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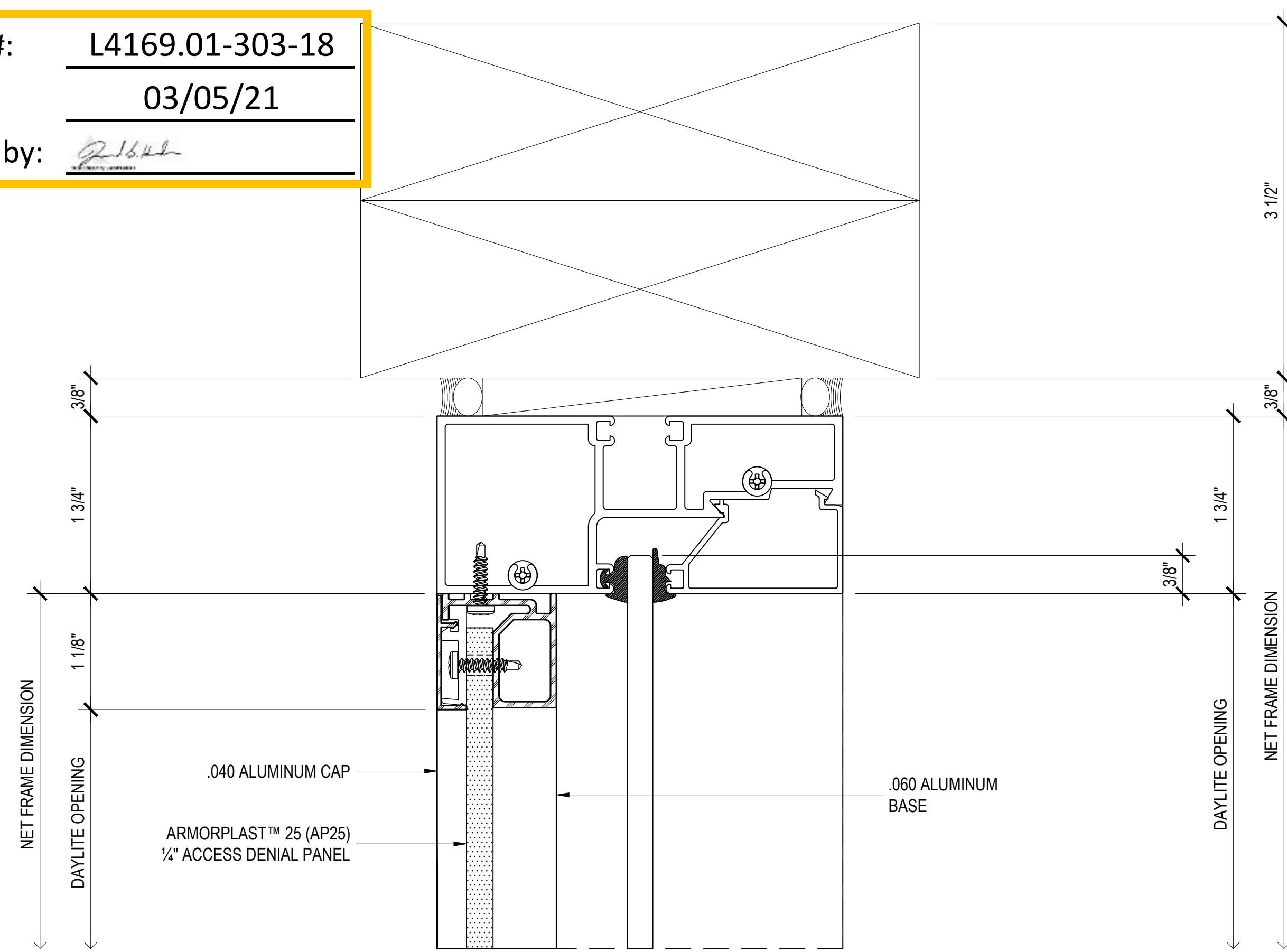
5.01



1 (FULL FRAME)
5.01 STOREFRONT
JAMB DETAIL
- ARCHITECTURAL REF

1 (FULL FRAME)
5.01 STOREFRONT
JAMB DETAIL
- ARCHITECTURAL REF

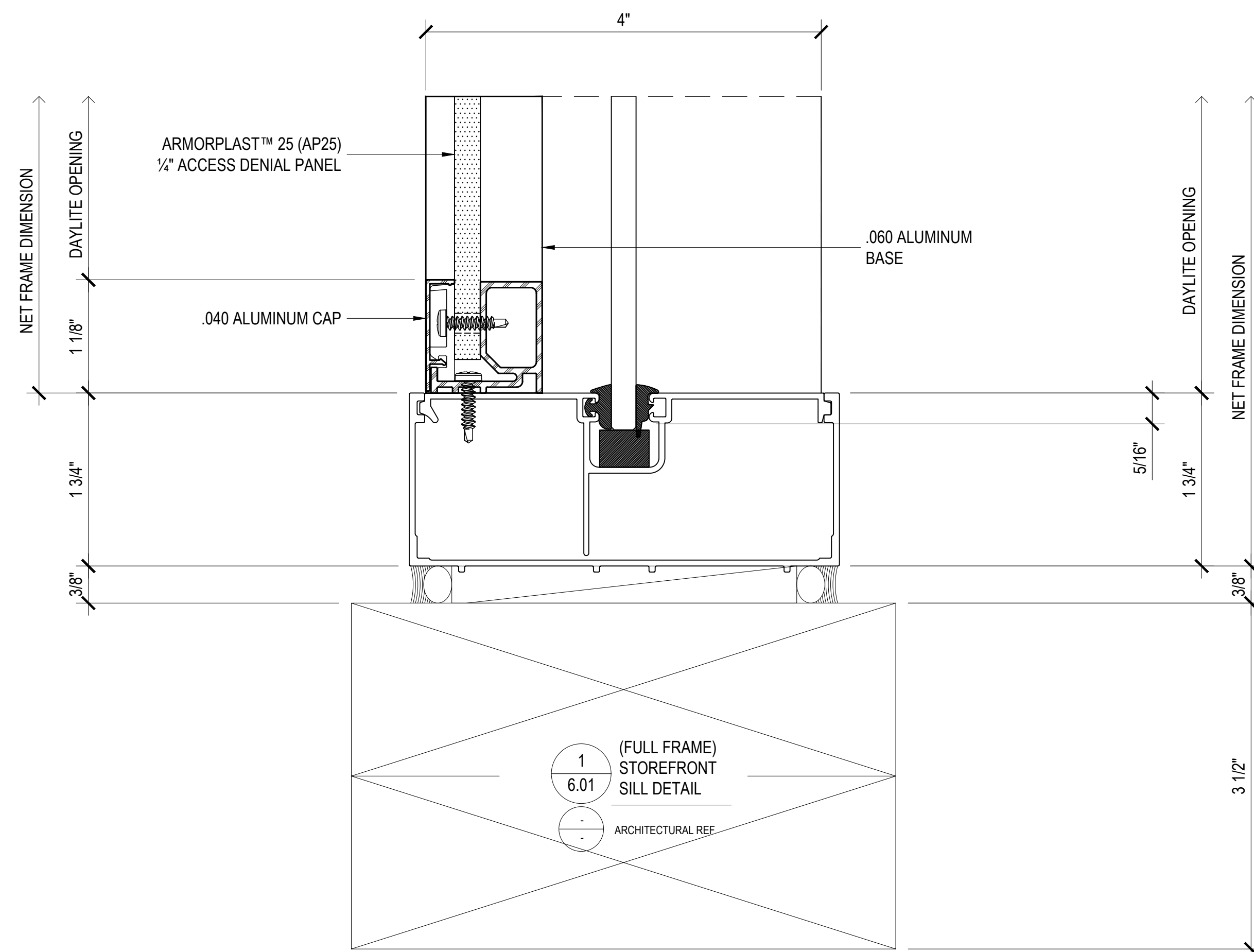
AP-25 FULL FRAME SYSTEM WITH SERIES 450 CENTER / INTERIOR GLAZED STOREFRONT SYSTEM



EXTERIOR
(THREAT SIDE)

1
6.01
ARCHITECTURAL REF

INTERIOR
(SECURE SIDE)



1
6.01
ARCHITECTURAL REF

AP-25 FULL FRAME SYSTEM WITH SERIES 450 CENTER / INTERIOR GLAZED STOREFRONT SYSTEM

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STOREFRONT
DETAILS
AP-25 FULL FRAME

DATE: 1/15/2021
SCALE: 1" = 0" = 1" - 0"
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JOB: N/A
SHEET:

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Date: 03/04/21

SECTION 13

REVISION LOG

REVISION #	DATE	PAGES	REVISION
0	03/04/21	N/A	Original Report Issue