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Test Report No: QA-5048-DW-A-Revision 1	**Issue Date: April 28, 2026**

SAMPLE ID: Acro Aluminum (2024) Ltd. 400T Series Out-Swing Side Hinged Door .

SAMPLE DESCRIPTION: Width: 1085 mm; Height: 2222 mm. See pages 6-7 for full description.

SAMPLING DETAIL: Test sample from Acro Aluminum (2024) Ltd. was submitted directly to QAI.

DATE OF RECEIPT: Test sample was received on December 16, 2025.

TESTING PERIOD: Testing was conducted December 17, 2025 – April 10, 2026.

TESTING LOCATION: QAI Laboratories Ltd., Burnaby, BC, Canada.

AUTHORIZATION: Proposal #QAI-2855, signed by Foad Raad, dated October 24, 2025.

TEST PROCEDURE: Testing was performed following the methods and requirements outlined in the following standards:

AAMA/WDMA/CSA 101/I.S.2/A440-22 NAFS – North American Fenestration Standard/Specification for windows, doors, and skylights.

CSA A440S1-25 – Canadian Supplement to NAFS 2022.

TEST RESULTS: The 400T Series Out-Swing Side Hinged Door has achieved the following classification and performance rating:

Class CW - PG35: Size tested 1085 x 2222 mm (~43 x 83 in) – Type LW - SHD

Detailed test results and product ratings are available on page 4.

CONTENTS: Test Report pages 1 through 27.

Prepared By

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Project Technologist

Signed for and on behalf of
QAI Laboratories, Ltd

Robbie Manuel
Fenestration Reviewer

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TEST CONDITIONS:

AAMA/WDMA/CSA 101/I.S.2/A440-22 NAFS and CSA A440S1-25

QAI Laboratories Ltd. (QAI) was retained by Acro Aluminum (2024) Ltd. to perform testing in accordance with the mandatory test requirements of AAMA/WDMA/CSA 101/I.S.2/A440-22 NAFS and CSA A440S1-25 on a representative sample of a 1085 mm x 2222 mm 400T Series Out-Swing Side Hinged Door .

This report includes tests performed on a specimen of specific dimensions. Actual product performance may be affected by variations in the windows dimensions, assembly details and installation methods. The drawings supplied by the client were verified by QAI for the window unit tested and are shown in Appendix A.

Installed by: Acro Aluminum (2024) Ltd.
Installation details:

- A 3” × 1” aluminum L-angle was used as a nailing flange at the jambs. The nailing flange was fastened to the test buck with #10 × 1-1/2” self-tapping countersunk screws spaced approximately 24” on center, and to the test sample with #8 × 1” self-drilling countersunk screws spaced approximately 8” on center and covered with a strip of burial tape.
- The threshold was fastened to the test buck with four #10 x 1-1/2” self-tapping countersunk screws, these screws were sealed with silicone underneath the threshold.
- A silicone bead was applied around the perimeter of the window between the frame profile, the threshold, and the test buck on both the interior and exterior sides.
- A 3/4” diameter backer-rod was used in the exterior and the interior perimeter of the main thermally broken aluminum frame.
- A 1” x 1” of expanded polystyrene was used in the interior perimeter of the thermally broken aluminum sub-frame.

Wooden test buck details:

- Inner frame: nominal 2” x 6” stud framing.
- Outer frame: nominal 2” x 12” stud framing.
- Rough opening: The rough opening is 1/4” larger than the test specimen in width and height.
- Shims: The sample was supported on the sill by two sets of parallel 3/8” thick U-shaped plastic shims, fixed in place with silicone and spaced approximately 10” on center.

PRODUCT RATINGS:

Table 1: Summary of Test Results

Test Name	*AAMA/WDMA/CSA 101/I.S.2/A440-22 NAFS* and *CSA A440S1-25* Results:
Operating Force Test (Clause 8.3.1)	Max. allowable force to open/close latching devices: 100 N (~22.5 lbf) Force to open/close latching device: Avg. force to open latching device = 37.2 N (~8.4 lbf) Avg. force to close latching device = 43.3 N (~9.7 lbf) Overall result - Pass requirements for CW classification.
Air Leakage Resistance Test (ASTM E283)	Pressure differential = 75 Pa Infiltration result = 0.353 L/s/m² (0.069 cfm/ft²) Exfiltration result = 0.871 L/s/m² (0.171 cfm/ft²) Max. allowable air leakage at ±75 Pa for CW Class = 1.000 L/s/m² (0.200 cfm/ft²) Overall result – Pass requirements for CW classification.
Water Penetration Resistance Test (ASTM E547)	Maximum pressure differential = 0 Pa (DP LW – ~0.00 psf)
Uniform Load Deflection Test at Design Pressure (ASTM E330 – Procedure A)	Design pressure = 2400 Pa (DP 50 – ~50.13 psf) Maximum pressure differential = 2520 Pa (~52.63 psf) Maximum deflection at test pressure = 4.67 mm (~0.184”) Max. L/175 deflection limit for LC Class = 12.62 mm (~0.497”) The deflection measurement was taken along the locking side stile.
Uniform Load Structural Test at 150% Design Pressure (ASTM E330 – Procedure A)	Design pressure = 1680 Pa (DP 35 – ~35.09 psf) Maximum pressure differential = 2520 Pa (~52.63 psf) Maximum deformation after test pressure = 0.15 mm (~0.006”) Maximum L*0.3% deformation limit for CW Class = 6.63 mm (~0.261”)
Forced Entry Resistance Test (AAMA 1304)	Pass
Vertical Loading Resistance Test (Clause 6.2.6.3)	Load applied = 1112 N (~250.0 lbf) Overall result - Pass
Operation / Cycle Performance (Clauses 6.2.6.2)	Number of cycles required for CW class - 250,000 cycles Overall result - Pass

Table 2. Product Classification to NAFS 2022 and to CSA A440S1-25

400T Series Out-Swing Side Hinged Door	
Maximum Size Tested: **Performance Classification:** **Performance Grade:** **Product Type:**	1085 mm wide x 2222 mm tall (~43 x 83 in) CW PG35 LW - SHD
Primary Designator: Class CW - PG35: Size tested 1085 x 2222 mm (~43 x 83 in) – Type LW - SHD	
Secondary Designator: Positive ASD Design Pressure (DP) = 1680 Pa (~35.09 psf) Negative ASD Design Pressure (DP) = -1680 Pa (~-35.09 psf) Water Penetration Resistance Test Pressure = 0 Pa (~0.00 psf) Air Infiltration / Exfiltration = Pass	

Notes:

- *AAMA/WDMA/CSA 101/I.S.2/A440-22 NAFS*, Clause 8.2.4: The air, water, and structural tests required by this Standard/Specification shall be performed on test specimens installed in a laboratory test fixture that permits installation in accordance with the manufacturer's documented instructions. The test protocols are intended to permit the evaluation of the fenestration product performance alone rather than the performance of the installation, particularly the perimeter sealants between the fixture and the test specimen and the anchoring of the test assembly to the test fixture.
- Products not installed according to the installation method described in this report may not perform to an equivalent performance level.
- Testing records will be retained by QAI Laboratories for a period of minimum of four years from the original test date.

Table 3. Product Description

400T Series Out-Swing Side Hinged Door		
Frame:	Description:	Head and Jambs: • Main Frame: Thermally broken aluminum main frame profile. • Sub Frame: Thermally broken aluminum sub-frame profile. Sill: Aluminum threshold profile. Three lengths of a two-part extension profile were fastened to the head and jambs on the operable side with #10 × 2” self-drilling pan-head screws spaced approximately 10” on center, with a silicone bead applied along the edges. Three additional lengths of a two-part extension profile were fastened to the head and jambs on the interior side with the same fasteners and spacing, with a silicone bead applied along the edges. Frame dimensions: Width: 1085 mm; Height: 2222 mm.
	Joints:	Frame members were butt-joined. The head was fastened to the vertical members with a custom corner key at each end. Each corner key was inserted into the mid-cavity of the vertical member and fastened to the head with two #12 × 2” self-tapping countersunk screws through the exterior side of the frame. An alignment adapter was used at each end and fastened to the horizontal member with three #10 × 2” self-drilling pan-head screws.
	Reinforcement:	None
Door Slab:	Description:	Thermally broken aluminum door slab profile. An aluminum door sweep was installed along the interior side of the bottom rail and fastened with #6 x 5/8” self-tapping panhead screws approx. 5” on center. Door slab dimensions: Width: 903 mm; Height: 2113 mm.
	Joints:	Door slab members were butt-joined. Each horizontal member was fastened to the vertical members with a custom corner key at each end. Each corner key was inserted into the mid-cavity of the horizontal member and fastened with four #10 × 1” self-drilling countersunk screws to the horizontal member and with two of the same screws to the vertical members at each corner.
	Reinforcement:	None.
Weather-stripping:	Frame:	Four strips of EPDM bulb weather-stripping gasket, part #2397, were inserted into the interior-most T-slot of the two-part extension profile that is installed on the operable side of the head and jambs, and on the innermost T-slot of the threshold. The gasket is butt joined at the corners. Two strips of EPDM weather-stripping gasket were inserted into the interior-most T-slot of the two-part extension profile that is installed on the interior side of the head and jambs.
	Door-Slab:	Two 10 mm wide mohair weather-stripping gasket were inserted into the two T-slot of the locking side stile profile. One length of an EPDM bulb weather-stripping gasket was inserted in the T-slot of the aluminum door sweep profile at the interior face of the bottom rail.

400T Series Out-Swing Side Hinged Door (continued)		
Glazing Method:	Interior Seal: (Glazing Bead & Glazing Gasket)	An aluminum glazing bead profile was used to secure the IGU from the interior side. Four lengths of glazing bead are installed around the perimeter of the door-slab. Each length is butt joined at the corners. Four lengths of EPDM glazing gasket, part #RG12100, are installed between the glazing bead and the IGU. These gaskets are butt joined at the corners.
	Exterior Seal: (Glazing Bead & Glazing Gasket)	An aluminum glazing bead profile was used to secure the IGU from the interior side. Four lengths of glazing bead were installed around the perimeter of the door slab. Each length was butt-joined at the corners. Four lengths of EPDM glazing gasket, part #2086, were installed between the glazing bead and the IGU. These gaskets were butt joined at the corners.
	Setting Blocks:	4” x 1” x 1/4” EPDM setting blocks were used around the IGU and distributed as follows: • Locking side Stile: One setting block was centered at 5” of the interior face of the top rail. • Hinged Stile: One setting block was centered at 5” of the interior face of the bottom rail. • Bottom rail: One setting blocks were centered at 4” of the interior face of the hinged side stile. • Top rail: None.
Glazing:	Description:	Two tempered glass panes with a thickness of 6 mm each. Overall IGU thickness of 26 mm. Glazing bite depth of 19.61 mm. IGU dimensions: Width: 712 mm; Height: 1897 mm.
Drainage:	Frame:	None
	Door-Slab:	None
Hardware:	Lock:	The single-point locking system includes a hook latch and an operator. The hook latch is located on the locking side of the sash and aligns with the corresponding keeper.
	Keeper:	A 2-1/2” x 5/8” slot was machined through the left jamb (interior view) and used as a keeper.
	Handles:	A 1” diameter, 9” long tube handle was installed on both sides of the door, passing through the locking-side stile and sealed with silicone. The handles were centered at 40” from the outer edge of the top rail of the door slab.
	Thumb Turn	One thumb turn was integrated into the door locking system of the door slab and centered at 50” from the outer edge of the top rail.
	Hinge:	A continuous gear hinge was fastened to the frame with sixteen #12 × 1” self-drilling countersunk screws and to the door slab with the same number of screws.

TEST SAMPLE MODIFICATIONS:

To achieve the reported air leakage test results, the client changed the frame’s weather-stripping gasket.

CONCLUSION / FINDINGS:

QAI Laboratories Ltd. has performed testing in accordance with AAMA/WDMA/CSA 101/I.S.2/A440-22 NAFS and CSA A440S1-25 requirements, on a representative sample of a Acro Aluminum (2024) Ltd. 400T Series Out-Swing Side Hinged Door . Testing was performed at the Burnaby, BC location.

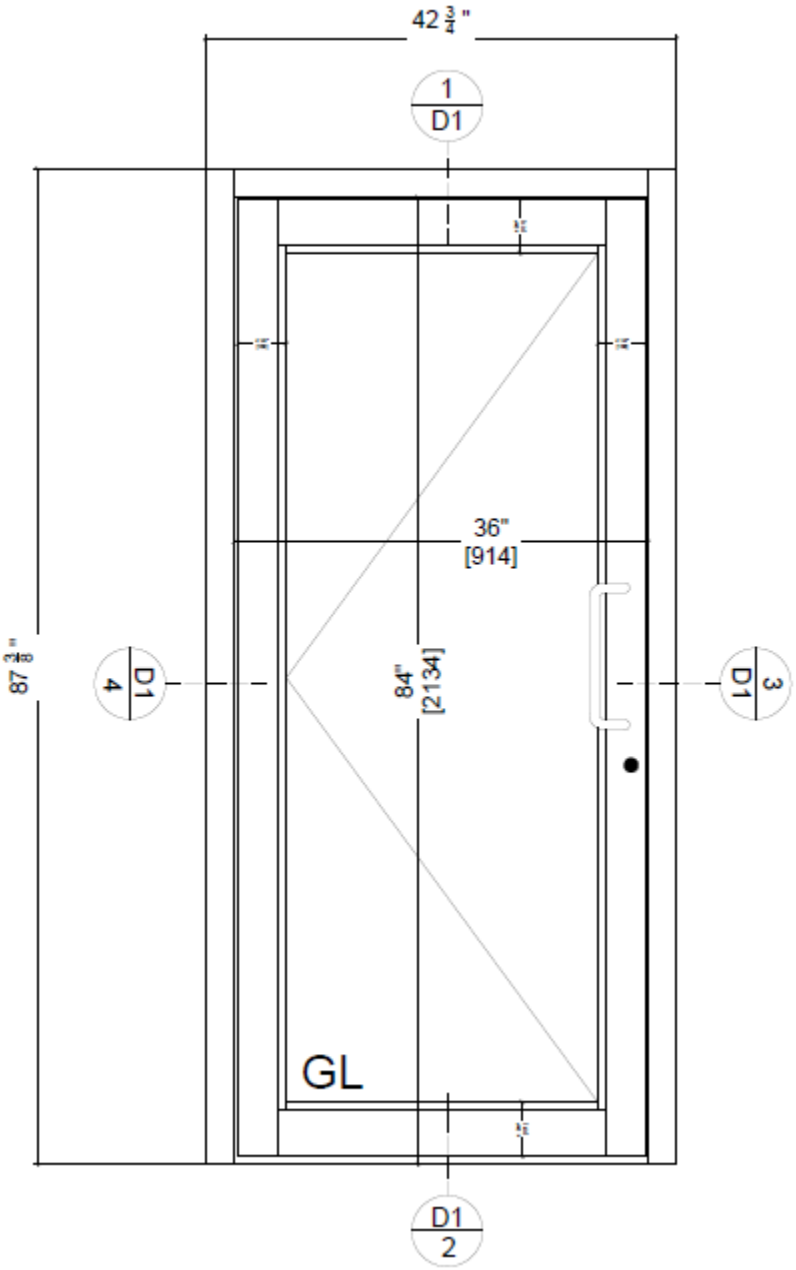
Test results in this report may not be reproducible in the field. Test results relate only to those products tested.

See Table 1 and Table 2 for a summary of test results and window ratings. The tested sample was found to comply with the applicable requirements and obtained test results as reported in Table 1 of this report.

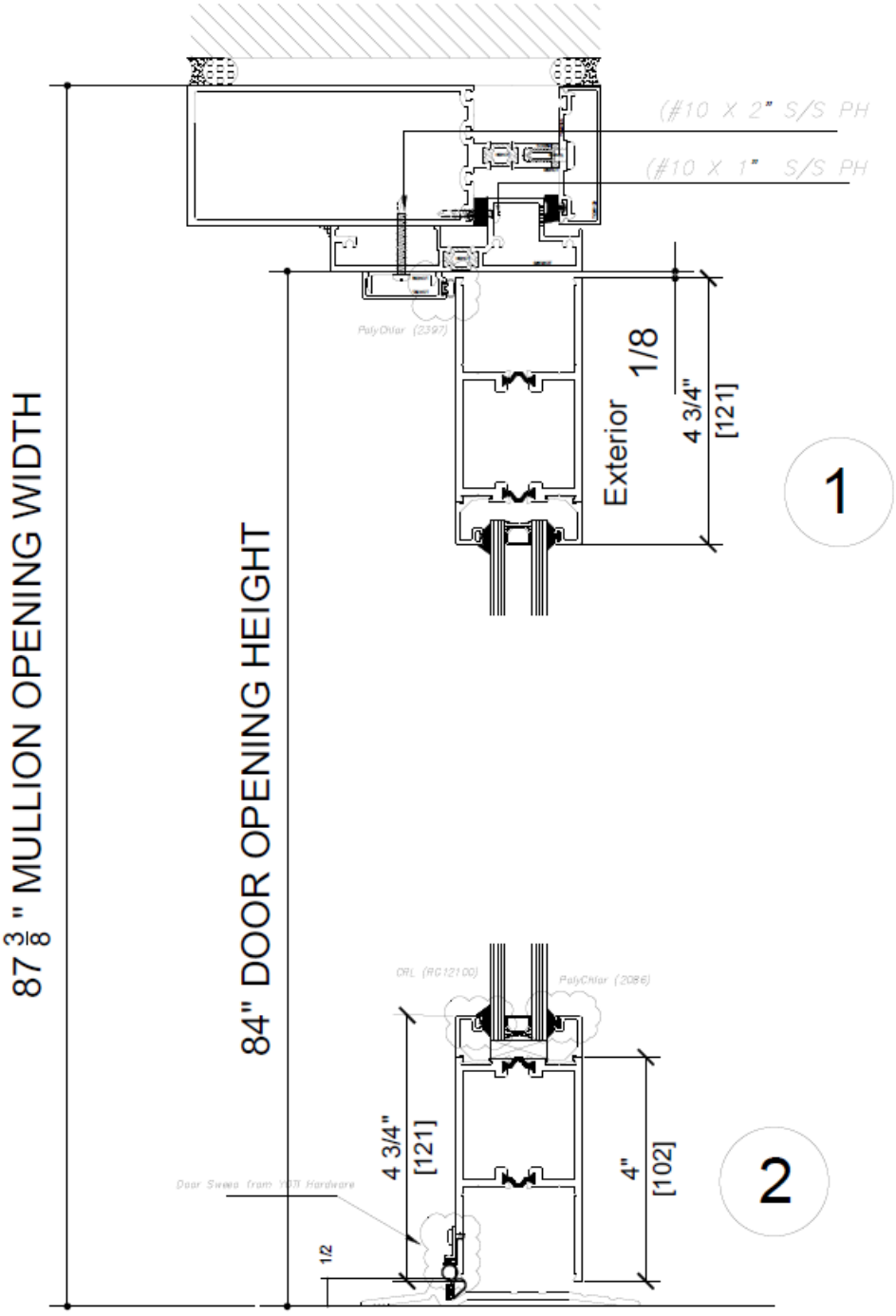
APPENDIX A

(Drawings and photographs specifications)

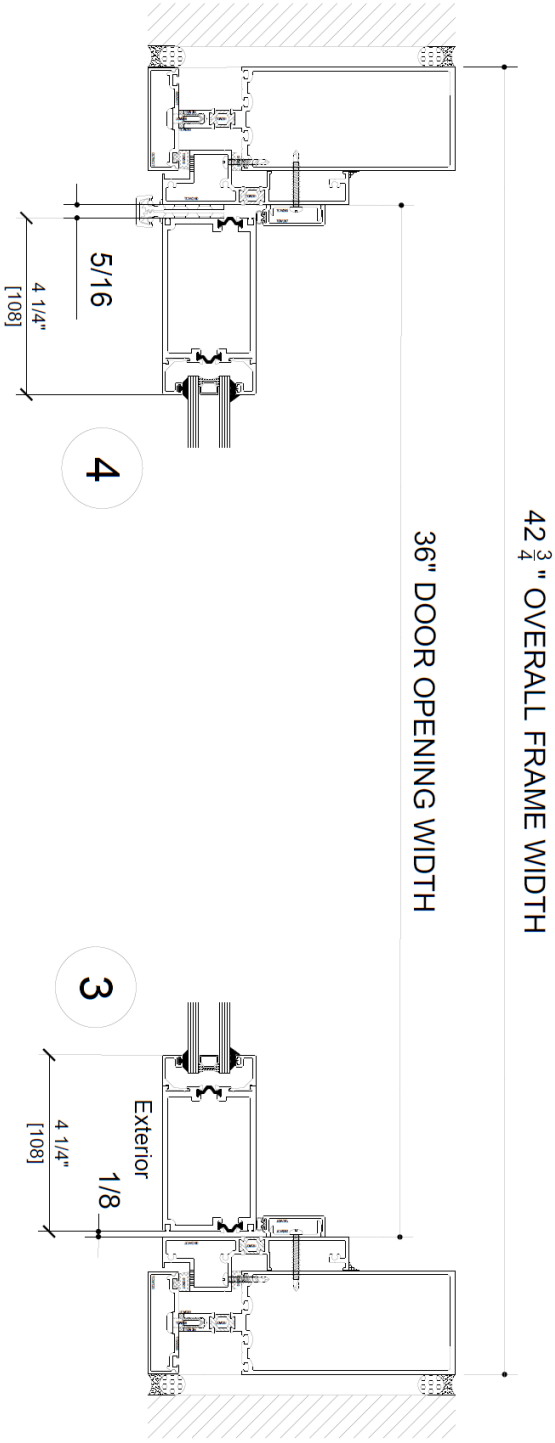
Elevation Drawing



Cross-Section Assembly Drawings

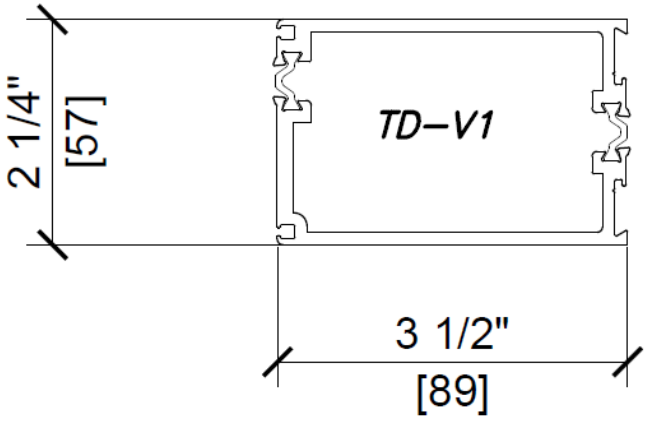


Vertical Cross-Section Assembly 1-3

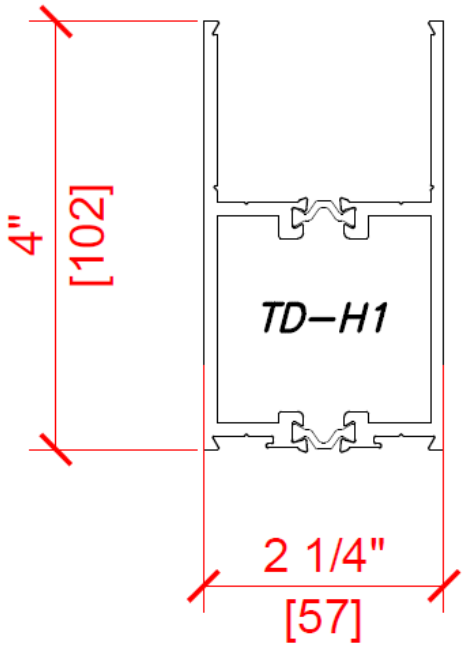


Horizontal Cross-Section Assembly 2-4.

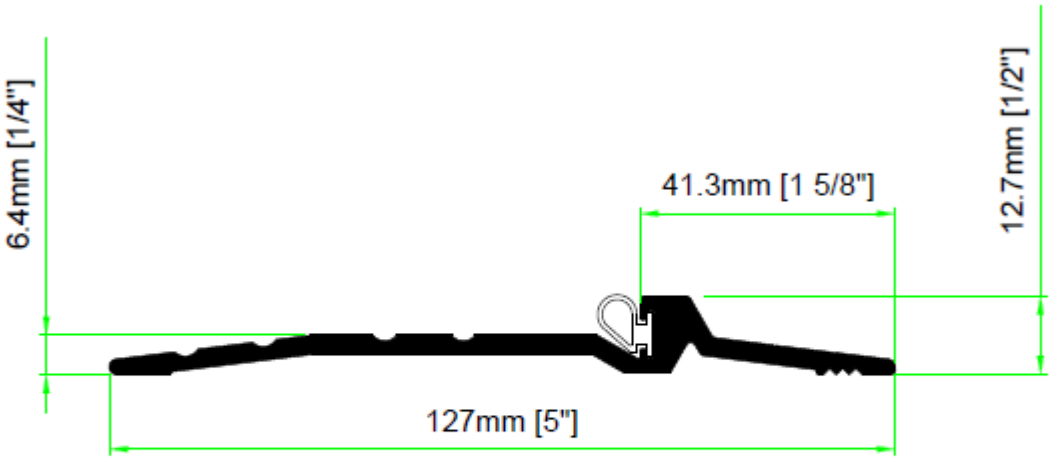
Dimensioned Die Drawings



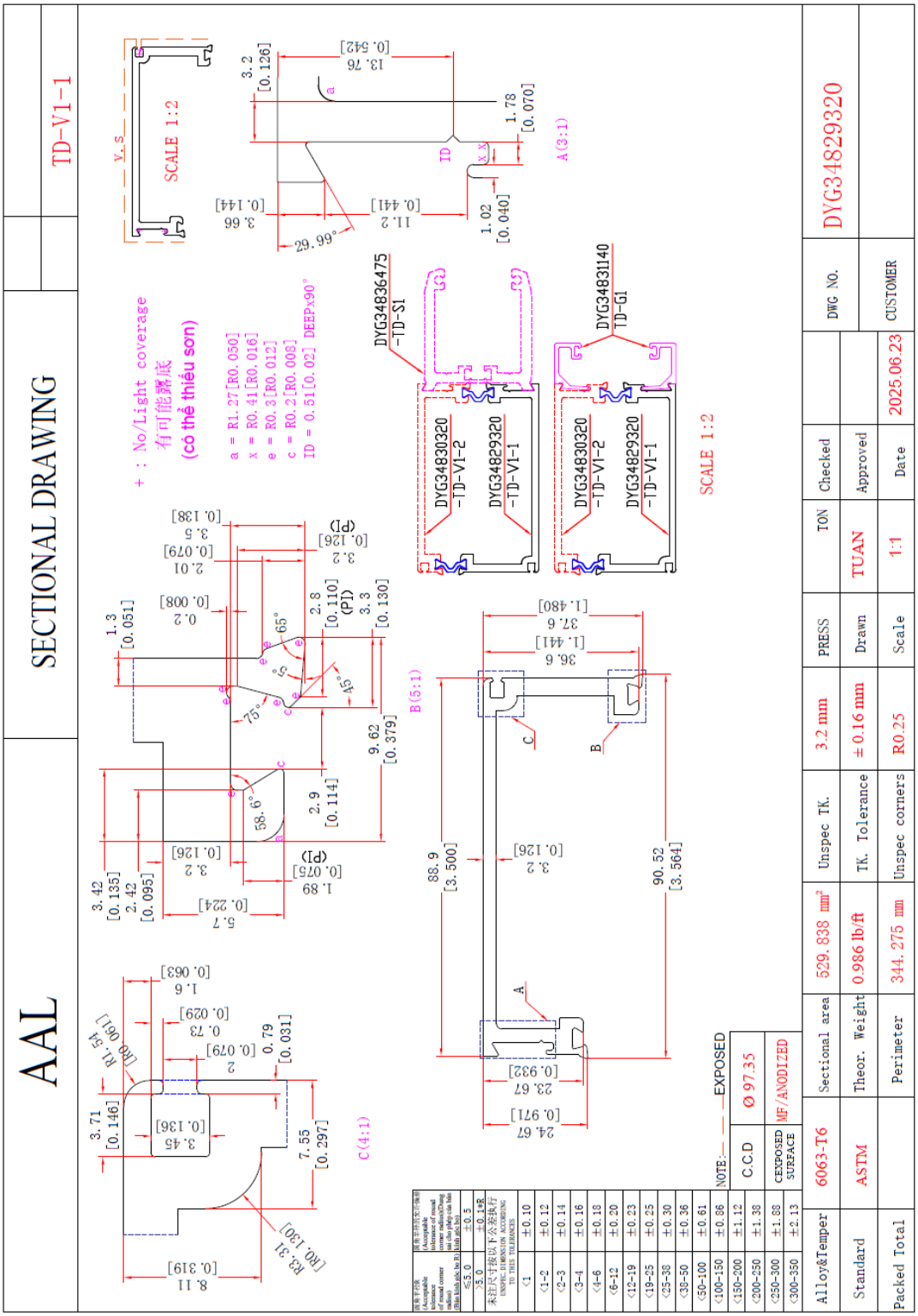
Vertical Rail(Lock & Hinge Stile)

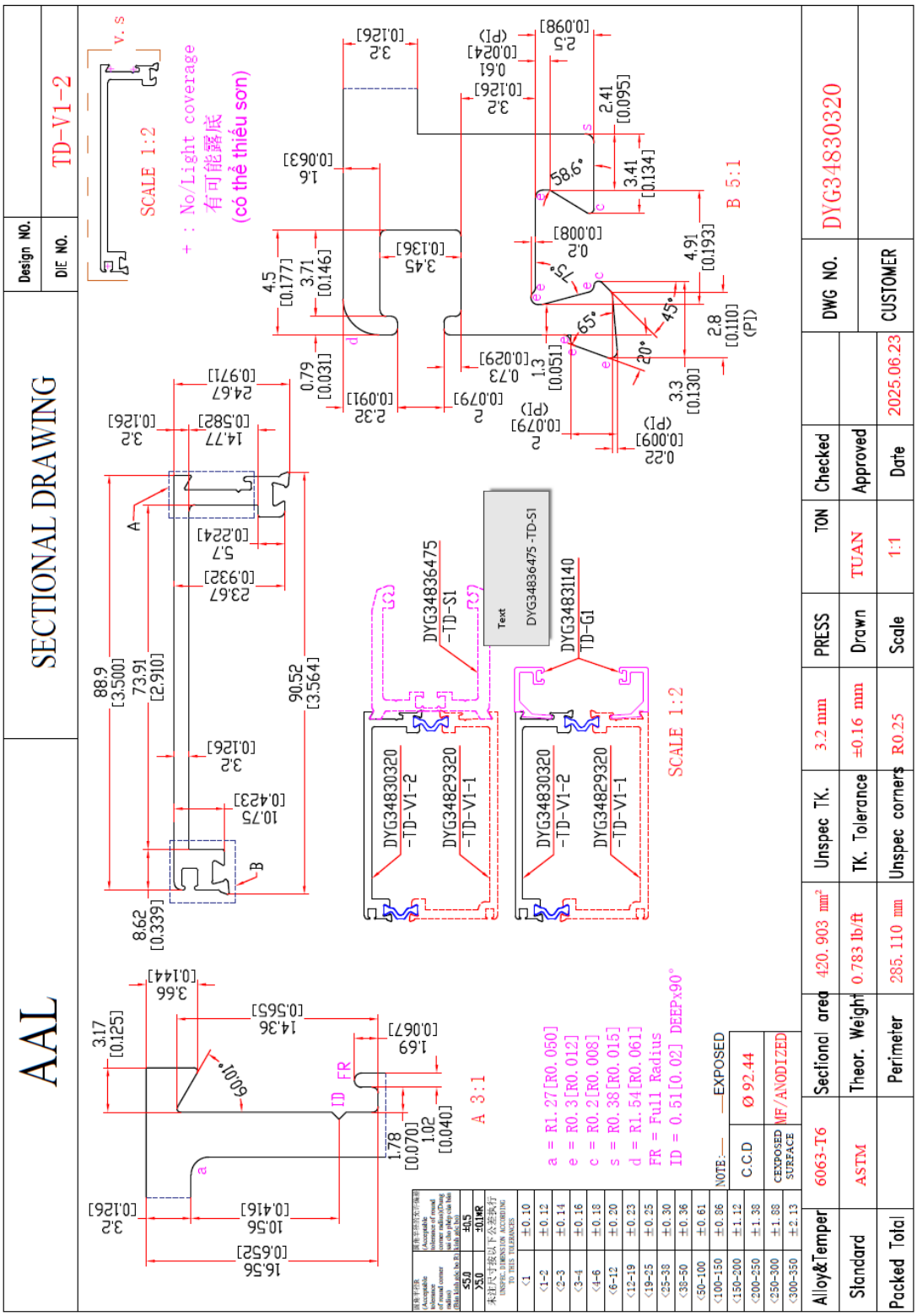


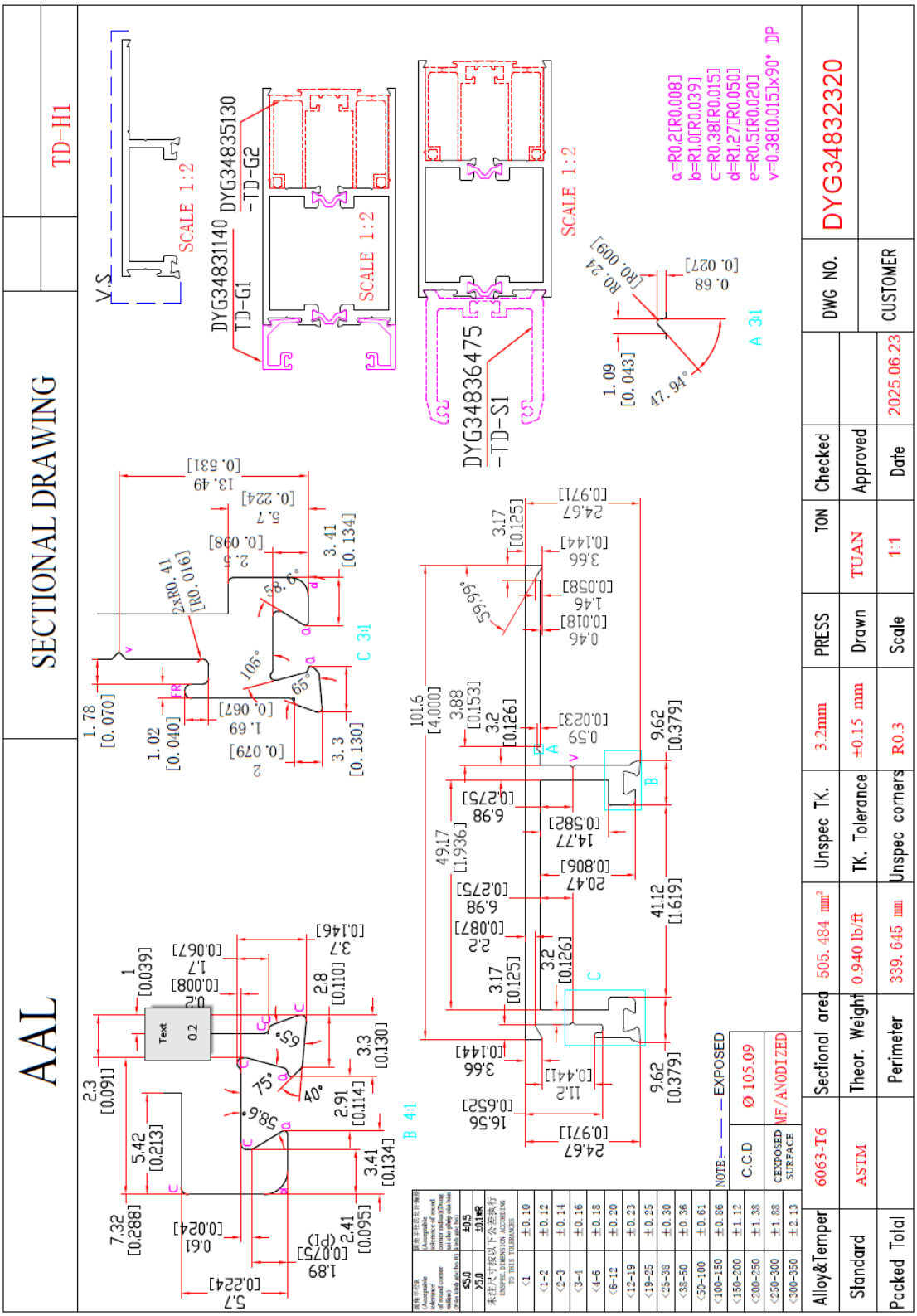
Horizontal Rails (Top & Bot.)

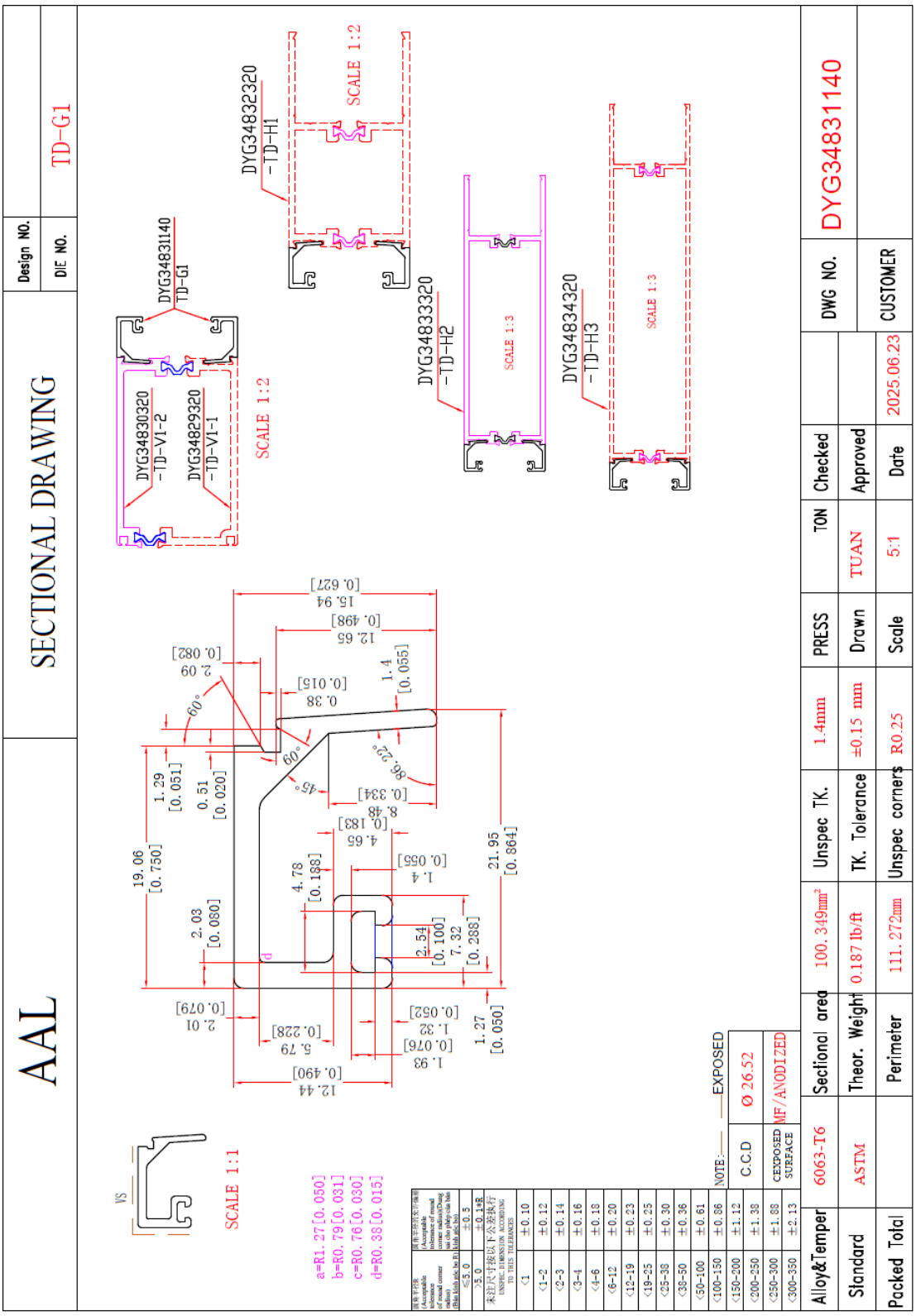


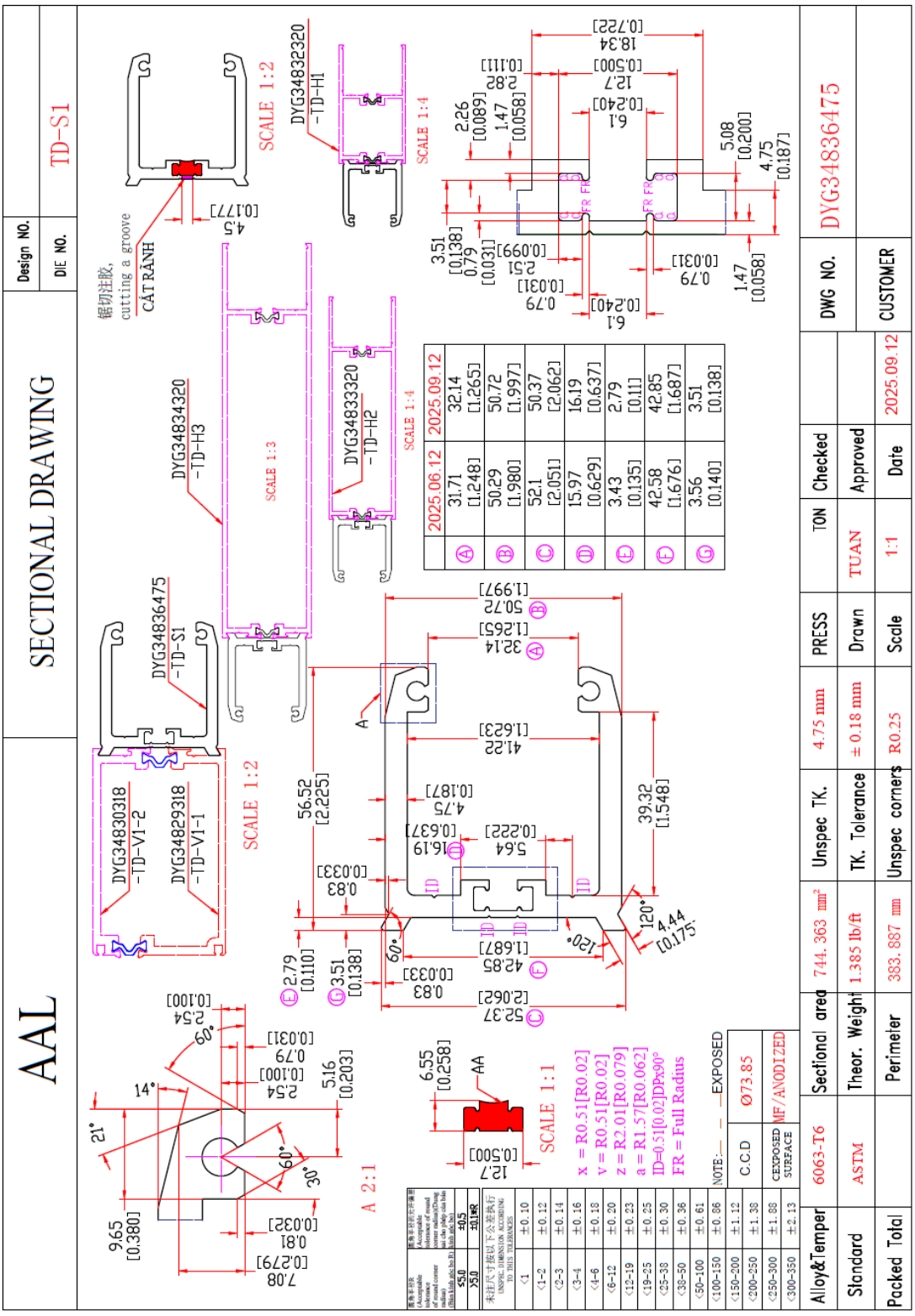
DRAFTSEAL THRESHOLD



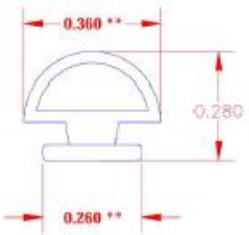




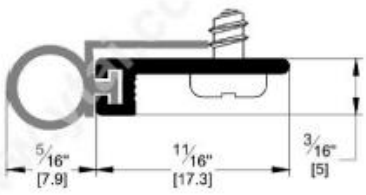




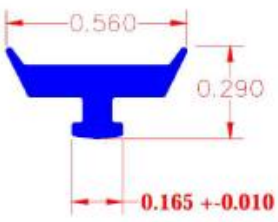
PolyChlor (2397)



Door Sweep from YOTI Hardware



PolyChlor (2086)



Sample Photographs

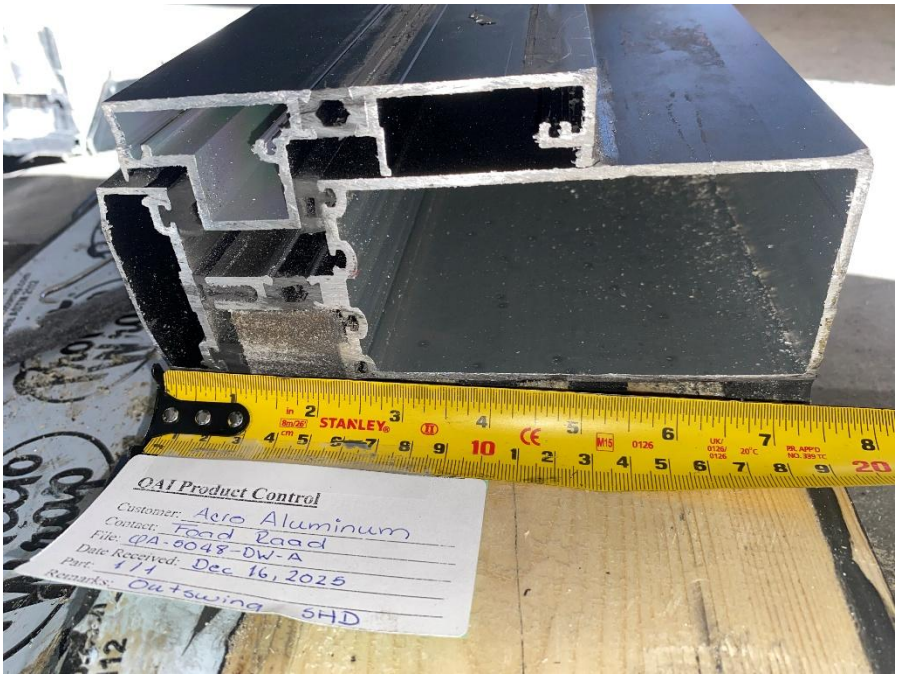


Figure 1: Frame and sub frame profiles.

Figure 2: Top and bottom rail profile.

Figure 3: Stile profile.

Figure 4: Glazing bead profile.

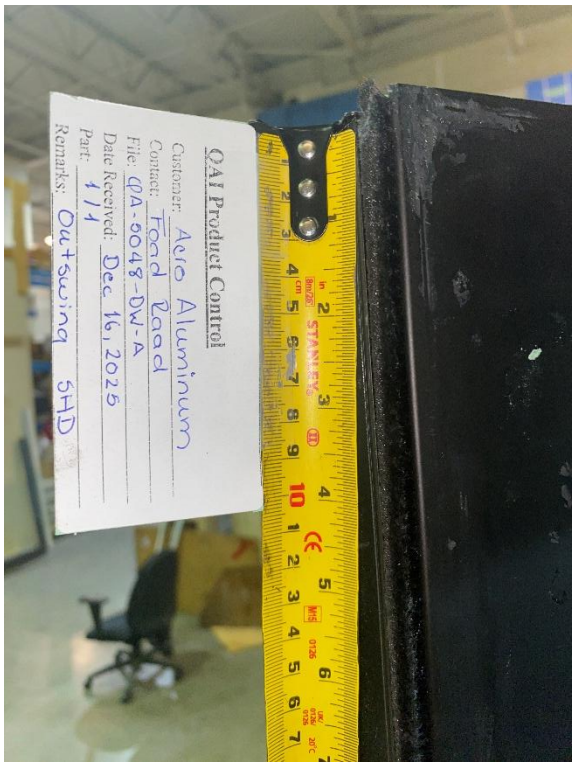


Figure 5: Weather stripping mohair gasket.

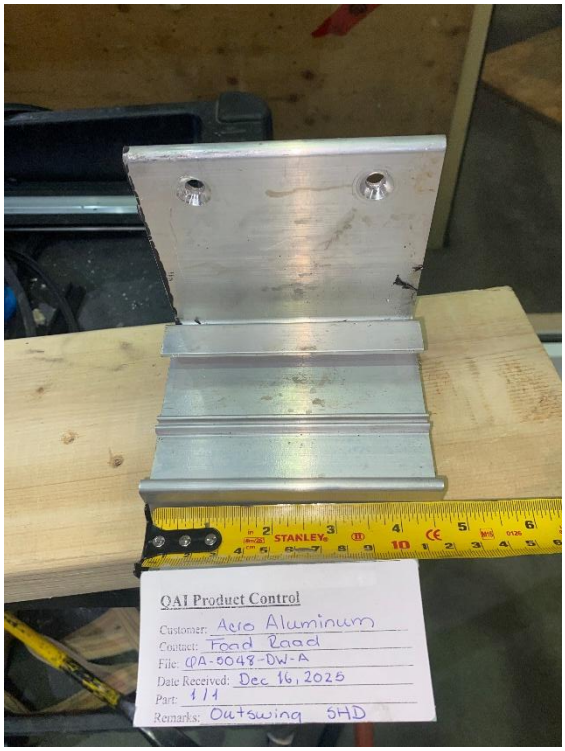


Figure 6: Frame corner key.

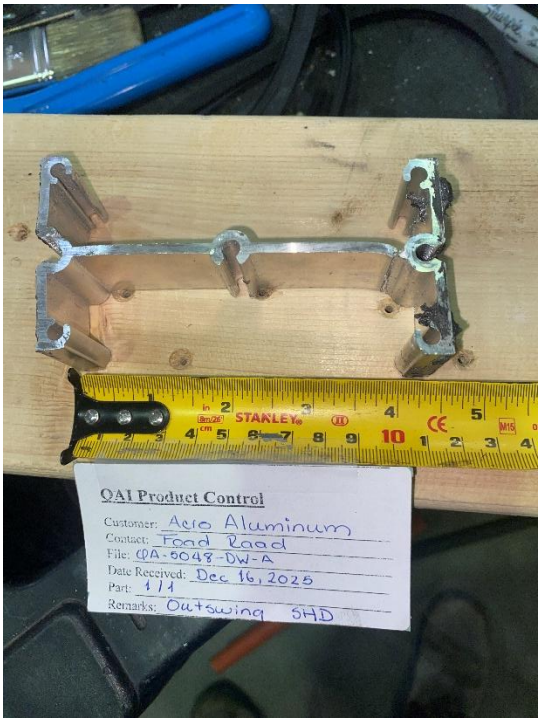


Figure 7: Frame alignment adapter.

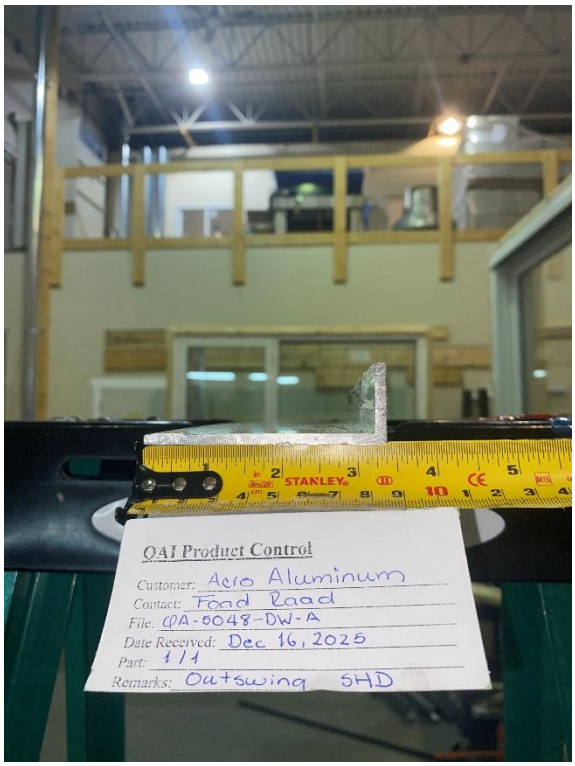


Figure 8: L-angle.

Figure 9: Door slab corner key.

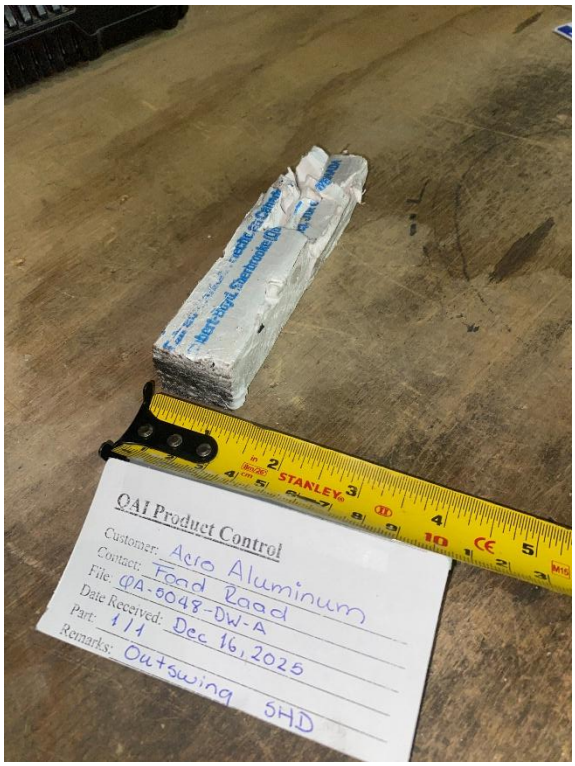


Figure 10: Extended polystyrene.

Figure 11: Hook latch.

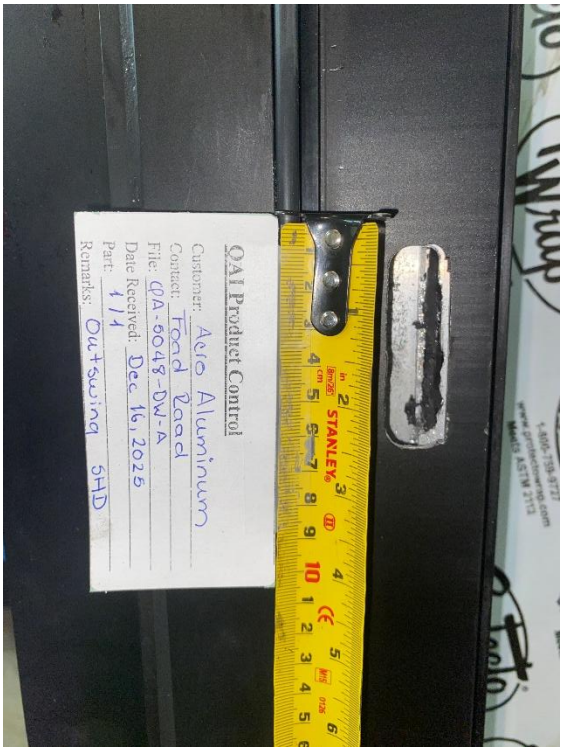


Figure 12: Keeper.

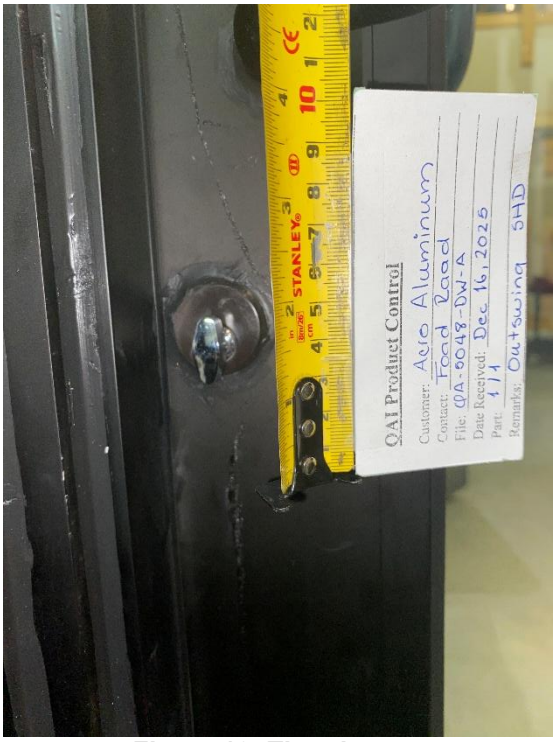


Figure 13: Thumb turn.

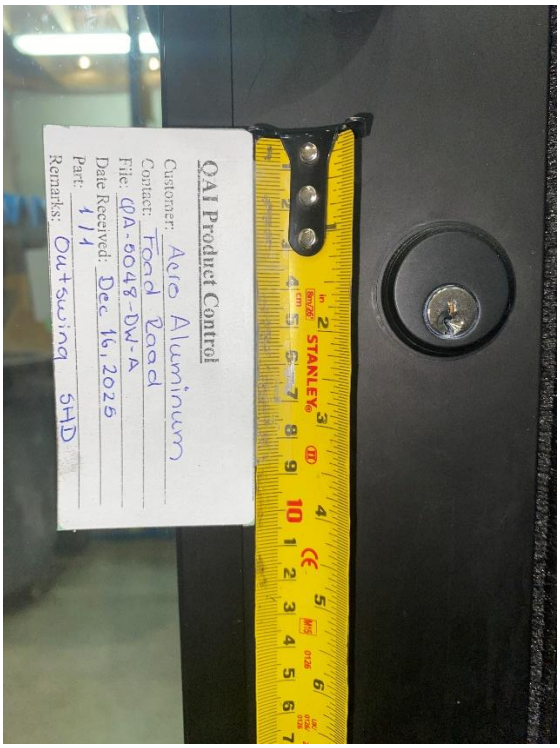


Figure 14: Key hole.

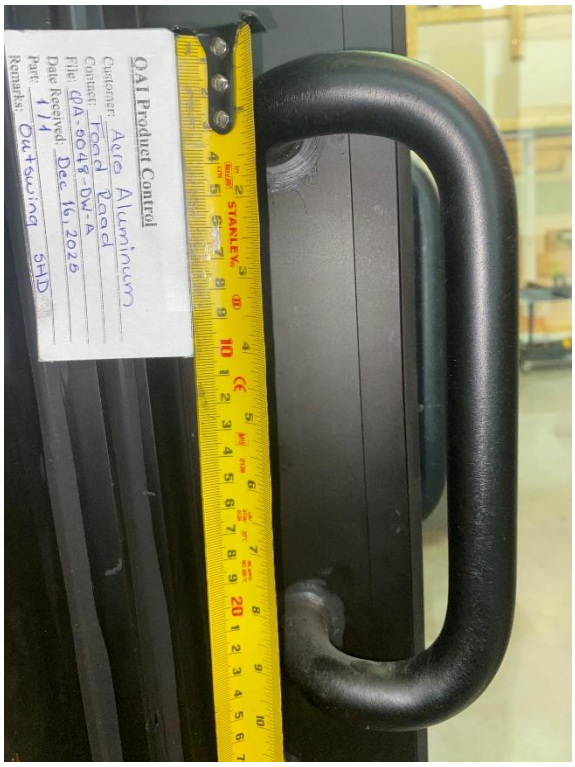


Figure 15: Interior handle.

REPORT REVISION HISTORY

Date	Revision	Change Description	Initials
April 10, 2026	0	Original Report: Acro Aluminum (2024) Ltd. 3000 Series Out-Swing Side Hinged Door	GS
April 28, 2026	1	Sample ID updated to “400T Series Out-Swing Side Hinged Door”	GS

**********<END OF REPORT>**********