

COEUR D'ALENE WINDOW CO TEST REPORT

SCOPE OF WORK

AAMA/WDMA/CSA 101/I.S.2/A440 TESTING ON
6800 SERIES SLIDING DOOR - 240" X 120"

REPORT NUMBER

L3360.02-901-44 R0

TEST DATE(S)

01/21/21 - 02/02/21

ISSUE DATE

03/12/21

RECORD RETENTION END DATE

02/02/31

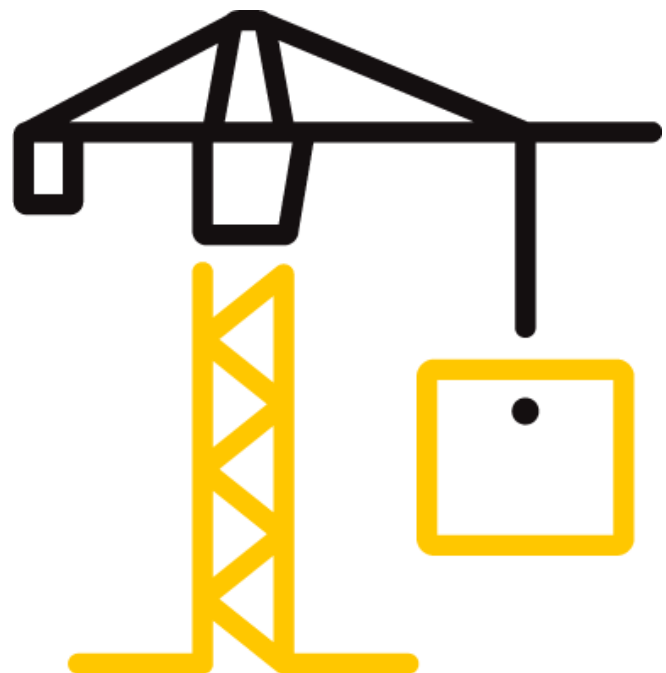
PAGES

24

DOCUMENT CONTROL NUMBER

RT-R-AMER-Test-2804 (04/17/18)

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TEST REPORT FOR COEUR D'ALENE WINDOW CO

Report No.: L3360.02-901-44 R0

REPORT ISSUED TO

COEUR D'ALENE WINDOW CO

115 N. Sycamore
Spokane, WA 99202

SECTION 1

SCOPE

Architectural Testing, Inc. (an Intertek company) dba Intertek Building & Construction (B&C) was contracted by ENERGI Fenestration Solutions LTD. to perform testing in accordance with AAMA/WDMA/CSA 101/I.S.2/A440 on their 425 Energi 2-Track OXXO / 2498 Sash - Sliding door - 240" x 120". 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 Kent, WA. This report does not constitute certification of this product nor an opinion or endorsement by this laboratory.

Unless differently required, Intertek reports apply the "Simple Acceptance" rule also called "Shared Risk approach," of ILAC-G8:09/2019, Guidelines on Decision Rules and Statements of Conformity.

This product was originally tested as the ENERGI Fenestration Solutions Ltd. Series/Model 425 Energi 2-Track OXXO / 2498 Sash - Sliding door - 240" x 120" and is a reissue of the original Report No. L3360.01-901-44. This report is reissued in the name of Coeur D'Alene Window Co through written authorization by ENERGI Fenestration Solutions Ltd.

SECTION 2

SUMMARY OF TEST RESULTS

TITLE	RESULTS
AAMA/WDMA/CSA 101/I.S.2/A440-17	Class R PG15 Size Tested 6096 x 3048mm (240" x 120") – Type SD
Design Pressure	±720 Pa (±15.04 psf)
Air Infiltration	0.56 L/s/m ² (0.11 cfm/ft ²)
Air Exfiltration	0.30 L/s/m ² (0.06 cfm/ft ²)
Canadian Air Infiltration/Exfiltration Level	A3
Cyclic Water Penetration Resistance Test Pressure	150 Pa (3.13 psf)

Reference must be made to Intertek B&C Report No. L3360.02-901-44 R0, dated 03/12/21 for complete test specimen description and detailed test results

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TEST REPORT FOR COEUR D'ALENE WINDOW CO

Report No.: L3360.02-901-44 R0

For INTERTEK B&C:

COMPLETED BY:	Arbind Raj	REVIEWED BY:	Brian L. Rasmussen
TITLE:	Lab Supervisor	TITLE:	Lab Manager
SIGNATURE:		SIGNATURE:	
DATE:	03/12/21	DATE:	03/12/21

AR/CR/BLR:pac

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SECTION 3

TEST SPECIFICATION(S)/METHOD(S)

The specimens were evaluated in accordance with the following:

AAMA/WDMA/CSA 101/I.S.2/A440-17- *North American Fenestration Standard/Specification for Windows, Doors, and Skylights*

The following test methods were used during testing:

ASTM E283-04(2012), *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 E547-00(2016), *Standard Test Method for Water Penetration of Exterior Windows, Skylights, Doors, and Curtain Walls by Cyclic Static Air Pressure Difference*

ASTM F842-17, *Standard Test Methods for Measuring the Forced Entry Resistance of Window Assemblies, Excluding Glazing Impact*

ASTM E987 - 17, *Standard Test Methods for Deglazing Force of Fenestration Products*

SECTION 4

MATERIAL SOURCE/INSTALLATION

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

The specimen was installed into a Douglas-Fir wood buck. The rough opening allowed for a 1/4" shim space and the exterior perimeter of the specimen was sealed to the test buck.

LOCATION	ANCHOR DESCRIPTION	ANCHOR SPACING
Head track	#8 x 2-1/2" Pan head screws	One screw located on the inside head track at each meeting rail (3 total screws)
Jambs	#8 x 2-1/2" Pan head screws	10" from corners and 24" apart through jamb installation
Head, jamb and sill	#8 x 1" Pan head screws	3" from corners and every 8" to 10" apart through nail fin

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SECTION 5

LIST OF OFFICIAL OBSERVERS

NAME	COMPANY
Che Rodriguez	Intertek B&C
Jacob McDaniel	Intertek B&C
Arbind Raj	Intertek B&C
Bob Gillespie	ENERGI Fenestration Solutions LTD.

SECTION 6

TEST SPECIMEN DESCRIPTION

Product Type: Sliding Door

Series/Model: 425 Energi 2-Track OXXO / 2498 sash - Sliding door

Product Sizes:

OVERALL AREA: 18.58 m ² (200 ft ²)	WIDTH		HEIGHT	
	millimeters	inches	millimeters	inches
Overall size	6096	240	3048	120
Panel (x4)	1556	61-1/4	2985	117-1/2

Frame Construction:

MEMBER	MATERIAL	DESCRIPTION
Head, sill, jambs	PVC	Extruded
	JOINERY TYPE	DETAIL
Frame corners	Coped / Butt	Sealed secured with four #10 x 2" screws at corners and sealed with silicone

Panel Construction:

MEMBER	MATERIAL	DESCRIPTION
Rails and Stiles	PVC	Extruded
	JOINERY TYPE	DETAIL
All corners	Mitered	Thermally welded

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Reinforcement:

DRAWING #:	LOCATION	MATERIALS
425-S2498	Lock stiles	Steel tube - 1.500" x 1.500", wall thickness of 0.250"
425-S2498	Interlock stiles	Steel tube - 1.500" x 1.500", wall thickness of 0.065"
425-S2498	Fixed panel stiles	Steel tube - 1.500" x 1.500", wall thickness of 0.065"
425-A17	Sill track	Aluminum

Weather-stripping:

DESCRIPTION	QUANTITY	LOCATION
3/16" Pile weather strip	4 rows	Head, jambs and sill
3/16" Pile weather strip	2 rows	Astragal, passive panel
3/16" Pile weather strip	1 row	Interior of interlock per panels

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	SPACER TYPE	INTERIOR LITE	EXTERIOR LITE	GLAZING METHOD
1" IG	Stainless steel	5 mm (1/4") Tempered	5 mm (1/4") Tempered	Glazing set on setting block; adhered to glazing tape and secured with glazing bead from the exterior; sealant applied in the corners

LOCATION	QUANTITY	DAYLIGHT OPENING		GLASS BITE
		millimeters	inches	
Panel	4	1378 x 2807	54-1/4 x 110-1/2	1/2"

Drainage:

METHOD	SIZE	QUANTITY	LOCATION
Weep hole	1-1/4" x 5/32"	5	Sill face, 2" from corners and at center of each interlock points, punched through inner tracks
Weep hole	5/16" dia	2 per panel	Panel, bottom rail glazing pocket, 2" from corners, drains through roller pockets

Hardware:

DESCRIPTION	QUANTITY	LOCATION
Lock	1	Active panel, 47" OC from bottom rail
Keeper (strike)	1	Passive panel aligned with lock
Handle set (Recessed)	1	Operating panel, 42-1/4" from bottom rail
Rollers	2 per panel	Panel, bottom rail
Sill track	1	Sill -full length

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SECTION 7

TEST RESULTS

The temperature during testing was 25°C (77°F). The results are tabulated as follows:

TITLE OF TEST	RESULTS	ALLOWED	NOTE
Operating Force As per ASTM E2068	Initiate motion: 53 N (12 lbf) Maintain motion: 85 N (19 lbf) Force to Latch: 22 N (5 lbf)	135 N (30.35 lbf) max. 110 N (24.73 lbf) max. 100 N (22.48 lbf) max.	
Air Leakage, Infiltration per ASTM E283 at 75 Pa (1.57 psf)	0.56 L/s/m ² (0.11 cfm/ft ²)	1.5 L/s/m ² (0.3 cfm/ft ²) max.	1, 2
Air Leakage, Exfiltration per ASTM E283 at 75 Pa (1.57 psf)	0.30 L/s/m ² (0.06 cfm/ft ²)	1.5 L/s/m ² (0.3 cfm/ft ²) max.	1, 2
Canadian Air Infiltration/Exfiltration Level	A3	1.5 L/s/m ² (0.3 cfm/ft ²) max.	
Water Penetration, per ASTM E547 at 150 Pa (3.13 psf)	Pass	No leakage	3
Forced Entry Resistance, Per ASTM F842, Grade 10	Pass	No Entry or damage	
Deglazing Test per ASTM E987 Operating direction, 320 N (70 lbf) Remaining direction, 320 N (70 lbf)	Pass Pass	Meets as stated Meets as stated	
Thermoplastic Corner Weld Test	Pass	Meets as stated	
Uniform Load Deflection, per ASTM E330 Deflections taken at lock stile +720 Pa (+15.04 psf) -720 Pa (-15.04 psf)	26.2 mm (1.03") 24.0 mm (0.93")	Report only	4, 5, 6
Uniform Load Deflection, per ASTM E330 Deflections taken at Interlock +720 Pa (+15.04 psf) -720 Pa (-15.04 psf)	34.8 mm (1.37") 33.8 mm (1.33")	Report only	4, 5, 6

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TITLE OF TEST	RESULTS	ALLOWED	NOTE
Uniform Load Structural, per ASTM E330 Permanent set taken at lock stile +1080 Pa (+22.56 psf) -1080 Pa (-22.56 psf)	0.76 mm (0.03") 3.05 mm (0.12")	11.4 mm (0.45") max. 11.4 mm (0.45") max.	4, 5
Uniform Load Structural, per ASTM E330 Permanent set taken at Interlock +1080 Pa (+22.56 psf) -1080 Pa (-22.56 psf)	0.76 mm (0.03") 3.56 mm (0.14")	11.4 mm (0.45") max. 11.4 mm (0.45") max.	4, 5

Note 1: The tested specimen meets (or exceeds) the performance levels specified in AAMA/WDMA/CSA 101/I.S.2/A440 for air leakage resistance.

Note 2: Test Date 01/21/21 / Time: 10:15 AM

Note 3: The client opted to start at a pressure higher than the minimum required.

Note 4: Loads were held for 10 seconds.

Note 5: 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 6: The deflections reported are not limited by AAMA/WDMA/CSA 101/I.S.2/A440 for this product designation. The deflection data is recorded in this report for special code compliance and information only.

**SECTION 8
ALTERATIONS**

Additional weep holes were drilled through inner tracks at each interlock to prevent water from overflowing sill tracks.

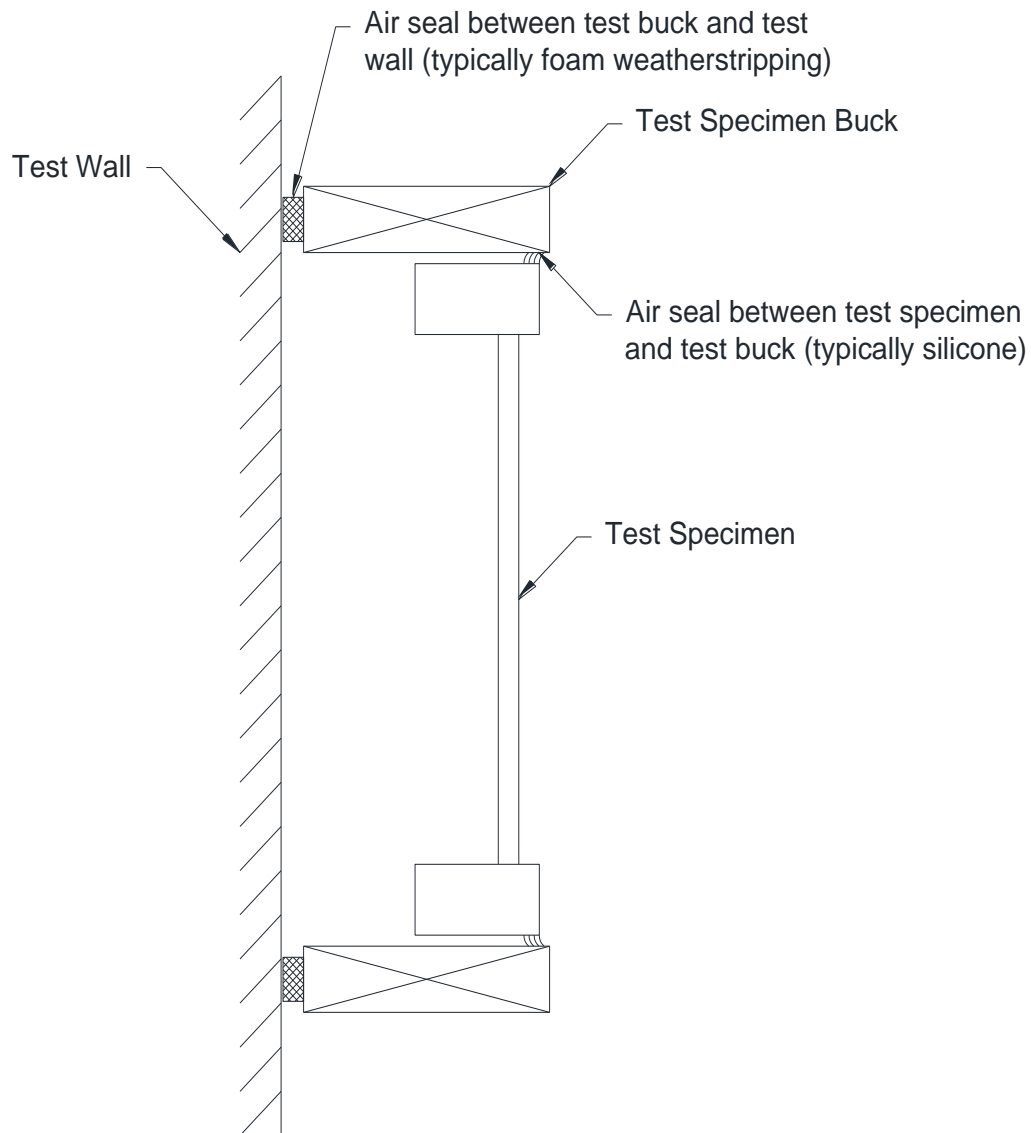
TEST REPORT FOR COEUR D'ALENE WINDOW CO

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SECTION 9

LOCATION OF AIR SEAL

The air seal between the test specimen and the test wall is detailed below. The seal is made of foam weatherstripping and is attached to the edge of the test specimen buck. The test specimen buck is placed against the test wall and clamped in place, compressing the weatherstripping and creating a seal.



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SECTION 10 CONCLUSION

The specimen tested successfully met the performance requirements for a **Class R-PG15 Size Tested 6096 x 3048 mm (240" x 120") – Type SD** rating.

This report is reissued in the name of Coeur d'Alene Window Co through written authorization of ENERGI Fenestration Solutions Ltd., to whom the original report was rendered. The original ENERGI Fenestration Solutions Ltd. Report No. is L3360.01-901-44.

SECTION 11 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.

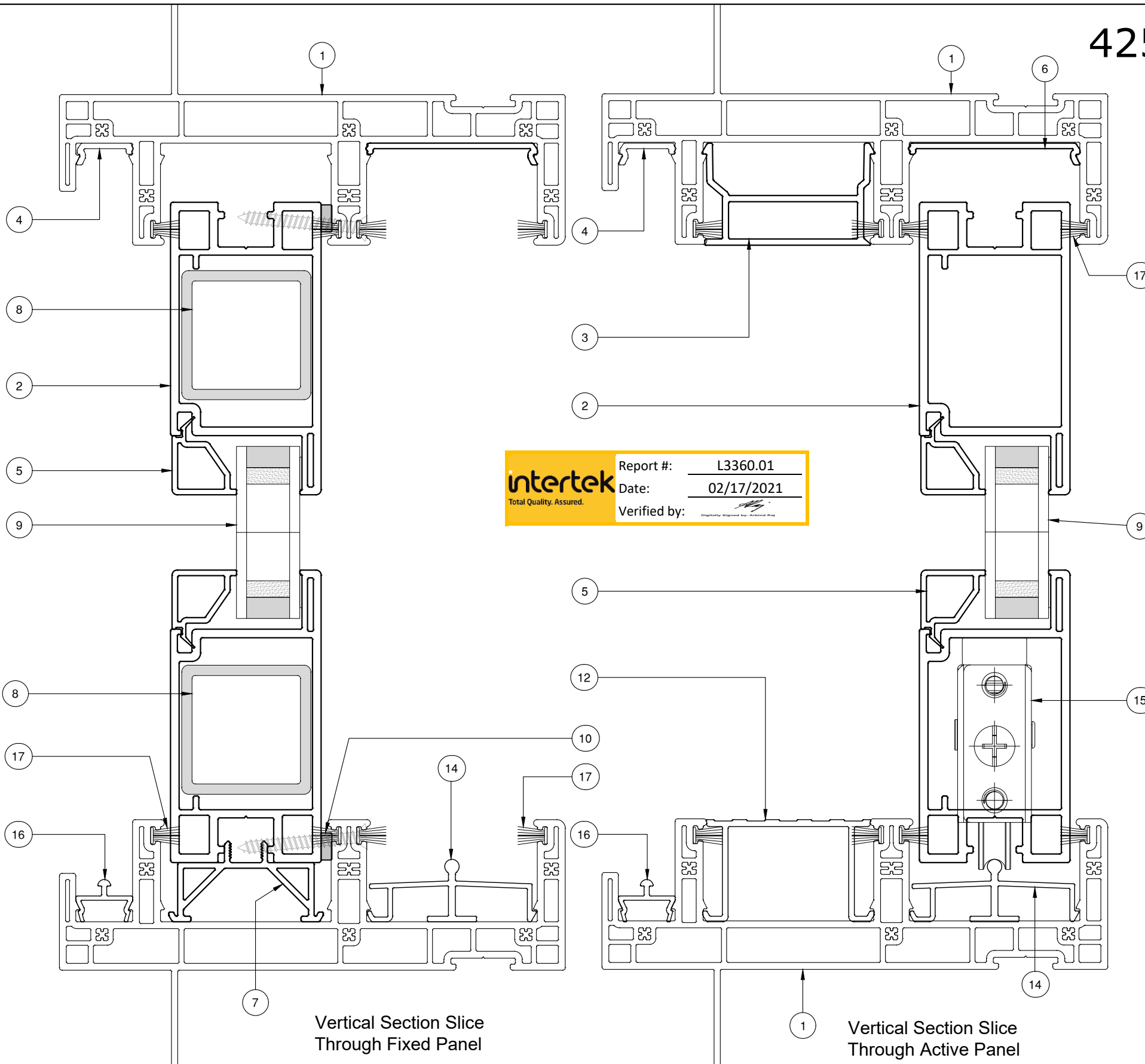
Attachments (pages): Drawings (14)

SECTION 12 REVISION LOG

REVISION #	DATE	PAGES	REVISION
0	03/12/21	N/A	Original Report Issue

425-L200-V

REV.	DESCRIPTION	Date	BY
A1	First Issue	2019-06-11	gmc
B1	Updated components & Notes	2019-08-20	gmc
B2	Corrected Roller Track Part Number	2019-10-30	gmc
B3	Replaced 2719 Frame with 2753	2020-01-28	gmc
B4	Fixed Parts List Structure	2020-11-13	gmc
C1	Chgd ws	2020-12-08	gmc

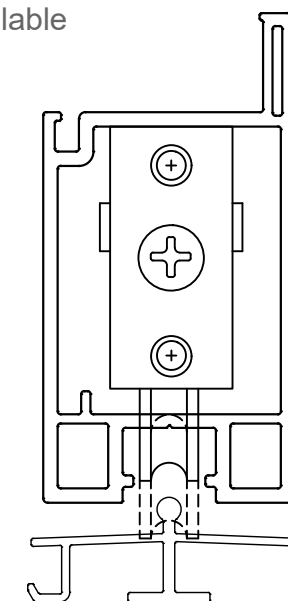


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 Verified by: [Signature]

Parts List				
ITEM	NAME	DESCRIPTION	MATERIAL	VENDOR
1	KE2753-425-D118_D1	Main Frame 2 Track	rPVC	EFS
2	KE2498-425-D50_cap	Sash	rPVC	EFS
3	KE2717-425-D103	Inside Pocket Filler	rPVC	EFS
4	KE2746-425-D119	Screen Track Cover	rPVC	EFS
5	KE2744-425-D113	Glass Stop	rPVC	EFS
6	KE2747-425-D116	Inside Pocket Cover	rPVC	EFS
7	R1837-425-D13	Outside Cover Receiver	rPVC	EFS
8	425-S2498_x120	Steel Tube 1.5 X .120	Steel 50k	TBD
9	IG_750_ss	IG 3/4" OA	Per Spec	TBD
10	Bumper Spacer	Stick On Bumper	Per Spec	TBD
11	TA-39-PRSS-181-850	Roller - Custom	Per Spec	Custom
12	425-A12_rev	Sill Pocket Cover	Aluminum	TBD
13	*U354	#8 x 1.5" FH Screw	SS	TBD
14	425-A17	Roller Track	Auminum	TBD
15	SS4650DSPA	Roller - Anthony	Per Spec	Anthony
16	425-A20	Aluminum Screen Track	Aluminum	TBD
17	WS_188 x .340	Pile Weatherstrip	Per Spec	TBD

KE2743 Required For Cap option Only

Dual & Quad Rollers From Custom & Anthony Available



Vertical Section Slice Through Fixed Panel

Vertical Section Slice Through Active Panel

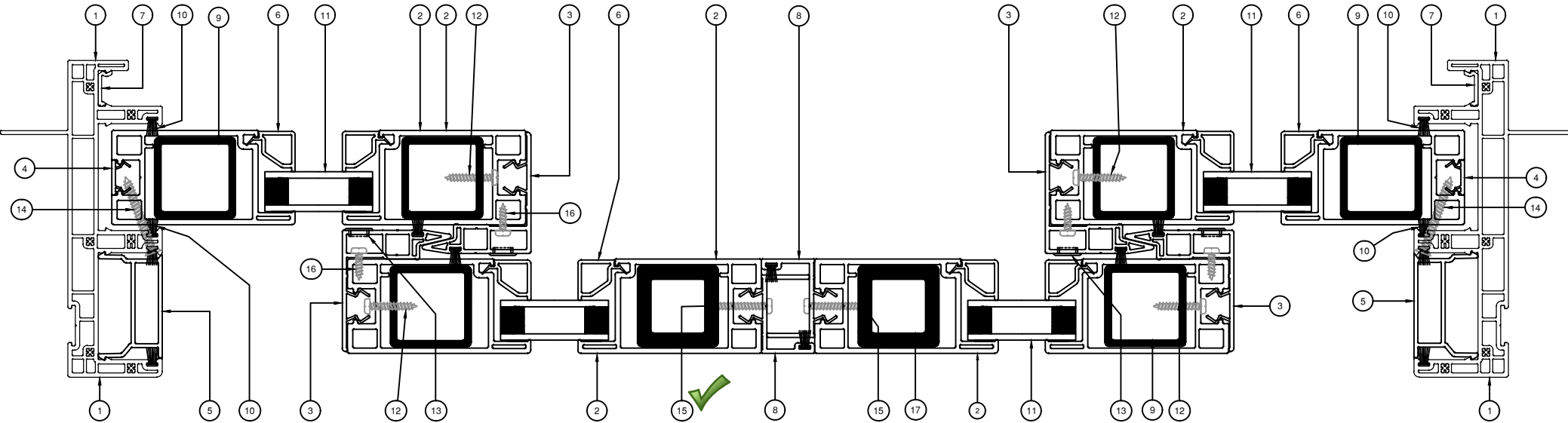
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425-L240-H

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REV.	DESCRIPTION	Date	BY
A1	First Issue	2019-06-11	gmc
B1	Updated components & Notes	2019-08-20	gmc
B2	Replaced 2719 Frame with 2753	2020-01-28	gmc
B4	Fixed Parts List Structure	2020-11-11	gmc
B5	Chg'd oxvo astragal to KE2765 from KE2748	2020-12-10	gmc
C1	Changed lock stile stiffener to 1/4" wall tube	2021-02-15	gmc



Horizontal Mid Jamb Section Slice

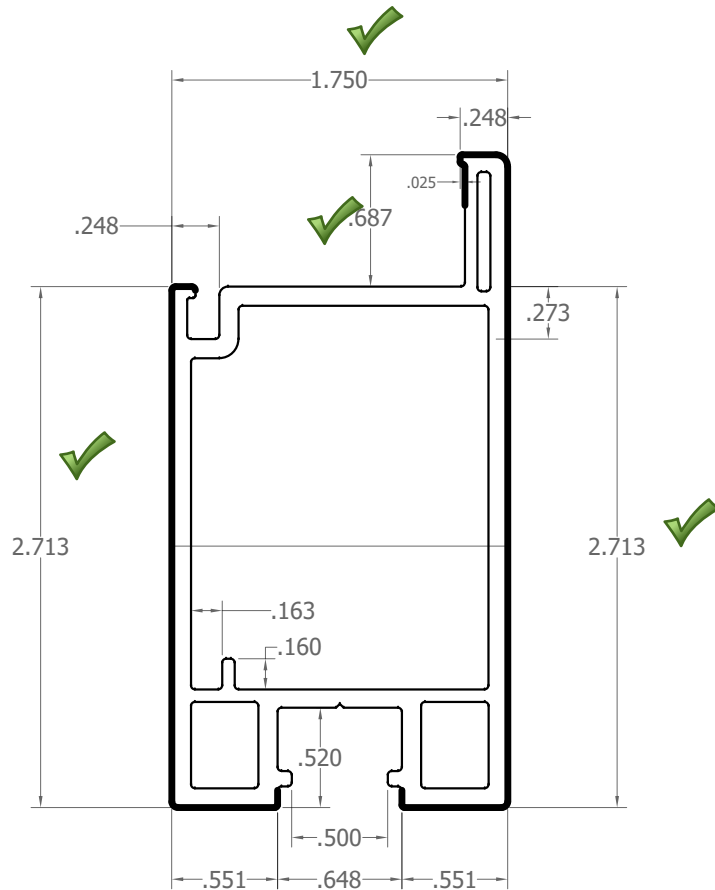
Parts List									
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1	KE2753-425-D118_D1	Main Frame 2 Track	rPVC	EFS	10	WS 188 x .340	Pile Weatherstrip	Per Spec	TBD
2	KE2498-425-D50_cap	Sash	rPVC	EFS	11	IG 750 ss	IG 3/4" OA	Per Spec	TBD
3	KE2545-425-D55	Sash Interlock	rPVC	EFS	12	*U329	#6 x 7/8" PH ST SS	SS	TBD
4	KE2743-425-D112	Filler Strip	rPVC	EFS	13	Plug 375	3/8" Hole Plug	HDPE	TBD
5	KE2717-425-D103	Inside Pocket Filler	rPVC	EFS	14	*U318	#8 x 1.5" FH Screw	SS	TBD
6	KE2744-425-D113	Glass Stop	rPVC	EFS	15	*U322	#6 x 3/4" ST SS Screw	SS	TBD
7	KE2746-425-D119	Screen Track Cover	rPVC	EFS	16	*U957	#6 x 1/2" PH Screw	SS	TBD
8	KE2765-325-D122	OXXO Astragal	rPVC	EFS	17	425-S2498_x250	1 1/2 x 1 1/2 Steel Tube	Steel	TBD
9	425-S2498_x120	Steel Tube 1.5 X .120	Steel 50k	TBD					

See 425-L100-V For Vertical Section

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KE2498

REV.	DESCRIPTION	Date	BY
A1	First Issue	2019-06-11	gmc



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Bold Lines = Optional Cap

WALL THICKNESS:	
EXTERNAL	.100
INTERNAL	.065
■	.000



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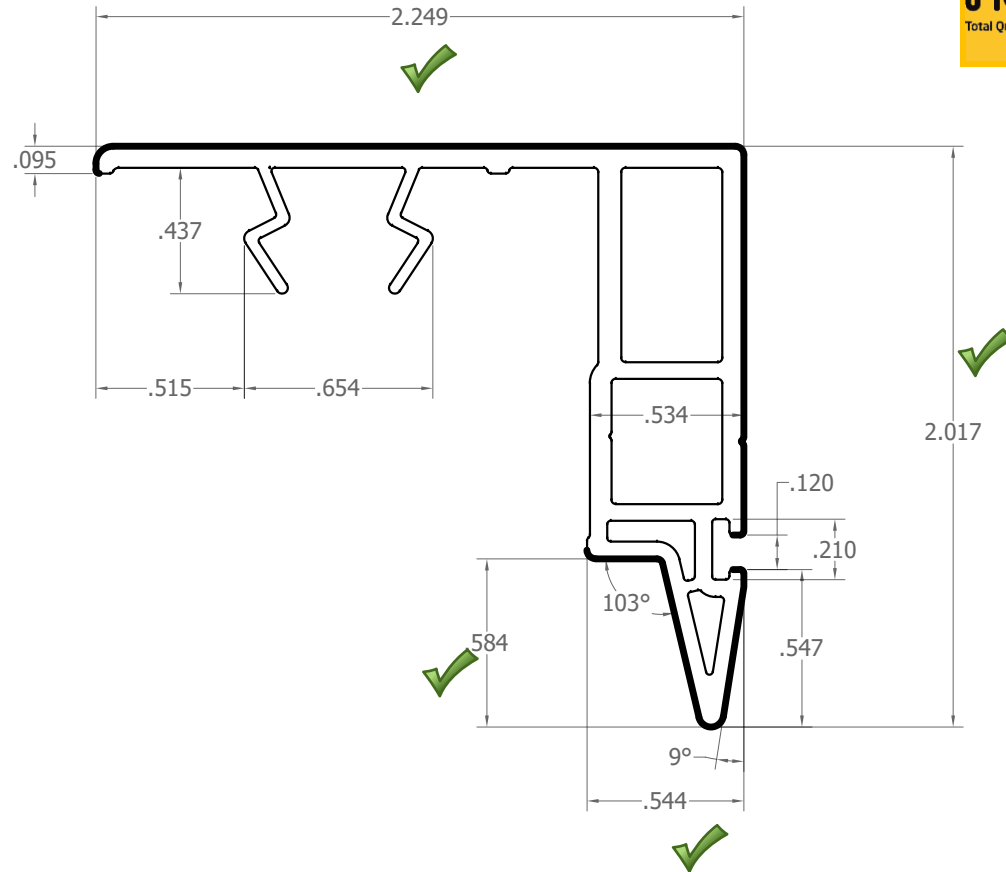
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KE2585

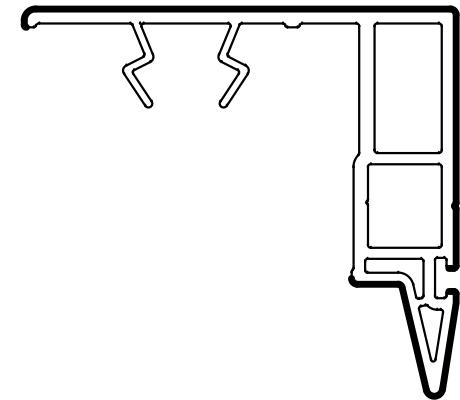
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A1	First Issue	2019-06-11	gmc

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WALL THICKNESS:	
EXTERNAL	.100
INTERNAL	.058
■	.000

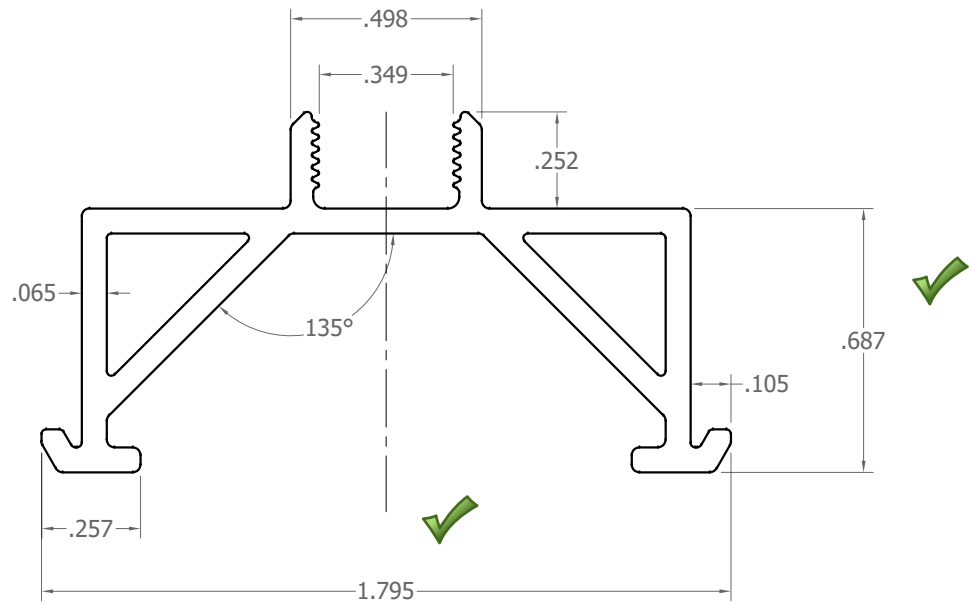


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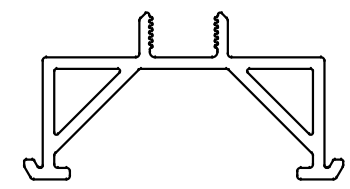
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R1837

REV.	DESCRIPTION	Date	BY
A1	First Issue	2019-06-11	gmc



Scale = 1:1



Symmetrical About C/L

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	Verified by:	

WALL THICKNESS:	
EXTERNAL	.065
INTERNAL	.000

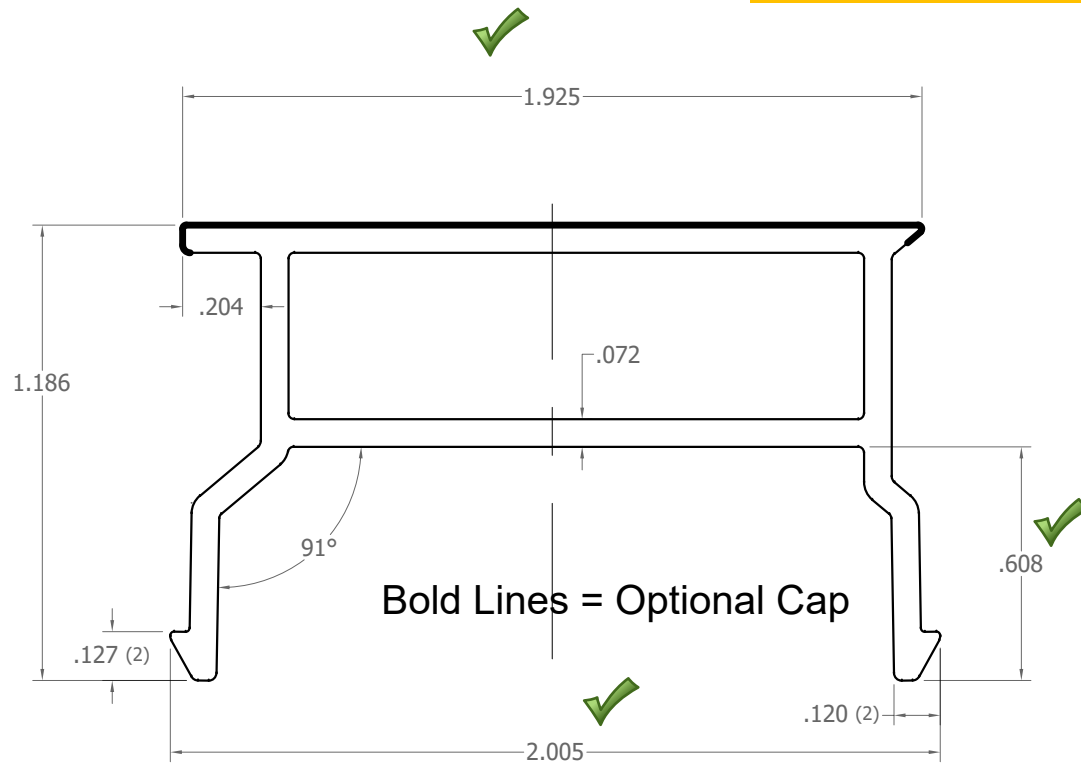
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KE2717

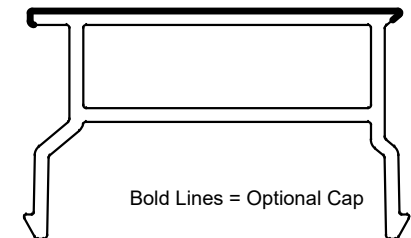
REV.	DESCRIPTION	Date	BY
A1	First Issue	2019-06-11	gmc

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Date: 02/17/2021
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Scale = 1:1



Bold Lines = Optional Cap

Bold Lines = Optional Cap

Symmetrical About C/L

WALL THICKNESS:	
EXTERNAL	.072
INTERNAL	

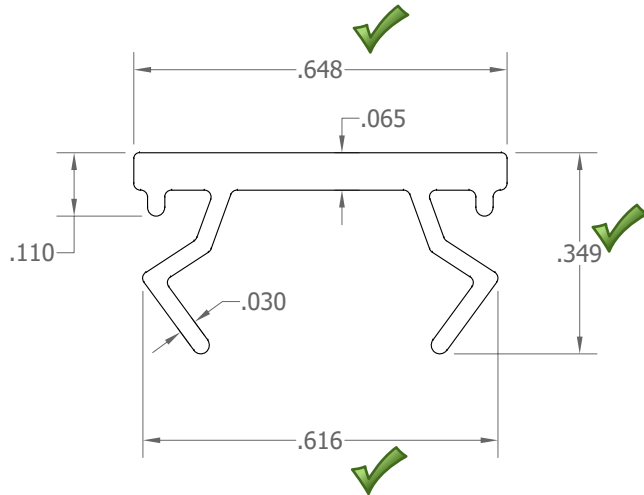


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CUSTOMER: EFS		Project: 425 Catalog	DRAWN: gmc	Layout/Drawing Name: KE2717-425-D103		
TITLE: Inside Pocket Filler		CHECKED:		PART: D103	DIE NUMBER: KE2717	ACAD: 425 Catalog - copy 09242020.dwg
SHEET: A	MATERIAL: rPVC	DATE: 2019-06-11	SCALE: 2:1	Series: 425	SHEET: /	

KE2743

REV.	DESCRIPTION	Date	BY
A1	First Issue	2019-06-11	gmc



	Report #:	L3360.01
	Date:	02/17/2021
	Verified by:	



Scale = 1:1

WALL THICKNESS:	
EXTERNAL	.072
INTERNAL	

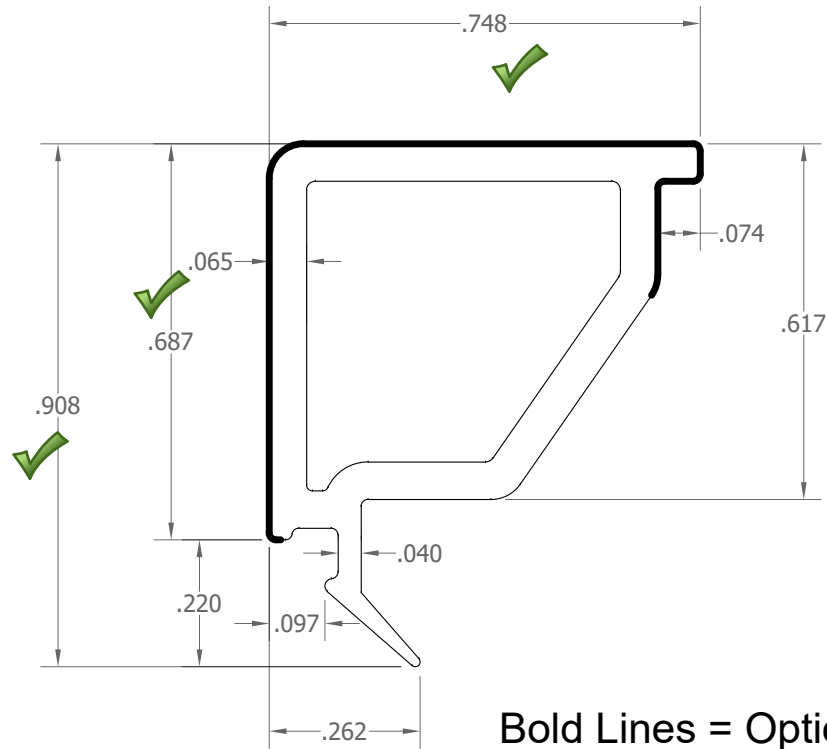


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CUSTOMER:		EFS		Project	425 Catalog	DRAWN:	gmc	Layout/Drawing Name		
TITLE:		Euro Groove Filler		CHECKED:		KE2743-425-D112				
SHEET:	MATERIAL:	DATE:	SCALE:	Series	SHEET:	PART:	DIE NUMBER:	ACAD:		
A	rPVC	2019-06-11	3:1	425	/	D112	KE2743	425 Catalog - copy 09242020.dwg		

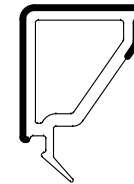
KE2744

REV.	DESCRIPTION	Date	BY
A1	First Issue	2019-06-11	gmc



intertek
Total Quality. Assured.

Report #: L3360.01
Date: 02/17/2021
Verified by: [Signature]



Bold Lines = Optional Cap

Bold Lines = Optional Cap

Scale = 1:1

KE2498 - $\frac{3}{4}$ " IG
R1898-99 - $\frac{5}{8}$ " IG

WALL THICKNESS:	
EXTERNAL	.072
INTERNAL	

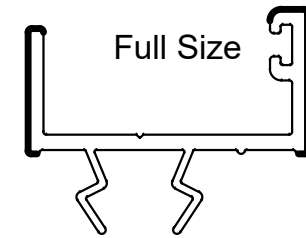
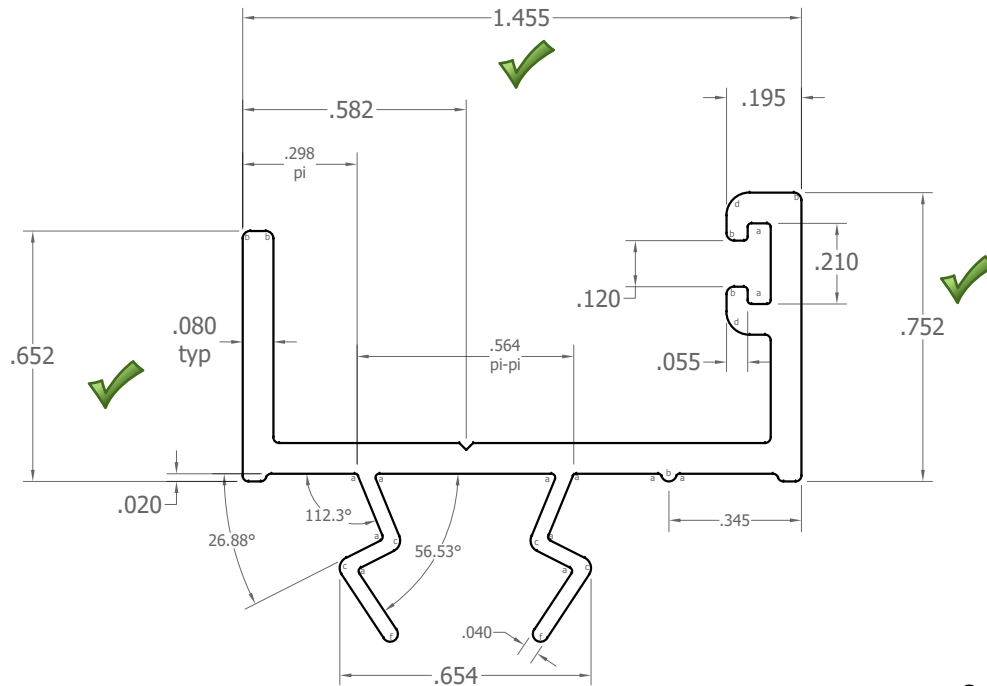


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CUSTOMER:		EFS		Project	425 Catalog	DRAWN:	gmc	Layout/Drawing Name		
TITLE:		Glass Stop		CHECKED:		KE2744-425-D113				
SHEET:	MATERIAL:	DATE:	SCALE:	Series	SHEET:	PART:	DIE NUMBER:	ACAD:		
A	rPVC	2019-06-11	3:1	425	/	D113	KE2744	425 Catalog - copy 09242020.dwg		

KE2748

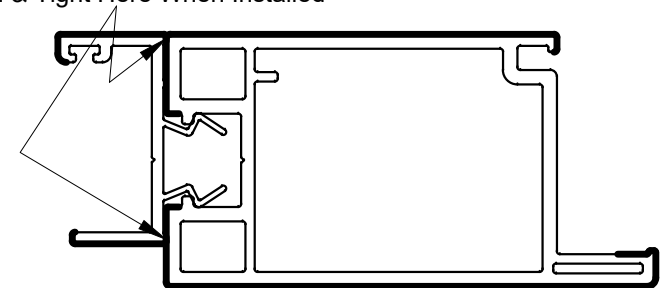
REV.	DESCRIPTION	Date	BY
A1	First Issue	2019-06-11	gmc



Bold Lines = Optional Cap

<p>Intertek Total Quality. Assured.</p>	Report #:	L3360.01
	Date:	02/17/2021
	Verified by:	

Snap In & Tight Here When Installed



Bold Lines = Optional Cap

WALL THICKNESS:	
EXTERNAL	.080
INTERNAL	.000
■	.000

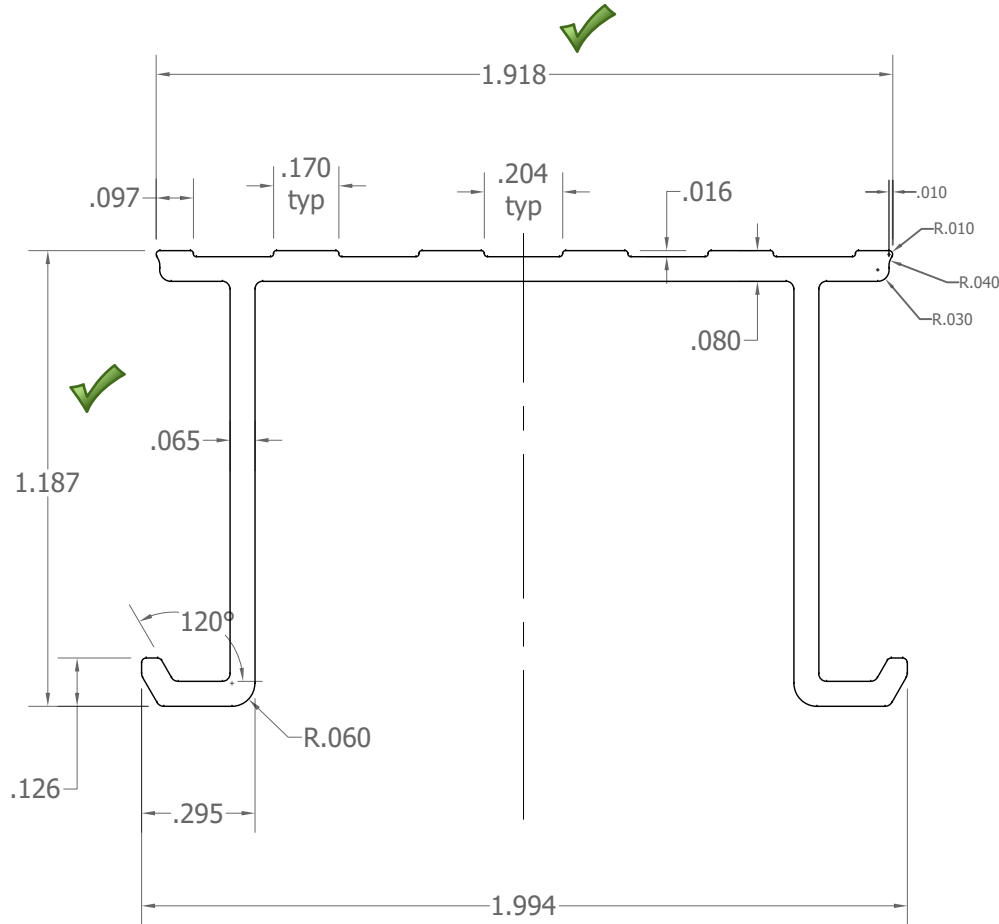


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CUSTOMER:		EFS		Project	425 Catalog	DRAWN:	gmc	Layout/Drawing Name			KE2748-425-D117-pt
TITLE:		OXXO Astragal		CHECKED:							
SHEET:	MATERIAL:	DATE:	SCALE:	Series	SHEET:	PART:	DIE NUMBER:	ACAD:			
A	As Noted	2019-06-11	2:1	425	/	D117	KE2748	425 Catalog - copy 09242020.dwg			

425-A12

REV.	DESCRIPTION	Date	BY
A1	First Issue	2019-06-11	gmc
A1	Rev top mating geometry to frame	2019-07-29	gmc



intertek Report #: L3360.01
 Total Quality. Assured. Date: 02/17/2021
 Verified by: [Signature]
Digitally Signed by: Arvind Raj

Scale = 1:1



Symmetrical About C/L
 6063 T5 Alloy or Equiv

WALL THICKNESS:	
EXTERNAL	.065
INTERNAL	

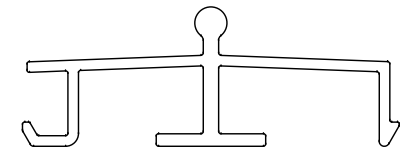
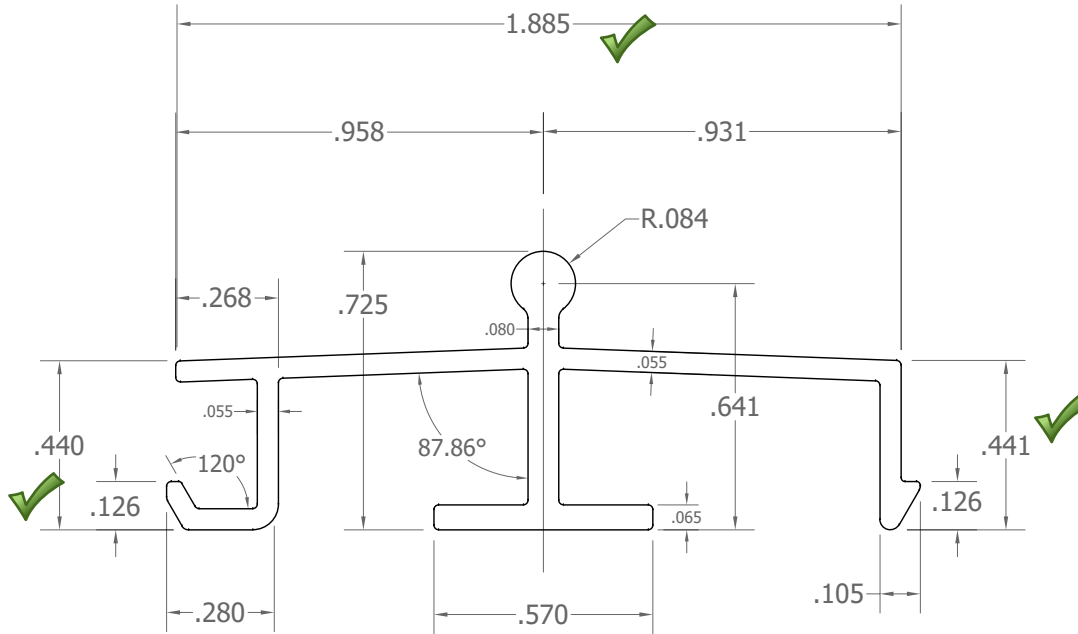


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CUSTOMER:		EFS		Project	425 Catalog	DRAWN:	gmc	Layout/Drawing Name		
TITLE:		Sill Track Cover		CHECKED:		425-A12				
SHEET:	MATERIAL:	DATE:	SCALE:	Series	SHEET:	PART:	DIE NUMBER:	ACAD:		
A	Aluminum	2019-06-11	2:1	425	/	A12		425 Catalog - copy 09242020.dwg		

425-A17

REV.	DESCRIPTION	Date	BY
A1	First Issue	2019-06-11	gmc
B1	Chg'd .044 walls to .055	2020-01-03	gmc



Scale = 1:1

intertek
Total Quality. Assured.

Report #: L3360.01
Date: 02/17/2021
Verified by: [Signature]
Digitally Signed by: Arvind Red

WALL THICKNESS:	
EXTERNAL	Noted
INTERNAL	



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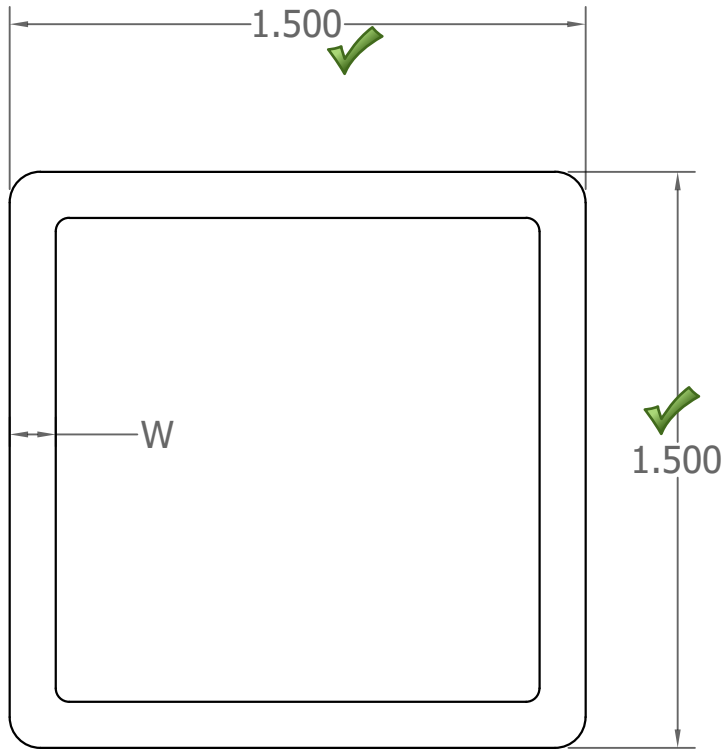
CUSTOMER: EFS		Project: 425 Catalog	DRAWN: gmc	Layout/Drawing Name: 425-A17	
TITLE: Roller Track					
SHEET: A	MATERIAL: Aluminum	DATE: 2019-06-11	SCALE: 2:1	Series: 425	SHEET: /
PART: A17		DIE NUMBER:	ACAD: 425 Catalog - copy 09242020.dwg		

425-S2498

REV.	DESCRIPTION	Date	BY
A1	First Issue	2019-11-22	gmc

intertek
Total Quality. Assured.

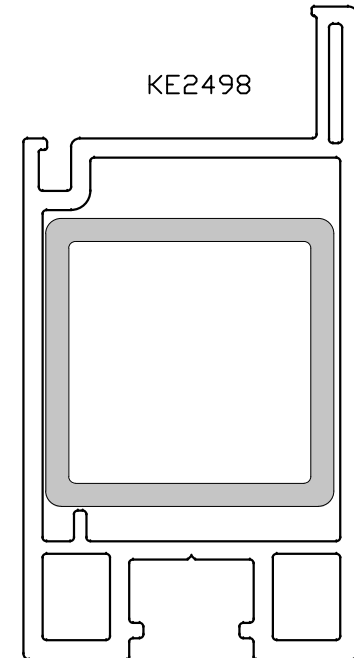
Report #: L3360.01
Date: 02/17/2021
Verified by: 



1 1/2" Square Steel Tube Wall Thickness Options

W"	Moment ^{^4}
✓ 0.065	0.125848
0.083	0.155483
0.120	0.209296
0.188	0.286242
✓ 0.250	0.335850

Scale = 1:1



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CUSTOMER: EFS		Project: 425 Catalog	DRAWN: gmc	Layout/Drawing Name: 425-S2498		
TITLE: Standard 1 1/2" Square Steel Tubing Specs						
SHEET: A	MATERIAL: Aluminum	DATE: 2019-11-22	SCALE: 2:1	Series: 425	CHECKED:	PART: S2498
				DIE NUMBER:		ACAD: 425 Catalog - copy 09242020.dwg

KE2498 Refo Opts

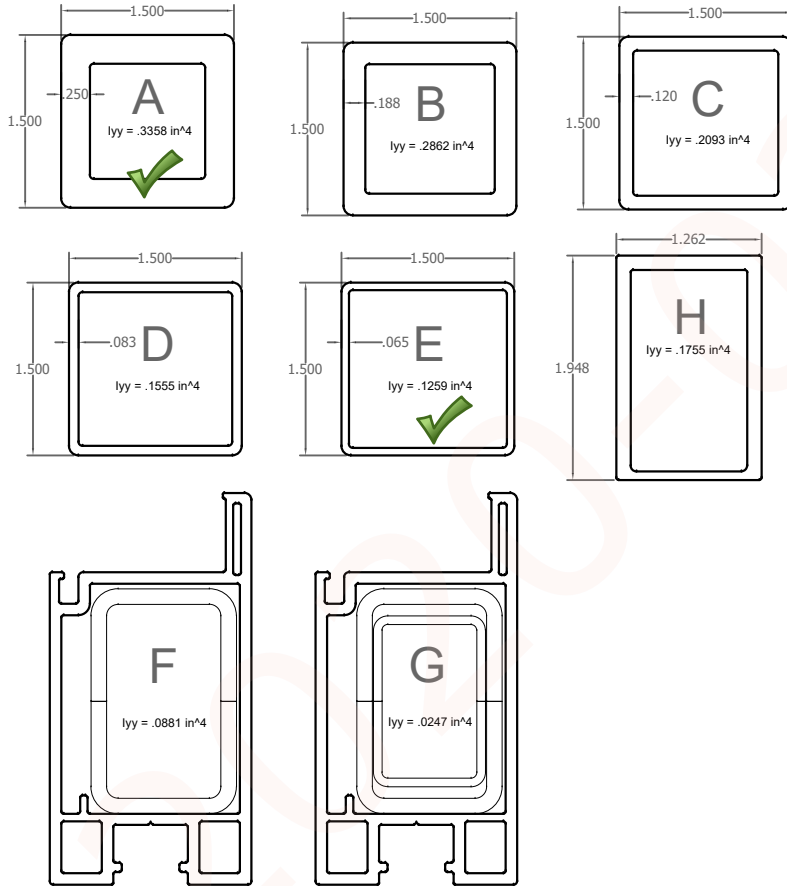
REV.	DESCRIPTION	Date	BY
A1	First Issue	209-11-22	gmc

intertek
Total Quality. Assured.

Report #: L3360.01
Date: 02/17/2021
Verified by: [Signature]

425 Door - Max Water = DP 35 (260 PA) at base of towers

425 Door - Max Water = DP 50 (400 PA) below sash pockets



Sash	Stiffener Config	Stiffener Material	Stiffener Description	Yield psi	Sash Size in.	Max PSF	COMMENTS
Medium	A	Steel	1.5" sq Tube x .250 wall	50k	60 x 120	45	50 psf possible with some permanent set
Medium	B	Steel	1.5" sq Tube x .188 wall	50k	60 x 120	35	40 psf possible with some permanent set
Medium	C	Steel	1.5" sq Tube x .120 wall	50k	60 x 120	25	30 psf possible with some permanent set
Medium	D	Steel	1.5" sq Tube x .083 wall	50k	60 x 120	20	
Medium	E	Steel	1.5" sq Tube x .065 wall	50k	60 x 120	15	
Medium	F	Steel	425 S11 U Channel	31k	60 x 120	FAIL	Below 15
Medium	G	Steel	425-S11 & 425-S12 Combo	31k	60 x 120	FAIL	Below 15
Medium	H	Aluminum	Rectangular Tube 425-AD50	21k	60 x 120	FAIL	Below 15

Medium	A	Steel	1.5" sq Tube x .250 wall	50k	60 x 108	50	55 psf possible with some permanent set
Medium	B	Steel	1.5" sq Tube x .188 wall	50k	60 x 108	40	45 psf possible with some permanent set
Medium	C	Steel	1.5" sq Tube x .120 wall	50k	60 x 108	30	35 psf possible with some permanent set
Medium	D	Steel	1.5" sq Tube x .083 wall	50k	60 x 108	25	30 psf possible with some permanent set
Medium	E	Steel	1.5" sq Tube x .065 wall	50k	60 x 108	20	25 psf possible with some permanent set
Medium	F	Steel	425 S11 U Channel	31k	60 x 108	FAIL	
Medium	G	Steel	425-S11 & 425-S12 Combo	31k	60 x 108	FAIL	15 remotely possible with lots of permanent set
Medium	H	Aluminum	Rectangular Tube 425-AD50	21k	60 x 108	FAIL	15 possible with 6061-T6 alloy

Medium	A	Steel	1.5" sq Tube x .250 wall	50k	60 x 96	75	
Medium	B	Steel	1.5" sq Tube x .188 wall	50k	60 x 96	65	
Medium	C	Steel	1.5" sq Tube x .120 wall	50k	60 x 96	45	50 psf possible with some permanent set
Medium	D	Steel	1.5" sq Tube x .083 wall	50k	60 x 96	35	40 psf possible with some permanent set
Medium	E	Steel	1.5" sq Tube x .065 wall	50k	60 x 96	30	
Medium	F	Steel	425 S11 U Channel	31k	60 x 96	FAIL	15 psf possible with lots of permanent set
Medium	G	Steel	425-S11 & 425-S12 Combo	31k	60 x 96	15	20 remotely possible with lots of permanent set
Medium	H	Aluminum	Rectangular Tube 425-AD50	21k	60 x 96	15	20 possible with perm set - 25 possible 6061-T6 alloy

Medium	A	Steel	1.5" sq Tube x .250 wall	50k	48 x 108	65	70 psf possible with some permanent set
Medium	B	Steel	1.5" sq Tube x .188 wall	50k	48 x 108	55	60 psf possible with some permanent set
Medium	C	Steel	1.5" sq Tube x .120 wall	50k	48 x 108	45	small permanent set possible
Medium	D	Steel	1.5" sq Tube x .083 wall	50k	48 x 108	30	
Medium	E	Steel	1.5" sq Tube x .065 wall	50k	48 x 108	25	
Medium	F	Steel	425 S11 U Channel	31k	48 x 108	FAIL	
Medium	G	Steel	425-S11 & 425-S12 Combo	31k	48 x 108	15	Barely
Medium	H	Aluminum	Rectangular Tube 425-AD50	21k	48 x 108	15	Barely

Medium	A	Steel	1.5" sq Tube x .250 wall	50k	48 x 96	90	
Medium	B	Steel	1.5" sq Tube x .188 wall	50k	48 x 96	75	80 psf possible with some permanent set
Medium	C	Steel	1.5" sq Tube x .120 wall	50k	48 x 96	55	60 psf possible with some permanent set
Medium	D	Steel	1.5" sq Tube x .083 wall	50k	48 x 96	40	45 psf possible with some permanent set
Medium	E	Steel	1.5" sq Tube x .065 wall	50k	48 x 96	35	small permanent set possible
Medium	F	Steel	425 S11 U Channel	31k	48 x 96	15	
Medium	G	Steel	425-S11 & 425-S12 Combo	31k	48 x 96	20	
Medium	H	Aluminum	Rectangular Tube 425-AD50	21k	48 x 96	20	25 possible with perm set - 30 possible 6061-T6 alloy

Medium	A	Steel	1.5" sq Tube x .250 wall	50k	48 x 82	100 +	Off the chart - major overkill
Medium	B	Steel	1.5" sq Tube x .188 wall	50k	48 x 82	100 +	
Medium	C	Steel	1.5" sq Tube x .120 wall	50k	48 x 82	80	
Medium	D	Steel	1.5" sq Tube x .083 wall	50k	48 x 82	60	65 psf possible with some permanent set
Medium	E	Steel	1.5" sq Tube x .065 wall	50k	48 x 82	50	
Medium	F	Steel	425 S11 U Channel	31k	48 x 82	20	25 possible with perm set
Medium	G	Steel	425-S11 & 425-S12 Combo	31k	48 x 82	25	30 psf possible with some permanent set
Medium	H	Aluminum	Rectangular Tube 425-AD50	21k	48 x 82	30	35 possible with perm set - 40 possible 6061-T6 alloy



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CUSTOMER:	EFS		Project	425 Catalog		DRAWN:	gmc		Layout/Drawing Name			
TITLE:	KE2498 Reinforcement Options						CHECKED:					
SHEET:	MATERIAL:	DATE:	SCALE:	Series	SHEET:	PART:	DIE NUMBER:	ACAD:	425 Catalog - copy 09242020.dwg			
A	Aluminum	2019-11-22	0.6:1	425	/							