10235 8th Street, Rancho Cucamonga, CA 91730

Report #: T20-070

#### REPORT SUMMARY

#### **REPORT #**

T20-070

#### **TESTED FOR**

C.R. Laurence Co., Inc. 2503 E. Vernon Ave. Vernon, CA 90058

#### **SERIES & PRODUCT TYPE**

PALISADES S90 - THERMALLY BROKEN ALUMINUM FOLDING DOOR (Outswing)

#### CONFIGURATION

XXXX -3L1R - Folding Outswing door

#### **FRAME SIZE**

3962.40 mm x 2438.40 mm (156.00" x 96.00")

#### **SPECIFICATION**

NAFS - North American Fenestration Standard/specification for windows, doors, and skylights AAMA/WDMA/CSA 101/I.S.2/A440-17

#### PRIMARY DESIGNATOR

CLASS CW-PG40 3962.40 x 2438.40 mm (156.00 x 96.00 in) Type: FLD

#### **TEST COMPLETION DATE**

October 19, 2020

#### REPORT DATE

March 17, 2021

10235 8th Street, Rancho Cucamonga, CA 91730

1.0 Tested For: C.R. Laurence Co., Inc.

2503 E. Vernon Ave. Vernon, CA 90058

2.0 Purpose:

The purpose of this report is to present the testing methods employed and the test results obtained during the performance testing of one (1) THERMALLY BROKEN ALUMINUM OUTSWING FOLDING DOOR described in paragraph 5.0 of this report.

- 3.0 Test References:
- 3.1 NAFS North American Fenestration Standard/specification for windows, doors, and skylights AAMA/WDMA/CSA 101/I.S.2/A440-17
- 3.2 ASTM F 842-17 Forced Entry Resistance Tests for Sliding Door Assemblies
- 3.3 AAMA 1304-18 Forced Entry Resistance for Side-Hinged Door Systems
- **4.0 Compliance Statement:** The test results in paragraph 6.0 indicate that the test sample described in paragraph 5.0 of this report met the performance requirements of the above specifications for the performance grade shown in 4.1 below.
- 4.1 CLASS CW-PG40 3962.40 x 2438.40 mm (156.00 x 96.00 in) Type: FLD
- 5.0 Sample Submitted:

5.1 **Product Type:** THERMALLY BROKEN ALUMINUM OUTSWING FOLDING DOOR

**5.2 Series:** PALISADES S90

**5.3 Configuration:** XXXX -3L1R - Folding Outswing door

5.4 Product Dimensions: Millimeters Inches

Total Frame: 3962.40 x 2438.40 156.00 x 96.00
All Panels: 901.70 x 2349.50 35.50 x 92.50

With an added Astragal to Panels C and D, each had a width of 37.75"

5.5 Glass and Glazing: Same for all panel

	J 01110 1111 1111111 6. 0 11111 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1					
IGU Thickness	Spacer Size	Interior Lite	Exterior Lite	Glazing method		
1.0"	0.625"	3/16"	3/16"	Inside glazed onto foam filled bulb gasket.		
overall wide		Tempered	Tempered	"L" shaped 1/8" corner setting block were set		
		•	-	at all four corners of each IGU.		
				Aluminum glazing stop applied full perimeter		
				on the inside of the IGU.		
	All vertical glazing stops contained an integral pull.					

5.6 Weepage:

Drainage Method	Size	Quantity	Location		
Rectangular weep	1.75" x 0.25"	Eight (8)	Sill outside face -Outermost weep at 6" from each end		
		Remaining weeps are 2" each way from each vertical			
			centerline in between two adjacent panels.		
Note that the sill sixteen 3/8" vertical access holes for sill anchors to the rough opeing also drained the exposed					
sill channels to lower sill hollow.					

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5.6 Weepage:

Drainage Method	Size	Quantity	Location
Rectangular weep	2.0" x 0.25"	Eight (8)	Sill center channel - One weep at 10" from each end and
			one 6" each way from the vertical centerline between
			panels . Note that the inner hollow wall directly below
			each of the weeps contained the same sized weep to
			drain the innermost hollow.
Vertical	1.75" x	One (1) at	Bottom rail of each panel - The hole in the horizontal
rectangular weep	0.25"	each end of	wall under the IGU drained into a hollow and out the
0 1		each panel	same sized hole at the bottom of the rail.

#### 5.7 Pressure balancing: None

5.8 Weather-stripping:

.8 weather-stripping:		
Туре	Quantity	Location
Flocked gasket – See drawing for part MDAC350208	Two (2) strip	One strip on head outside leg facing out and one strip on sill outside leg facing out.
EPDM rubber gasket part	See "Location"	All panel stiles contained two strips.
S85GDRS		All panel rails contained one strip on the inboard side.
Gasket S85GRP	See "Location"	Jambs each have one strip.
		Posts each have two strips – one facing each panel stile.
Hollow gasket part	See "Location"	One strips on each jamb inside leg facing out. One strip on
MDAC350203		panel 'C' astragal facing out and one strip on panel "D"
		astragal facing in.
Hollow gasket part	See "Location"	One strip on each panel top and bottom rail on the
S85GDRH		outboard side and one strip at each end of each post on
		outboard side.

#### 5.9 Sealants:

Sealant was applied at the following locations:

- -The frame was sealed to the rough opening full perimeter on the inside and outside.
- -Frame corners were sealed full profile.
- -Jamb S85 plastic blocks (one at each end) were sealed to the jambs.
- -End dams at each end of the sill and head were sealed to the sill and head respectively.
- -All screws fastening the end dams to their resepective head and sill were sealed.
- -All sill anchor screws were sealed over.

#### 5.10 Hardware:

Туре	Quantity	Location	
Lock handle for shoot	Two	One at post between panels A & B, and one at panel C right stile.	
bolts		37.75" from bottom.	
		When locked, the shoot bolts engaged their respective channel.	
Door handle – latch	One	The door handle was fastened to panel D left side stile and located	
lock		37.75" from the bottom and fastened with a pair of screws from the	
		interior. The handle operated only the latch lock which engaged its	
		catch on panel C right side stile.	
Keyed dead bolt	One	The keyed dead bolt was located on panel D left side stile 34.25"	
		from the bottom. It controlled a three point lock system with lock	
		points at 6.5", 35.75", and 66.75" from the bottom. Each lock point	
		engaged its respective catch on panel C right side stile.	

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#### 5.10 Hardware:

Туре	Quantity	Location
4 wheel roller - S85B One		The roller was fastened to the bottom of the 2 <sup>nd</sup> post from the left
		with a pair of screws. The wheels traveled along the integral sill
		tracks. Each track contained a stainless steel cap.
Top Roller/Guide	One	Fastened to the top of the 2nd post from the left with a pair of
S85T		screws.
S85 concealed butt	5 per	One hinge at 8"and 19.5" from each end and one at midspan for
hinge	hinged	each hinge stile/jamb.
	stile/jamb	
S85 Leveler	24	All jamb and head anchor screws contained a leveler to adjust the
		position of the head and jamb respectively.

#### 5.11 Construction:

Location	Joinery Type	Number of Fasteners	Fastener Size	
Panel corners	Mitered	Two (2) keys per corner and each	N/A	
	Keyed and staked	key leg was staked twice		
Note that the frame of	corners were not joined	to each other. Head, sill, and jambs were	e independently	
	fastened t	to the rough opening.		
Metal shoot bolt guide (See drawing, M000600401) located at each end of the first post between panels A				
and B, and at each end of panel C right stile. Each was fastened with a pair of screws.				
Aluminum horizontal gasket retainer fastened to each panel's top and bottom rails with #8 x 0.75" PFH				
	screws located 4.5" f	from each end and 5" on center.		
Astragal extrusion S85JAMBEXT was applied to Panel C right stile and Panel D left stile. Each was fastened				
to its respective panel stile with four (4) screws; one 4" from each end and 29" o.c.				
A nylon cover (part S85COVERP) at each end of each post on the inboard side was fastened to the post				
	with a single screw a	nd used to retain weather-strip.		

#### 5.12 Reinforcement: None

#### 5.13 Installation:

Location on frame	Anchor type	Spacing		
Head	#10 x 3" PFH	6" from each end and 16" on center for a total of ten (10) screws -		
		staggered		
Jambs	#10 x 3" PFH	4" from each end and 14" on center for a total of 7 screws -		
		staggered		
Sill	#10 x 3.5" PFH	4" and 8" from each jamb and 4" and 8" from each panel post in		
each direction for a total of 16 screws - staggered				
Note that at the sill, access holes for fasteners were made through the upper horizontal sill wall to fasten				
	the lower h	orizontal sill wall to the rough opening.		

**6.0 - Test procedures and results:** All testing procedures were performed in accordance with the performance requirements of the test specifications referenced in paragraph 3.0 of this report. The number preceding each test listed below refers to the corresponding section in the NAFS.

6.4.5 - Force to latch for side-hinged door systems

Test Description	Results	Allowed	Comments
6.4.5.1 – Force to latch	40.03 N (9.00 lbf)	Report only	
6.4.5.2 - Force-to-engage deadbolt	2.2 N-m (19.50 in-lbs)	Report only	1
6.4.5.2 – Additional perpendicular force	44.48 N (10.00 lbf)	Report only	2
applied to stile in order to engage deadbolt			

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9.3.2 - Air Infiltration (ASTM E283-04(2012))

<b>Test Description</b>	Results	Allowed	Comments
75 Pa differential pressure	0.90 L/s*m <sup>2</sup>	1.5 L/s*m <sup>2</sup>	
1.57 psf differential pressure	0.18 cfm/ft <sup>2</sup>	0.30 cfm/ft <sup>2</sup>	
The tested specimen meets the perform	nance levels specified in A	AMA/WDMA/CSA 101/I.S.	2/A440 for air
leakage resistance.			

9.3.3 - Water Penetration (ASTM E547-00(2016))

Test Description	Results	Allowed	Comments
DP70 - 510 Pa (10.65 psf)	No water penetration	No water penetration	3

9.3.4.2 - Uniform Load Deflection at Design Pressure (ASTM E330-14)

Test Description	Results	Allowed	Comments	
DP40 - 1920 Pa (40.10 psf) Pos	6.86 mm (0.27")	13.46 mm (0.53")	4	
DP40 - 1920 Pa (40.10 psf) Neg	11.94 mm (0.47")	13.46 mm (0.53")	4	

9.3.4.3 - Uniform Load Structural at 1.5 x Design Pressure (ASTM E330-14)

Test Description	Results	Allowed	Comments
OL for DP40 - 2880 Pa (60.15 psf) Pos	0.25 mm (0.01")	7.11 mm (0.28")	4
OL for DP40 - 2880 Pa (60.15 psf) Neg	0.25 mm (0.01")	7.11 mm (0.28")	4

9.3.5 - Forced Entry Resistance (ASTM F842-17, AAMA 1304-18)

Test Description	Results	Allowed	Comments
ASTM F842 Type A Grade 10 &	No Entry	No Entry	5
AAMA 1304-18	-		

9.3.6.3 - Deglazing Test

Test Description	Results	Allowed	Comments
Active Sash Pull Stile - 320 N (71.94 lbf)	16%	Less than 90% of glazing bite	
Active Sash Rail - 230 N (51.71 lbf)	9%	Less than 90% of glazing bite	

#### 7.3.7 - Operation/Cycling Performance per AAMA 920-16

Test Description	Results	Allowed	Comments
250,000 Cycles opening 60 degrees at a	Passed	Met passing criteria in AAMA	6
rate of not less than 12 cycles per minute		920-16 section 8.1, 8.2, 8.3,	
• •		and 8.4	

Comment #1 - This test is to measure the torque force to operate the deadbolt.

Comment #2 - Reports any additional perpendicular force needed to be applied to the panel to get the deadbolt to engage after the latch has engaged.

Comment #3 - Tested without insect screen. Note that the folding door passed water penetration at a test pressure that exceeded the overall performance level of the door (DP40).

Comment #4 - Deflection measurement taken from post between panel B and C.

Comment #5 - ASTM F842 Grade 10 achieved.

Comment #6 – Tested a separate single door constructed with the same materials as the frame, weather-stripping, and hinges used on the sample described in this report with the astragal as used in the lock stile was tested per AAMA 920-16. A pneumatic cylinder attached to the door that pushed open and pulled the door shut at the prescribed rate so that it slammed shut. Testing was witnessed by: Jim Cruz with FTL at CRL's testing location in Vernon, CA. Personnel from CRL performing and/or witnessing all or part of the testing were Bladimir Ochoa, Mario Salazar, Roman Aguiniga, and Naoufel Mourchid.

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For a complete description of the tested sample, refer to the attached fifty-five (55) pages consisting of a bill of materials, cross section drawings, and individual die drawings. This report is complete only when all the above referenced bill of materials and drawings are attached.

The bill of materials, cross section drawings, and die drawings of frame and sash members are on file and have been compared to the sample submitted. Test sample sections, bill of materials, drawings and a copy of this report will be retained at the test laboratory for four years.

This test report may not be modified in any way without the written consent of Fenestration Testing Laboratory, Inc (FTL).

The preceding test results relate only to the tested specimen and were obtained by using the applicable test methods listed in section 3.0 and 6.0 above. This report does not constitute certification of this product or an endorsement by this laboratory. It is the property of the client named in section 1.0 above. Certification can only be granted by an approved administrator and/or validator.

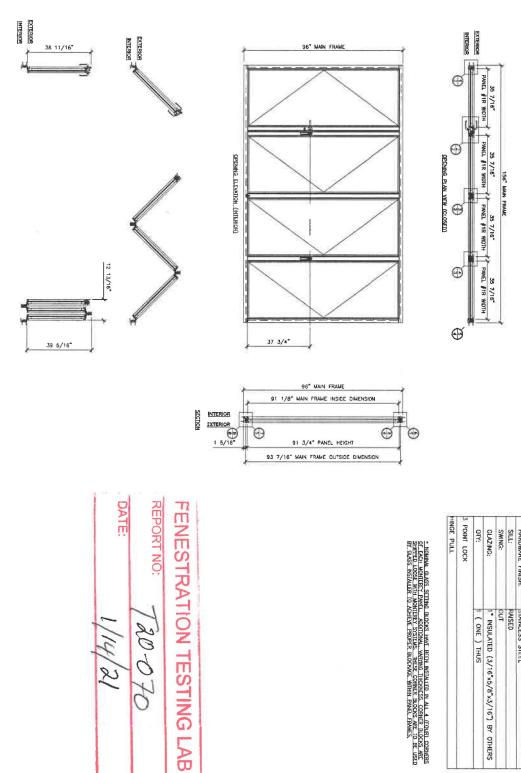
**Test Completion Date:** October 19, 2020 **Report Completion Date:** March 17, 2021

Pete Cruz - Test Engineer

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Laboratory Managen

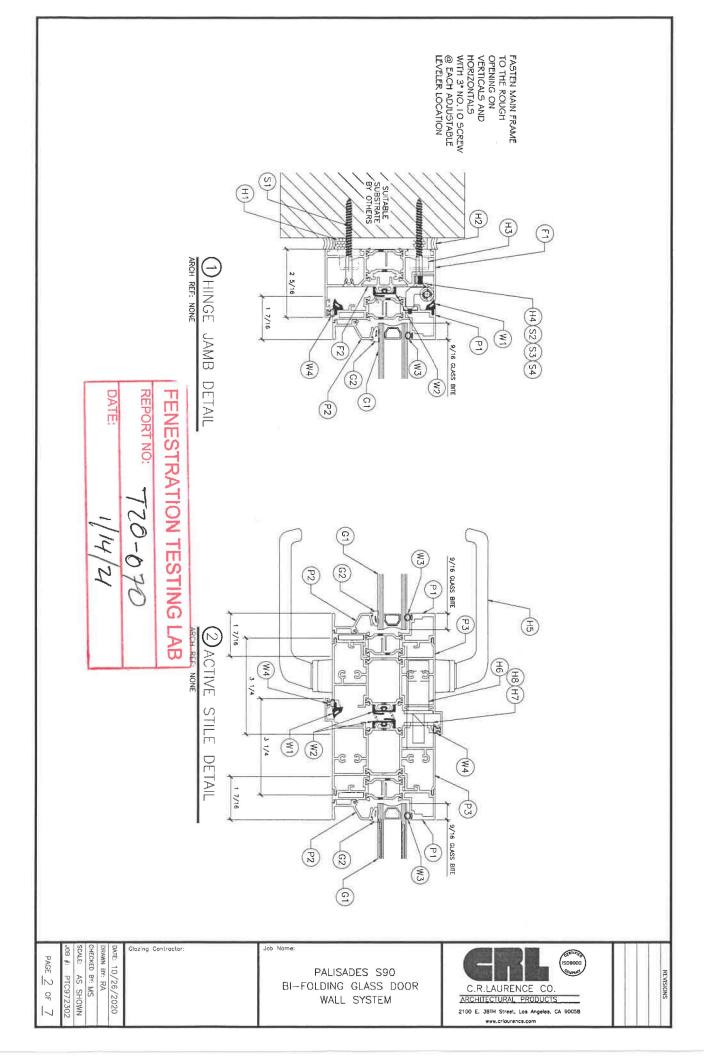


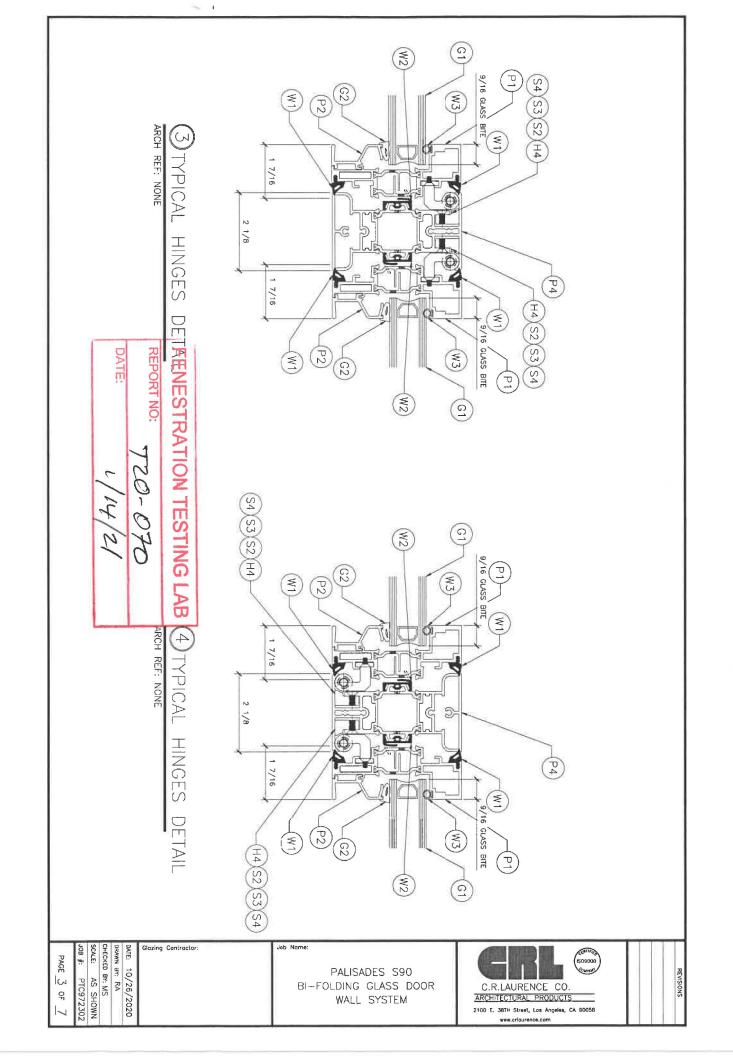
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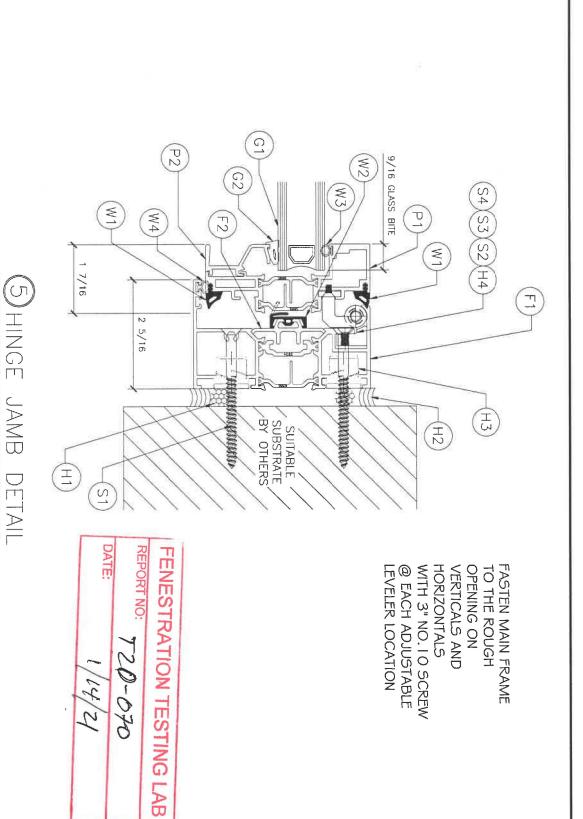
\* NOMINAL GLASS, STITMG BLOCKS, HAVE BEEN INSTALLED IN ALL 4 (TOUR), CORNERS SOCIAL MATTERS. PAREL, ADDITIONAL "MATCHES, SCORRER BLOCKS, ARE TO BE USED BY GLASS, INSTALLER TO ACHIEVE BLOCKS, ARE TO BE USED BY GLASS, INSTALLER TO ACHIEVE PROPER BLOCKAGE, WITHIN JEWIEL FRAMES, BY GLASS, INSTALLER TO ACHIEVE PROPER BLOCKAGE, WITHIN JEWIEL FRAMES,

PALISADES DOOR CONFIGURATION	GURATION
P0 **	1351503
CUSTOMER PO #	CR Laurence Co., Inc
SYSTEM:	590
FRAME & PANEL FINISH:	FRAME & PANEL FINISH: DARK BRONZE ANODIZE - CLASS 1
HARDWARE FINISH:	STAINLESS STEEL
SILL:	RAISED
SWING:	OUT
GLAZING:	1" INSULATED (3/16"x5/8"x3/16") BY OTHERS
OTY:	1 ( ONE ) THUS
POINT LOCK	
HINGE PULL	

Glazing Glazin	PALISADES S90 BI-FOLDING GLASS DOOR WALL SYSTEM	C.R.LAURENCE CO. ARCHITECTURAL PRODUCTS 2100 E. 38TH Street, Los Angeles, CA 90058 www.c/dourence.com	
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DATE: 10/26/2020
DATE: 10/26/2020
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ARCH REF: NONE

Job Name:

PALISADES S90 BI-FOLDING GLASS DOOR WALL SYSTEM C.R.LAURENCE CO.

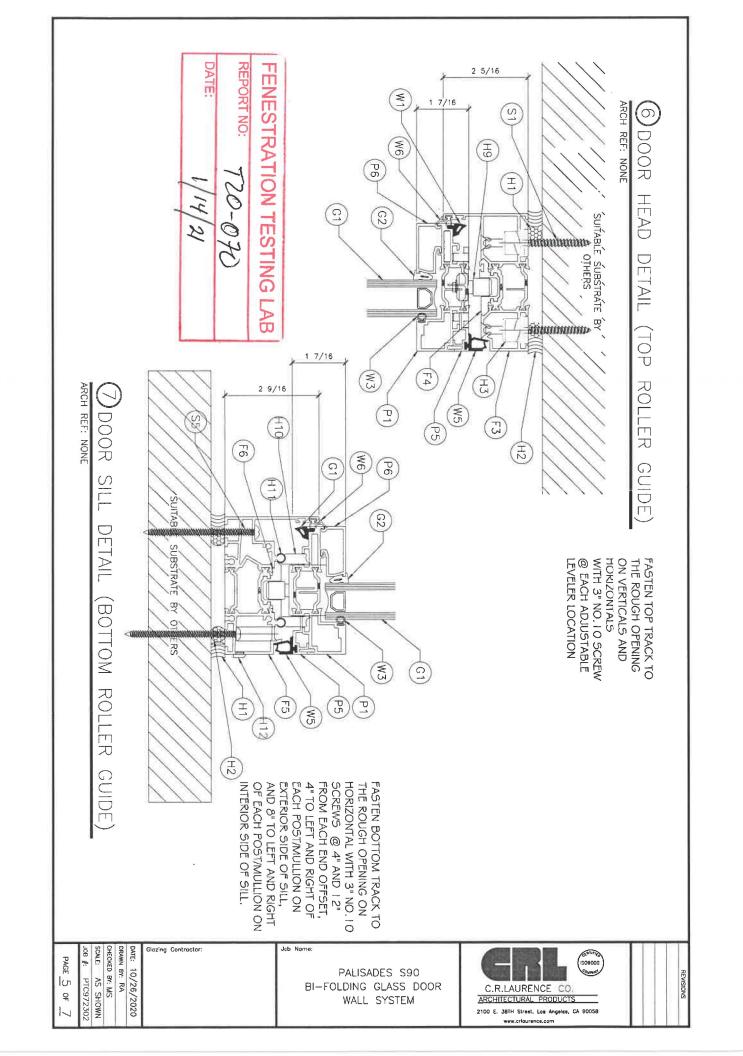
ARCHITECTURAL PRODUCTS

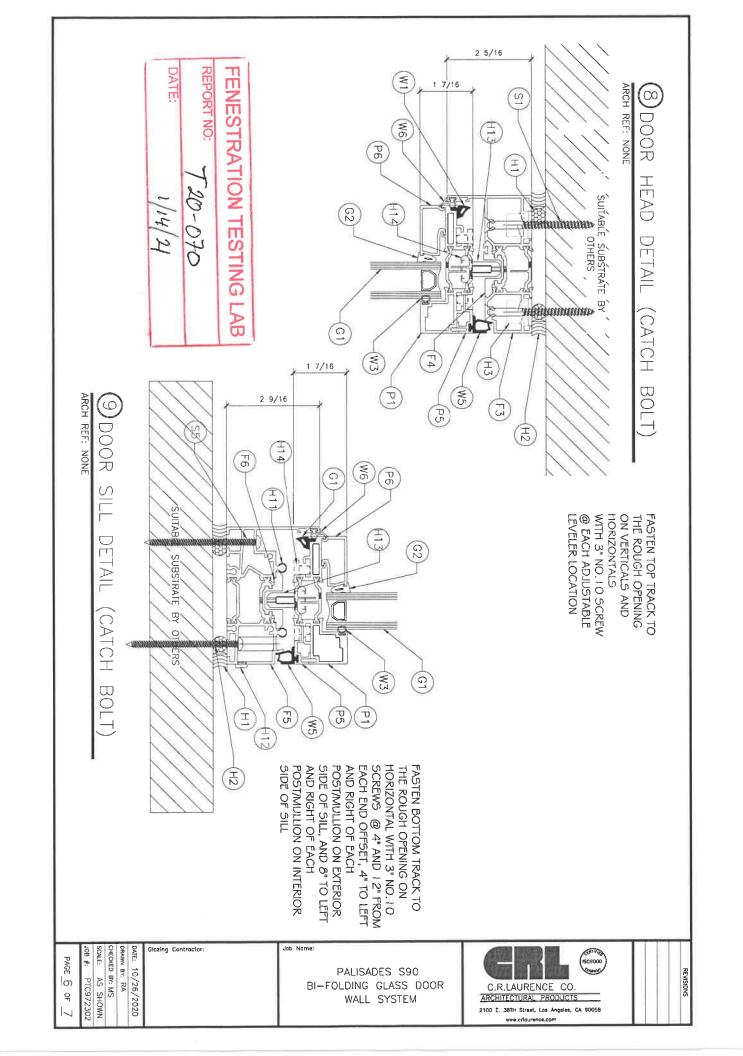
ARCHITECTURAL PRODUCTS

2100 E. 38TH Street, Los Angeles, CA 90058

www.criourence.com

REVISIONS





F1 F2 F3 F4 F5	MAIN FRAME	S85HJAMB_ S85JAMBSNAP	S85 - LATERAL FRAME (HINGED JAMB) S85 - JAMB SNAP				
F2 F3 F4 F5	AME						
F3 F4 F5	AME		300 UNIVE STAN				
F4 F5	<<	S85HEAD_	S85 - TOP TRACK				
F5	얦	S85GU1DETOP	S85 - GUIDE TOP TRACK				
	¥	S850SS1LL_	S85 - SURFACE-MOUNTED OUTSWING SILL / BOTTOM TRACK				
F6	×	S85GU1DEBOTTOM	S85 - LATERAL FRAME (HINGED JAMB)				
		55555175111	Solution (Miles of Miles)				
P1	Ø	S85PANEL_	S85 - PANEL (INSWING & OUTSWING)				
P2	N.	S85GLV_	S85 - PULL HANDLE				
P3	Ö	S85JAMBEXT_	S85 - PANEL JAMB EXTENDER (LOCK & STRIKE)				
P4	MP	S85P0ST_	S85 - POST / REINFORCEMENT MULLION				
P5	8	S85SHGR_	S85 - GASKET RETAINER				
P6	PANEL COMPONENTS	S85GLHV_	S85 - GLAZING STOP FOR 1"				
	9						
W1	-	S85GDRS	S85 - GASKET; DOOR RAIL STILE				
W2	문	S85GRP	S85 - GASKET; REINFORCEMENT POST				
W3	RST	WH34200300	BULB GASKET				
W4	WEATHERSTRIP / GASKET	MDAC350203	HOLLOW GASKET				
W5	ASK	S85GDRH	S85 - GASKET; DOOR RAIL HORIZONTAL				
W6	≶ છે	MDAC350208	FLOCKED GASKET				
C1		CLIC	NO 40 V 7" FLAT HEAD CHIEFT NETAL CORF"	_			
\$1	S	SMS	NO. 10 X 3" FLAT HEAD SHEET METAL SCREW  M5 X 0.8 MM THREAD, 6 MM LONG, CUP-POINT SET SCREW; HINGE FASTENER				
\$2	Ä	M5X6MMSS					
S3	FASTENERS	632X14FHMS	6-32 THREAD, 1/4" LONG, PHILLIPS FLAT HEAD SCREWS; HINGE FASTENER	_			
S4	FAS	48A126	8-32 FLAT HEAD SCREW; HINGE FASTENER	_			
S5	_	SMS	NO. 10 X 3" PAN HEAD SHEET METAL SCREW	-			
04			7/46" TEMPERED CLASS - F /O" NUMBER AND PROCES - 7/46" TEMPERED CLASS	-			
G1	rn.		3/16" TEMPERED GLASS - 5/8" ALUMINUM MILL SPACER - 3/16" TEMPERED GLASS	_			
G2	ZIZ	WH416	WEDGE GASKET	_			
	GLAZING	S85GSH1MC	S85 - GLASS SHIM CORNER	+			
H1		EF12C	1/2" CLOSED CELL BACKER ROD	+-			
H2		DC795BL	DOW CORNING 795 SILICONE	+			
НЗ		S85LEVELER	S85 LEVELER; RAPID BLOCK (12MM); FOR TOP TRACK & JAMBS	1			
H4		S85H1NGE	S85 - CONCEALED HINGE	1/2/1			
H5	O <sub>O</sub>	MDHANDLE_	Monterey S55/S80 Square HANDLE Standard 3 Points Lock	14			
H6	HARDWARE / MISC	MDPC050_	Monterey S55/S55R 3-Point LOCK (Lock Body + Cylinder In/Out Covers)	+ \			
H7	W.	MDS55STR1KE1.	Monterey S55/S55R SINGLE STRIKE on Panel for 3pt Lock (Top & Bottom)	7			
H8	WA	MDS55STR1KE20L1R	Monterey S55/S55R DOUBLE STRIKE on Panel for 3pt Lock	+			
Н9	8	S85TGU1DE	S85 - TOP ROLLER GUIDE	+			
H10	Ì	S85BROLLER	S85 BOTTOM ROLLER GUIDE; 4PCS BEARING WHEEL	+			
H11		6701A20	S.S.TRACK COVER	+			
H12		MDWHCB	WEEP HOLE COVER (BLACK) / END CAP	+			
H13		S85CATCHB0LT	S85 - CATCH BOLT	+			
H14		S85B0LTGU1DE	S85 - TOP & BOTTOM BOLT GUIDE	+			
		S85COVERP	S85 - COVER FOR POST; TOP & BOTTOM	-			
		S85COVERP S85COVERJE	S85 - COVER FOR POST; TOP & BOTTOM  S85 - COVER FOR JAMB EXTENDER; TOP & BOTTOM	-			
		S85BLOCKHJBR1LOR	S85 - BLOCK FOR HINGE JAMB BOTTOM RAISED; INSWING LH + OUTSWING RH	+			
		S85BLOCKHJBR1ROL	S85 - BLOCK FOR HINGE JAMB BOTTOM RAISED; INSWING RH + OUTSWING LH				
		S85BLOCKHJT1LOR	S85 - BLOCK FOR HINGE JAMB TOP; INSWING LH + OUTSWING RH				
			S85 - BLOCK FOR HINGE JAMB TOP; INSWING RH + OUTSWING LH				
		S85BLOCKHJT1ROL	S85 - CORNER CLIP "SMALL"				
		S85CORNERS	S85 - CORNER CLIP "LARGE"	_			
		S85CORNERL					
		S85CATCH_HSCC	S85 - CATCH S85 - CATCH BACKPLATE	_			
		S85CATCHBP					
		S85CATCHB0DY	S85 - CATCH BODY				
		S85EDBRL	S85 - END DAM FOR BOTTOM RAISED TRACK; LH				
		S85EDBRR	S85 - END DAM FOR BOTTOM RAISED TRACK; RH				
		S85EDTL	S85 - END DAM FOR TOP TRACK; LH				
		\$85EDTL \$85EDTR 1420TR\$\$316ASTMA19396	S85 - END DAM FOR TOP TRACK; RH				

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Glazing Contractor:

Job Name:

PALISADES S90 BI-FOLDING GLASS DOOR WALL SYSTEM

