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CR LAURENCE CO, INC.

ACOUSTICAL PERFORMANCE TEST REPORT

SCOPE OF WORK
ASTM E90 SOUND TRANSMISSION LOSS TESTING ON A D900 TD-42" X 96" DOOR SYSTEM

REPORT NUMBER
H9895.01-303-11 R0

TEST DATE
01/24/18

ISSUE DATE
02/15/18

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01/24/22

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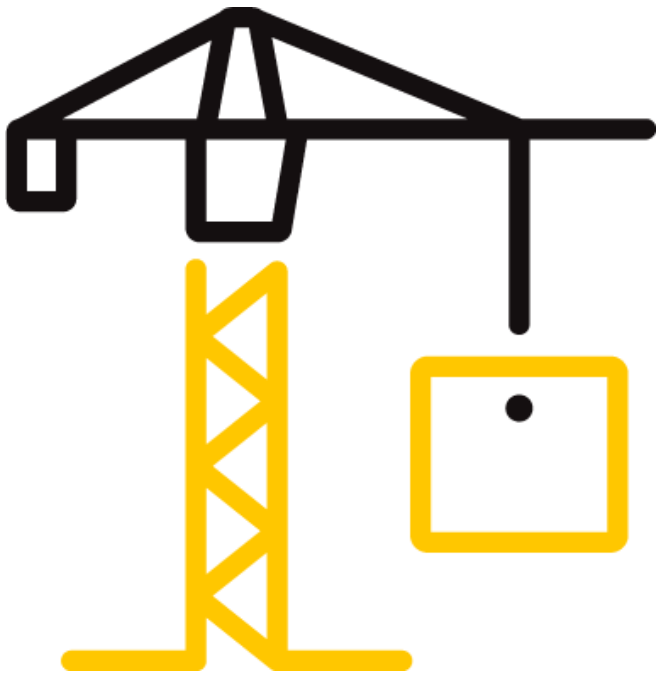

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Lake Forest, California 92630

Telephone: 949-460-9600
Facsimile: 717-764-4129
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TEST REPORT FOR CR LAURENCE CO, INC.
Report No.: H9895.01-303-11 r0
Date: 02/15/18

REPORT ISSUED TO

CR LAURENCE CO, INC.
2503 East Vernon Avenue
Los Angeles, California 90058

SECTION 1

SCOPE

Intertek Building & Construction (B&C) was contracted by CR Laurence Co, Inc. to conduct a sound transmission loss test. Results obtained are tested values and were secured by using the designated test method(s). The complete test data is included herein. The client provided the test specimen. All measurements were conducted in the HT test chambers at Intertek B&C located 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

SERIES/MODEL	D900 TD-42" x 96"
TYPE	Door System
GLAZING	1" IG (7/16" Laminate Interior, 3/8" Air Space, 3/16" Exterior)
TEST CONDITION	Operable
DATA FILE NO.	H9895.01A
STC	36
OITC	31
AIR INFILTRATION AT 1.57 PSF	0.02 cfm/ft^2
AIR INFILTRATION AT 6.27 PSF	0.06 cfm/ft^2

For INTERTEK B&C:

COMPLETED BY:	Leeland S. Hoover	**REVIEWED BY:**	Bradlay D. Hunt
TITLE:	Technician I	**TITLE:**	Laboratory Manager
SIGNATURE:	Digitally Signed by: Leeland Hoover	**SIGNATURE:**	Digitally Signed by: Bradlay Hunt
DATE:	02/15/18	**DATE:**	02/15/18

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SECTION 3
TEST METHOD(S)

The specimens were evaluated in accordance with the following:

ASTM E90-09 (2016), *Standard Test Method for Laboratory Measurement of Airborne Sound Transmission Loss of Building Partitions and Elements*

ASTM E413-16, *Classification for Rating Sound Insulation*

ASTM E1332-16, *Standard Classification for Rating Outdoor-Indoor Sound Attenuation*

ASTM E2235-04 (2012), *Standard Test Method for Determination of Decay Rates for Use in Sound Insulation Test Methods*

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*

SECTION 4
SPECIMEN INSTALLATION

A sound transmission loss test was initially performed on a filler wall.

The specimen plug was removed from the filler wall assembly. A filler wall-reducing element was used to adjust the test opening size to accommodate the test specimen. The reducing element consisted of a double 2x6 wood stud wall construction with three layers of 5/8" drywall on both sides. The stud cavities in the wall were insulated with two layers of R-19 fiberglass insulation. The specimen was placed on an isolation pad in the custom test opening. Duct seal was used to seal the perimeter of the specimen to the test opening on both sides. The interior side of the specimen, when installed, was approximately 1/4" from being flush with the receive room side of the filler wall. A stethoscope was used to check for any abnormal air leaks around the test specimen prior to testing. Operable portions of the test specimen, if any, were cycled at least five times prior to testing.

SECTION 5
EQUIPMENT

The equipment listed below meets the requirements of the test methods stated in Section 3 of this report.

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INSTRUMENT	MANUFACTURER	MODEL	DESCRIPTION	ASSET #	CAL DATE
Data Acquisition Card	National Instruments	PXIe-4464	Data Acquisition Card	INT00627	10/17 *
Data Acquisition Card	National Instruments	PXIe-4464	Data Acquisition Card	INT00395	10/17 *
Data Acquisition Card	National Instruments	PXIe-4464	Data Acquisition Card	INT00396	10/17 *
Source Room Microphone	PCB Piezotronics	378C20	Microphone and Preamplifier	INT00239	04/17
Source Room Microphone	PCB Piezotronics	378C20	Microphone and Preamplifier	INT00240	04/17
Source Room Microphone	PCB Piezotronics	378C20	Microphone and Preamplifier	INT00241	04/17
Source Room Microphone	PCB Piezotronics	378C20	Microphone and Preamplifier	INT00242	04/17
Source Room Microphone	PCB piezotronics	378C20	Microphone and Preamplifier	INT00243	04/17
Receive Room Microphone	PBC Piezotronics	378C20	Microphone and Preamplifier	INT00244	04/17
Receive Room Microphone	PCB Piezotronics	378C20	Microphone and Preamplifier	INT00245	04/17
Receive Room Microphone	PCB Piezotronics	378C20	Microphone and Preamplifier	INT00246	04/17
Receive Room Microphone	PCB Piezotronics	378C20	Microphone and Preamplifier	INT00247	04/17
Receive Room Microphone	PCB Piezotronics	378C20	Microphone and Preamplifier	INT00228	04/17
Receive Room Environmental Indicator	Comet	T7510	Receive Room	INT00299	10/17
Source Room Environmental Indicator	Comet	T7510	Source Room	INT00300	10/17
Microphone Calibrator	Norsonic	1251	Pistonphone Calibrator	INT00288	06/17

**- Note: The calibration frequency for this equipment is every two years per the manufacturer's recommendation.*

TEST CHAMBER

	VOLUME	DESCRIPTION
RECEIVE ROOM	231 m^3	Rotating vane and stationary diffusers Temperature and humidity controlled Isolation pads under the floor
SOURCE ROOM	196 m^3	Stationary diffusers only Temperature and humidity controlled

	MAXIMUM SIZE	DESCRIPTION
TL TEST OPENING	4.27 m wide by 3.05 m high	Vibration break between source and receive rooms

N/A-Not Applicable

SECTION 6
LIST OF OFFICIAL OBSERVERS

NAME	COMPANY
Garrett Osterode	CR Laurence Co, Inc.
Ryan R. Lau	Intertek B&C
Leeland S. Hoover	Intertek B&C

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SECTION 7
TEST PROCEDURE

Air Infiltration
The air seal between the test specimen and the test wall. 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. Pressure was applied and the total air infiltration was measured. The specimen exterior was sealed with plastic sheet and duct tape. The extraneous air infiltration was measured. Environmental corrections were applied to the both airflow results. The airflow rate was calculated by subtracting the extraneous airflow from the total airflow and dividing the difference by the specimen area.

Acoustical Tests
The sensitivity of the microphones was checked before measurements were conducted. The transmission loss values were obtained for a single direction of measurement. Two background noise sound pressure level and five sound absorption measurements were conducted at each of five microphone positions. Two sound pressure levels were made simultaneously in the receive and source rooms at each of five microphone positions. The air temperature and relative humidity conditions were monitored and recorded during all measurements. Data for flanking limit tests, repeatability measurements, and reference specimen tests are available upon request.

SECTION 8
ACOUSTICAL TEST CALCULATIONS

Transmission loss (TL) at each 1/3 octave frequency is the average source room sound pressure level minus the average receive room sound pressure level, plus, 10 times the log of the specimen area divided by the sound absorption of the receive room with the sample in place.

STC Rating
To obtain the Sound Transmission Class (STC), read the TL of the contour curve at 500 Hz. The sum of the deficiencies below the contour curve must not exceed 32. The maximum deficiency at any one frequency must not exceed 8.

OITC Rating
The Outdoor-Indoor Transmission Class (OITC) is calculated by subtracting the logarithmic summation of the TL values from the logarithmic summation of the A-weighted transportation noise spectrum stated in ASTM E1332.

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SECTION 9
SPECIMEN DESCRIPTION

	FRAME	LEAF
SIZE	42" by 96"	40-1/2" by 94-5/8"
THICKNESS	4-1/2"	2-1/4"
CORNERS	Butted	Mitered
FASTENERS	Screws	Keys
SEAL METHOD	Sealant	Sealant
MATERIAL	Aluminum	Aluminum
REINFORCEMENT	N/A	N/A
THERMAL BREAK MATERIAL	Insulbar	Insulbar
DAYLIGHT OPENING SIZE	N/A	33" by 87-1/16"

MEASURED OVERALL INSULATION GLASS UNIT THICKNESS	0.998"
SPACER TYPE	Aluminum box

	EXTERIOR SHEET	GAP	INTERIOR SHEET
MEASURED THICKNESS	0.184"	0.386"	0.182", 0.060", 0.186"
MATERIAL	Heat Strengthened	Air*	Laminated
LAMINATE MATERIAL	N/A	N/A	PVB

GLAZING METHOD	Exterior
GLAZING MATERIAL	Silicone
GLAZING BEAD MATERIAL	Aluminum

	TYPE	QUANTITY	LOCATION
WEATHERSTRIP	1/8" Hollow bulb gasket	1 Row	Perimeter of frame
	1/4" Rubber leaf gasket	1 Row	Perimeter of leaf
HARDWARE	Full mortise butt hinges	4	Hinge stile
	Multi-point Lock and handle	1	Lock stile
DRAINAGE	1-1/4" by 1/2" weep slot with cover	1	Sill
	3/4" by 1/8" weep slot	2	Sill

TOTAL WEIGHT (lbs)	**AVERAGE WEIGHT** (lbs / ft^2)
366	13.07

** - Stated per Client/Manufacturer, N/A-Not Applicable*

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Date: 02/15/18

SECTION 10
TEST RESULTS

ASTM E90
AIRBORNE SOUND TRANSMISSION LOSS

ACCREDITED Testing Laboratory

TEST DATE	01/24/18				
DATA FILE NO.	H9895.01A				
CLIENT	CR Laurence Co., Inc.				
DESCRIPTION	Series/Model: D900 TD-42" by 96" Side-Hinged Door with 1" IG (7/16" Laminate Interior, 3/8" Air Space, 3/16" Exterior)				
SPECIMEN AREA	2.60 m^2	**RECEIVE TEMP.**	18.9 °C	**SOURCE TEMP**	18.7 °C
TECHNICIAN	Bradlay Hunt	**RECEIVE HUMIDITY**	40%	**SOURCE HUMIDIT**	44%

FREQ (Hz)	BACKGROUND SPL (dB)	ABSORPTION (m^2)	SOURCE SPL (dB)	RECEIVE SPL (dB)	SPECIMEN TL (dB)	95% CONFIDENCE LIMIT	NUMBER OF DEFICIENCIES
80	44.1	4.9	104	78	24	1.18	-
100	39.3	4.3	106	78	27	1.30	-
125	45.5	5.0	105	78	25	1.53	0
160	44.7	5.2	104	74	27	1.15	0
200	38.5	6.7	105	77	24	0.61	2
250	29.1	7.1	106	76	25	0.48	4
315	23.5	6.8	106	72	30	0.66	2
400	23.4	5.9	106	69	33	0.48	2
500	18.2	5.4	105	68	34	0.33	2
630	17.0	5.7	106	69	34	0.58	3
800	20.5	5.8	106	68	35	0.42	3
1000	8.3	6.1	107	67	36	0.19	3
1250	5.1	6.3	105	64	37	0.24	3
1600	4.3	7.0	104	62	38	0.14	2
2000	4.0	8.4	101	57	39	0.20	1
2500	3.9	9.6	101	57	38	0.18	2
3150	4.2	11.4	100	54	40	0.23	0
4000	4.8	14.6	98	47	44	0.23	0
5000	5.5	19.5	98	44	45	0.38	-
STC RATING		36	*(Sound Transmission Class)*				
DEFICIENCIES		29	*(Sum of Deficiencies)*				
OITC RATING		31	*(Outdoor-Indoor Transmission Class)*				

Notes:
1) Receive Room levels less than 5 dB above the Background levels are red.
2) Specimen TL levels listed in red indicate the lower limit of the transmission loss.
3) Specimen TL levels listed in green indicate that there has been a filler wall correction applied

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SECTION 11
RESULTS GRAPH

ASTM E90
AIRBORNE SOUND TRANSMISSION LOSS

ACCREDITED
Testing Laboratory

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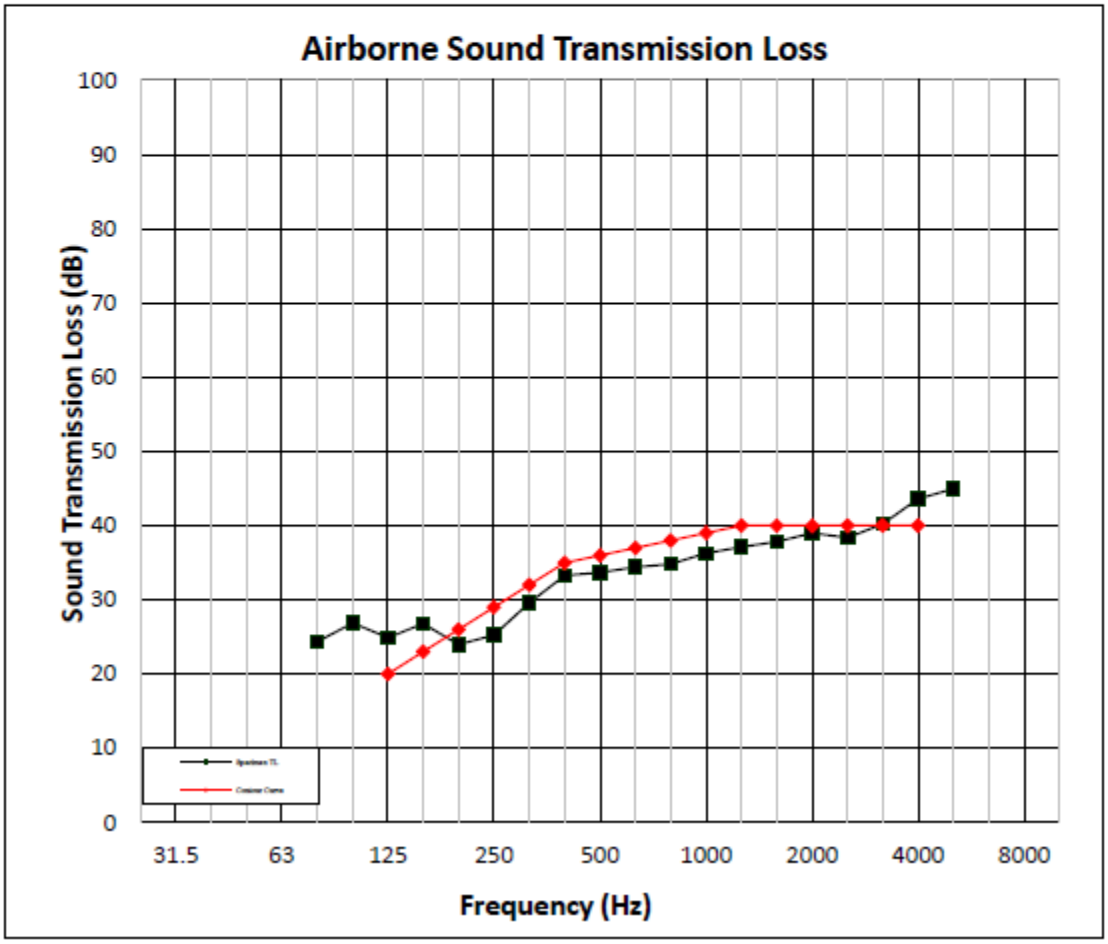

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SECTION 12
PHOTOGRAPHS

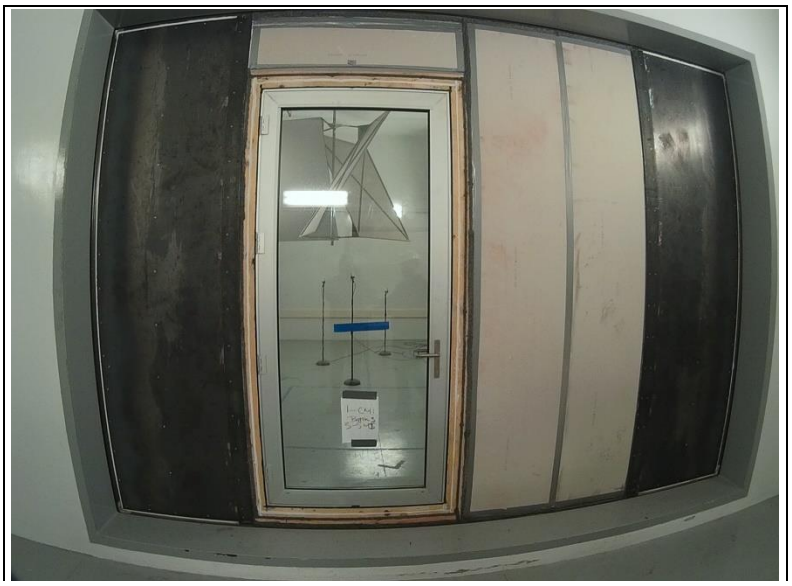

Photo No. 1
Source Room View of Test Specimen

Photo No. 2
Receive room

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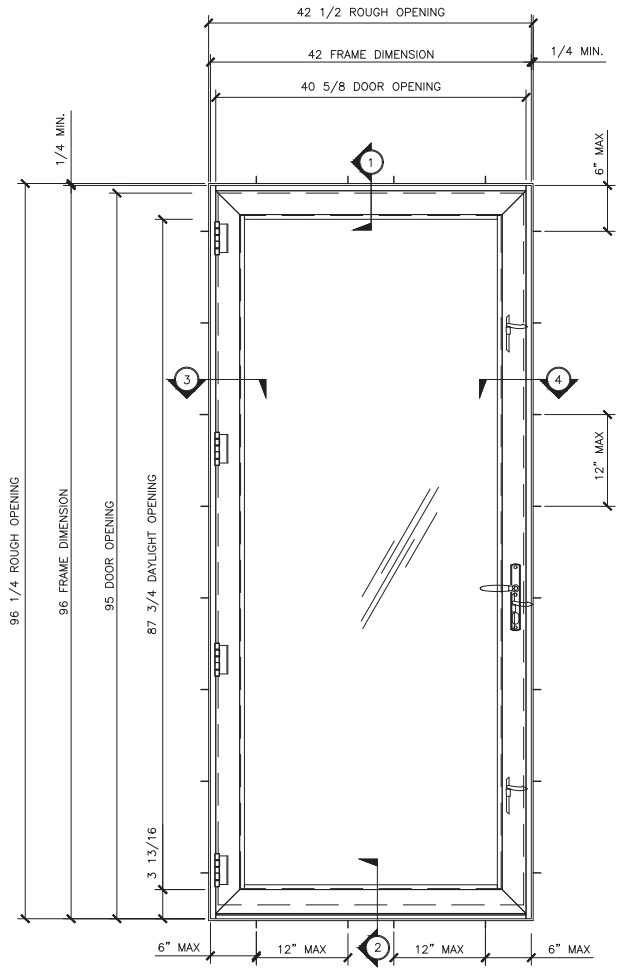
SECTION 13
DRAWINGS



intertek Report #: H9895.01 Date: 02/15/18 Verified by:

1 SERIES D900 TERRACE DOOR– OUT–SWING

1 1/2"=1'–0"

ITEM		PT. NO.	PART DESCRIPTION	
C1	FRAME & SASH COMPONENTS	HT300	BOTTOM RAIL	
C2		WN429	GLASS STOP	
C3		JI450	FRAME–JAMB	
C4		HT450	FRAME–HEAD	
C5		HT300	SASH MEMBER	
C6		WH751	HINGE ASSEMBLY	
C7		WH7633	WEEP HOLE COVERS	
W1	WTHR STRIP	WH358	BLADE GASKET	
W2		GT416	GLAZING TAPE	
W3		WH344	WEDGE GASKET	
W4		WH342	BULB GASKET INTERIOR	
G1	GLAZING		3/16" CLEAR TEMP–3/8" AIR–3/16" HEAT STRENGTH'ND .060 SOLUTIA PVB–3/16" HEAT STRENGTH'ND	
G2		WB410	WEDGE BLOCK	
G3		SB222	SETTING BLOCK	
G4		SB450	SPACER GASKET	
G5		NP267	HOLLOW FORM GASKET	
G6		TH701	DEADBOLT STRIKE	
G7		TH702	TONGUE STRIKE	
G8		TH703	SHOOT BOLT STRIKE	
G9		HT451	STANDARD THRESHOLD–OUTSWING	
H3	HARDWARE	CB291	CORNER BLOCK	
H4		----	#10 X 2 ½" SS WOOD SCREWS	
H5		-----	ATHINAI M156/216N–SOLID BRASS W/DEADBOLT	
H6		----	#12–24 PH UNDER CUT FLAT HEAD MACHINE SCREWS	
S1		EF38C	3/8" CLOSED CELL BACKER ROD	
S3		DC795BL	DOW CORNING 795 BLACK–BUILDING SEALANT	

TEST REQUIREMENTS

AIR INFILTRATION:
<0.06 CFM/SQ.FT. @6.24 CFM

STATIC WATER:
15 Psf

DESIGN PRESSURE:
80 Psf

STRUCTURAL OVERLOAD:
120 Psf

TAS-201-94 SMI, LEVEL A *WIND ZONE 4*

TAS-202-94 Uniform Static Air Pressure ±80.0psf DP, 15.0psf water

TAS 203-94 Cyclic Pressure loading ±80.0psf DP

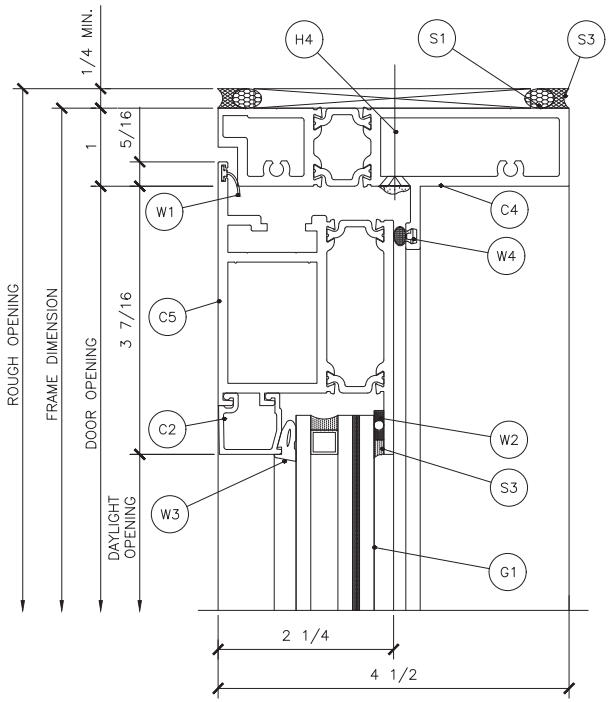
REVISIONS

CERTIFIED ISO9000 COMPANY
C.R.LAURENCE CO.
ARCHITECTURAL PRODUCTS
2100 E. 38TH Street, Los Angeles, CA 90058
www.crlaurence.com

Job Name: SERIES D900 TERRACE DOOR 42" X 96" OUTSWING–SMI

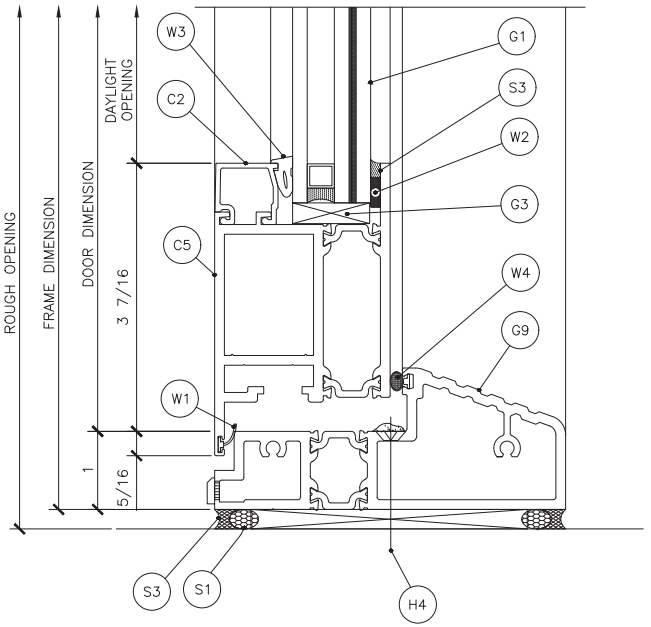
Glazing Contractor:

DATE: 8.31.2017
DRAWN BY: GDO
CHECKED BY:
SCALE: AS SHOWN
JOB #: PTC694395



1 OUT-SWING DOOR -HEAD

1-0"=1'-0"



2 OUT-SWING DOOR-AT THRESHOLD

1-0"=1'-0"

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Job Name:

SERIES D900 TERRACE DOOR
42" X 96" OUTSWING-SMI

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DATE:	8.31.2017
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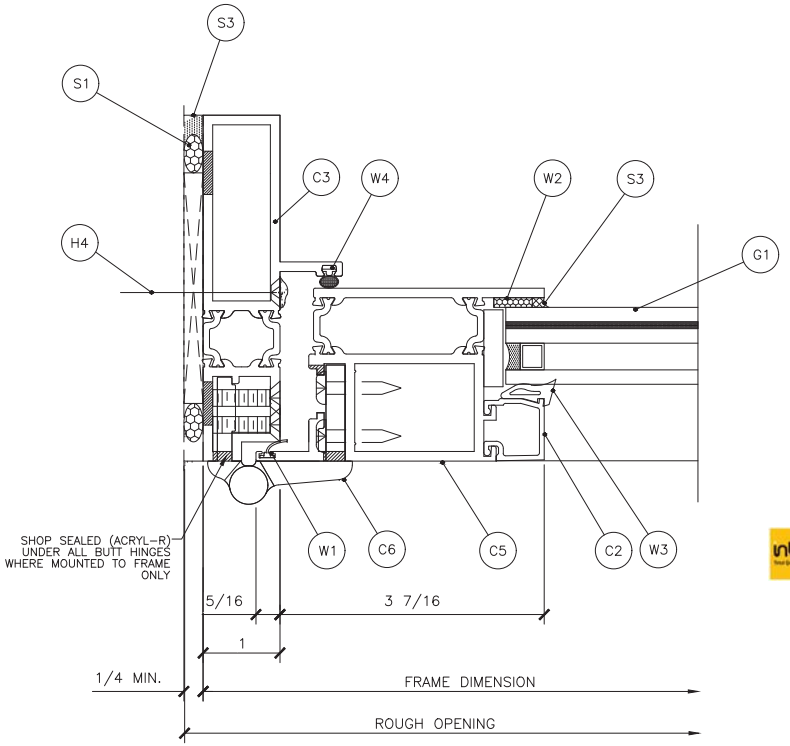
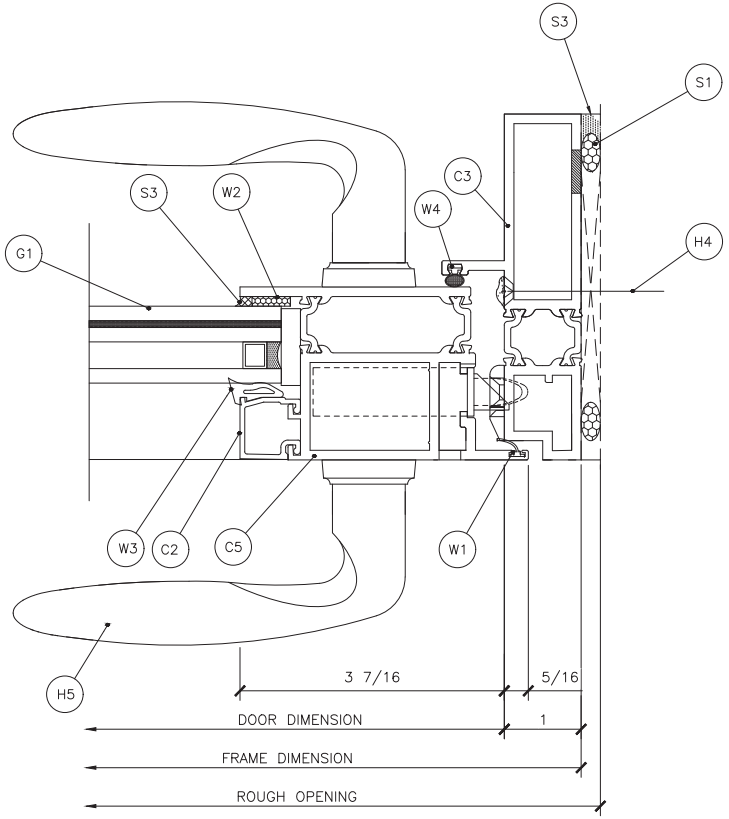


3 OUT-SWING DOOR @ JAMB

1-0"=1'-0"



4 OUT-SWING DOOR @ JAMB/LOCK STILE

1-0"=1'-0"

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Glazing Contractor:

DATE: 8.31.2017
DRAWN BY: GDO
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SCALE: AS SHOWN
JOB #: PTC694395

SHT 3 OF 3

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SECTION 14
REVISION LOG

REVISION #	DATE	PAGES	REVISION
0	02/15/18	N/A	Original Report Issue