



## TEST REPORT

**Report No.:** G3061.01-301-47

**Rendered to:**

CR LAURENCE CO., INC.  
Vernon, California

**PRODUCT TYPE:** Fixed Lite Storefront  
**SERIES/MODEL:** OS450 & OS450SG

| Title                                      | Summary of Results                                   |
|--------------------------------------------|------------------------------------------------------|
| Design Pressure                            | ±1200 Pa (±25.06 psf)                                |
| Air Infiltration                           | <0.1 L/s/m <sup>2</sup> (<0.01 cfm/ft <sup>2</sup> ) |
| Water Penetration Resistance Test Pressure | 300 Pa (6.24 psf)                                    |
| Uniform Load Structural Test Pressure      | ±1800 Pa (±37.59 psf)                                |

Reference must be made to Report No. G3061.01-301-47, dated 09/27/16 for complete test specimen description and detailed test results.

**1.0 Report Issued To:** CR Laurence Co., Inc.  
2503 East Vernon Avenue  
Vernon, California 90058

**2.0 Test Laboratory:** Architectural Testing, Inc., an Intertek company ("Intertek-ATI")  
25800 Commercentre Drive  
Lake Forest, California 92630  
949-460-9600

**3.0 Project Summary:**

**3.1 Product Type:** Fixed Lite Storefront – Exterior Glazed

**3.2 Series/Model:** OS450 & OS450SG

**3.3 Compliance Statement:** Results obtained are tested values and were secured by using the designated test methods. Test specimen description and results are reported herein.

**3.4 Test Date:** 09/14/16

**3.5 Test Record Retention End Date:** All test records for this report will be retained until September 14, 2020.

**3.6 Test Location:** CR Laurence Co., Inc. test facility in Vernon, California. Calibration of test equipment was performed by Intertek-ATI in accordance with AAMA 205-01 "In-Plant Testing Guidelines for Manufacturers and Independent Laboratories".

**3.7 Test Specimen Source:** The test specimen was provided by the client. Representative samples of the test specimen were retained by the customer.

**3.8 Drawing Reference:** The test specimen drawings have been reviewed by Intertek-ATI and are representative of the test specimen(s) reported herein.

**3.9 List of Official Observers:**

| <u>Name</u>      | <u>Company</u>        |
|------------------|-----------------------|
| Garrett Osterode | CR Laurence Co., Inc. |
| Jarod S. Hardman | Intertek-ATI          |

**4.0 Test Method:**

AAMA 501-15, *Methods of Test for Exterior Walls*.

## 5.0 Test Specimen Description:

### 5.1 Product Sizes:

| Overall Area:<br>12.01 m <sup>2</sup><br>(129.32 ft <sup>2</sup> ) | Width       |        | Height      |        |
|--------------------------------------------------------------------|-------------|--------|-------------|--------|
|                                                                    | millimeters | inches | millimeters | inches |
| Overall size                                                       | 4928        | 194    | 2438        | 96     |

### 5.2 Frame Construction:

| Frame Member | Material | Description                                                                                                   |
|--------------|----------|---------------------------------------------------------------------------------------------------------------|
| Head         | Aluminum | Stack head channel, part No. CS56811, see attached drawings.                                                  |
| Head         | Aluminum | Head channel insert, part No. OG46611, snap fit into stack head channel, see attached drawings.               |
| Horizontal   | Aluminum | Horizontal mullion, part No. OG53411, see attached drawings.                                                  |
| Horizontal   | Aluminum | Horizontal sheer blocks, part No. APK563, inserted into horizontal mullion, see attached drawings.            |
| Horizontal   | Aluminum | Horizontal insert, part No. OG43211, snap fit into horizontal mullion, see attached drawings.                 |
| Horizontal   | Aluminum | Horizontal F-Cap, part No. OG53411, snap fit over exterior face of horizontal mullion, see attached drawings. |
| Sill         | Aluminum | Stack sill channel, part No. CS56311, see attached drawings.                                                  |
| Sill         | Aluminum | Sill insert, part No. OG47611, snap fit into stack sill channel, see attached drawings.                       |
| Sill         | Aluminum | Sill F-Cap, part No. OG53911, snap fit into sill stack channel, see attached drawings.                        |
| Jamb         | Aluminum | Jamb wall, part No. OG45211, see attached drawings.                                                           |
| Jamb         | Aluminum | End dam, part No. EC450, secured to ends of jambs with #8 x 1/2" Phillips SMS screws.                         |
| Vertical     | Aluminum | V-Mull, part No. OG45511, see attached drawings.                                                              |
| Vertical     | Aluminum | Structurally sealed vertical mullion, part No. OG45111, see attached drawings.                                |

## 5.0 Test Specimen Description: (Continued)

### 5.2 Frame Construction: (Continued)

| Frame Member | Material | Description                                                           |
|--------------|----------|-----------------------------------------------------------------------|
| Vertical     | Aluminum | Expansion mullion M-half,<br>part No. OG46211, see attached drawings. |
| Vertical     | Aluminum | Expansion mullion F-half,<br>part No. OG46911, see attached drawings. |

|             | Joinery Type | Detail                                                               |
|-------------|--------------|----------------------------------------------------------------------|
| All corners | Flush        | Secured through head and sill with<br>#8 x 1/2" Phillips SMS Screws. |

### 5.3 Reinforcement:

| Item Number | Location                                                                | Material |
|-------------|-------------------------------------------------------------------------|----------|
| H7          | Inserted into structurally sealed<br>vertical mullion part No. OG45111. | Aluminum |

### 5.4 Weatherstripping:

| Description               | Quantity | Location                                                                                    |
|---------------------------|----------|---------------------------------------------------------------------------------------------|
| Two finger vinyl isolator | 2 rows   | Inserted into exterior and interior<br>leg of expansion mullion M-half<br>part No. OG46211. |

## 5.0 Test Specimen Description: (Continued)

**5.5 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 | Dry glazed with EPDM press in gasket at interior and exterior face, part No. NP225, for all joints excluding structural glazed mullion, structural glazed mullion sealed at interior and exterior face with structural silicone and silicone spacer gasket, part No. SP450. |

| Location         | Quantity | Daylight Opening |             | Glass Bite |
|------------------|----------|------------------|-------------|------------|
|                  |          | millimeters      | inches      |            |
| Upper fixed lite | 4        | 1168 x 1553      | 46 x 61-1/8 | 7/16"      |
| Lower fixed lite | 4        | 1168 x 740       | 46 x 29-1/8 | 7/16"      |

## 5.6 Drainage:

| Method    | Size       | Quantity | Location                 |
|-----------|------------|----------|--------------------------|
| Weep hole | 1" x 3/16" | 8        | 2 per bay equal spacing. |

**5.7 Hardware:** No hardware was utilized.

**5.8 Screen Construction:** No screen was utilized.

## 6.0 Installation:

The specimen was installed into a Pine wood buck. The rough opening allowed for a 1/4" shim space. The exterior and interior perimeter of the window was sealed with structural silicone sealant.

| Location                            | Anchor Description | Anchor Location                                           |
|-------------------------------------|--------------------|-----------------------------------------------------------|
| Through head and sill stack channel | 1/4" x 2" lag bolt | 6" from ends of vertical members and center of each lite. |

**7.0 Test Results:** The temperature during testing was 23°C (73°F). The results are tabulated as follows:

| Title of Test                                                                                                                                | Results                                                 | Allowed                                                    | Note |
|----------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------|------------------------------------------------------------|------|
| <b>Air Leakage,</b><br>per ASTM E283<br>at 75 Pa (1.57 psf)                                                                                  | <0.1 L/s/m <sup>2</sup><br>(<0.01 cfm/ft <sup>2</sup> ) | 0.3 L/s/m <sup>2</sup><br>(0.06 cfm/ft <sup>2</sup> ) max. | 1    |
| <b>Air Leakage,</b><br>per ASTM E283<br>at 300 Pa (6.27 psf)                                                                                 | <0.1 L/s/m <sup>2</sup><br>(<0.01 cfm/ft <sup>2</sup> ) | 0.3 L/s/m <sup>2</sup><br>(0.06 cfm/ft <sup>2</sup> ) max. | 1    |
| <b>Water Penetration,</b><br>per ASTM E331<br>at 300 Pa (6.24 psf)                                                                           | Pass                                                    | No leakage                                                 | 1    |
| <b>Uniform Load Preload,</b><br>per ASTM E330<br>Deflections taken at vertical mullion<br>+600 Pa (+12.5 psf)                                | Pass                                                    | No damage                                                  | 3, 4 |
| <b>Air Leakage,</b><br>per ASTM E283<br>at 75 Pa (1.57 psf)                                                                                  | <0.1 L/s/m <sup>2</sup><br>(<0.01 cfm/ft <sup>2</sup> ) | 0.3 L/s/m <sup>2</sup><br>(0.06 cfm/ft <sup>2</sup> ) max. | 2    |
| <b>Air Leakage,</b><br>per ASTM E283<br>at 300 Pa (6.27 psf)                                                                                 | <0.1 L/s/m <sup>2</sup><br>(<0.01 cfm/ft <sup>2</sup> ) | 0.3 L/s/m <sup>2</sup><br>(0.06 cfm/ft <sup>2</sup> ) max. | 2    |
| <b>Water Penetration,</b><br>per ASTM E331<br>at 300 Pa (6.24 psf)                                                                           | Pass                                                    | No leakage                                                 | 2    |
| <b>Uniform Load Deflection,</b><br>per ASTM E 330<br>Deflections taken at vertical mullion<br>+1200 Pa (+25.06 psf)<br>-1200 Pa (-25.06 psf) | 7.6 mm (0.30")<br>7.9 mm (0.31")                        | 13.2 mm (0.52") max.<br>13.2 mm (0.52") max.               | 3, 4 |
| <b>Air Leakage,</b><br>per ASTM E283<br>at 75 Pa (1.57 psf)                                                                                  | <0.1 L/s/m <sup>2</sup><br>(<0.01 cfm/ft <sup>2</sup> ) | 0.3 L/s/m <sup>2</sup><br>(0.06 cfm/ft <sup>2</sup> ) max. | 2    |
| <b>Air Leakage,</b><br>per ASTM E283<br>at 300 Pa (6.27 psf)                                                                                 | <0.1 L/s/m <sup>2</sup><br>(<0.01 cfm/ft <sup>2</sup> ) | 0.3 L/s/m <sup>2</sup><br>(0.06 cfm/ft <sup>2</sup> ) max. | 2    |
| <b>Water Penetration,</b><br>per ASTM E331<br>at 300 Pa (6.24 psf)                                                                           | Pass                                                    | No leakage                                                 | 2    |

## 7.0 Test Results: (Continued)

| Title of Test                                                                                                                              | Results                          | Allowed                                    | Note |
|--------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------|--------------------------------------------|------|
| <b>Uniform Load Overload,</b><br>per ASTM E 330<br>Deflections taken at vertical mullion<br>+1800 Pa (+37.59 psf)<br>-1800 Pa (-37.59 psf) | 0.8 mm (0.03")<br>0.5 mm (0.02") | 4.8 mm (0.18") max.<br>4.8 mm (0.18") max. | 3, 4 |

**General Note:** All testing was performed in accordance with the referenced standard.

*Note 1: Testing performed prior to structural preloading.*

*Note 2: Testing performed after structural preloading.*

*Note 3: Loads were held for 10 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.*

Intertek-ATI will service this report for the entire test record retention period. Test records such as detailed drawings, datasheets, or other pertinent project documentation, will be retained by Intertek-ATI for the entire test record retention period.

This report does not constitute certification of this product nor an opinion or endorsement by this laboratory. It is the exclusive property of the client so named herein and relates only to the specimen tested. This report may not be reproduced, except in full, without the written approval of Intertek-ATI.

For ARCHITECTURAL TESTING, INC.:

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Jarod S. Hardman  
Laboratory Manager

JSH:ss/ms

Attachments (pages): This report is complete only when all attachments listed are included.

Appendix A: Location of air seal (1)

Appendix B: Drawings (3)

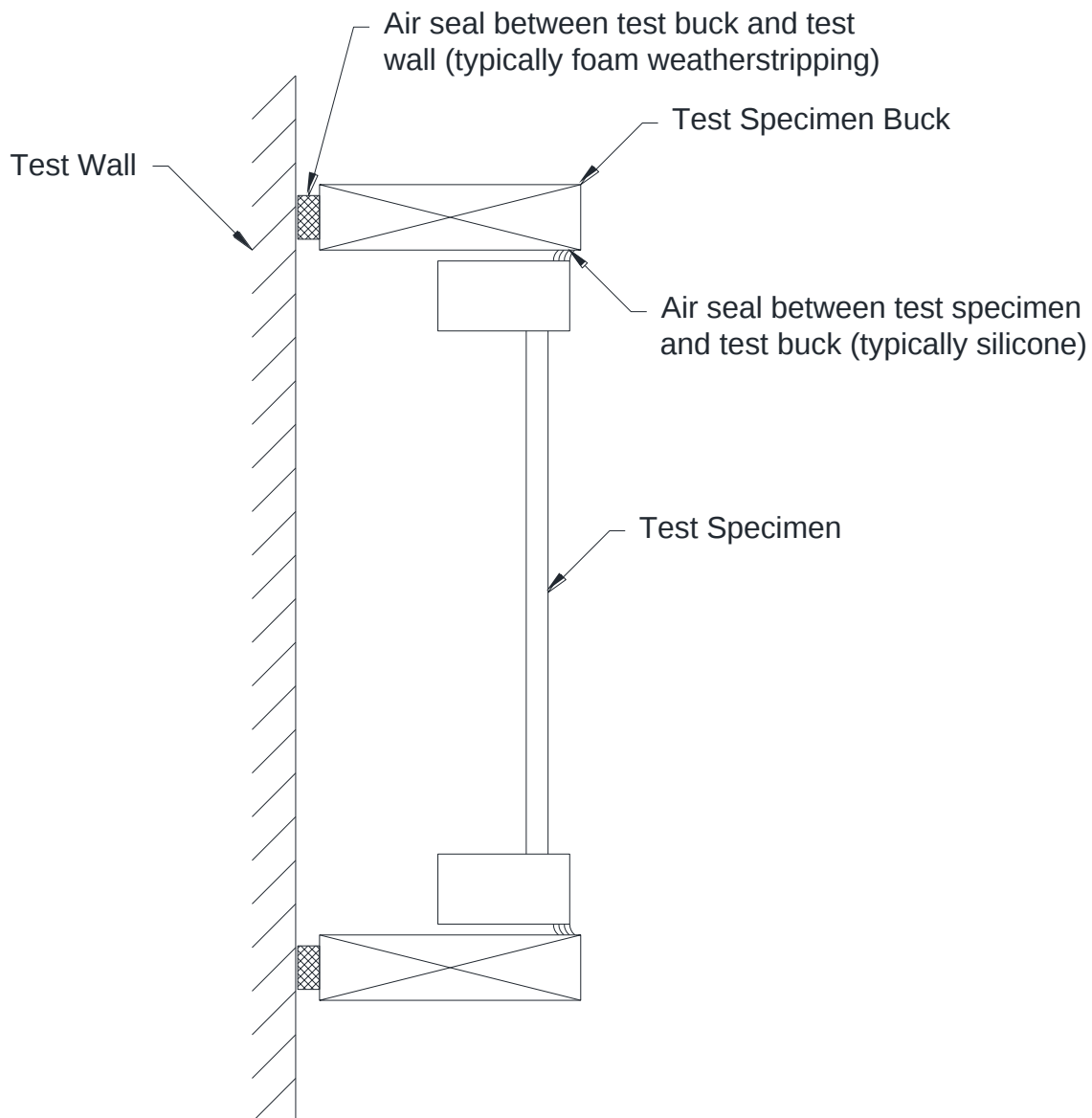
### Revision Log

| <u>Rev. #</u> | <u>Date</u> | <u>Page(s)</u> | <u>Revision(s)</u>     |
|---------------|-------------|----------------|------------------------|
| 0             | 09/23/16    | N/A            | Original Report Issue. |
| 1             | 09/27/16    | Cover, 1       | Revise Model Number    |

This report produced from controlled document template ATI 00479, revised 06/19/15.

## Appendix A

**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.





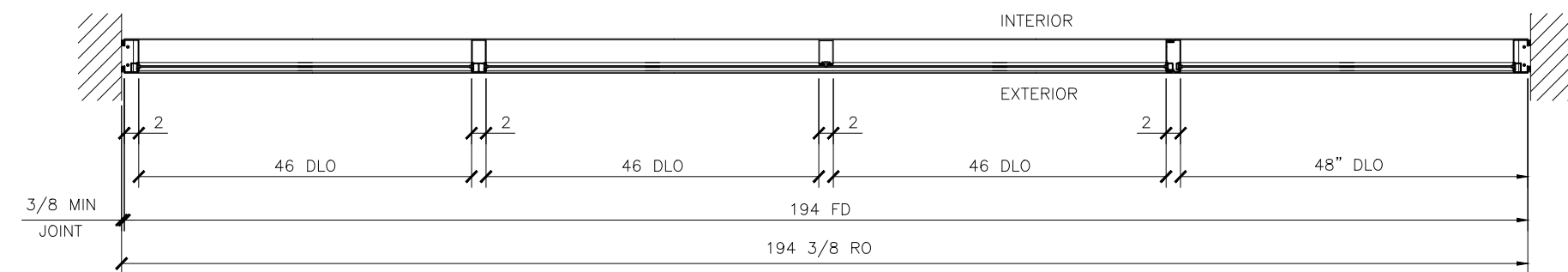
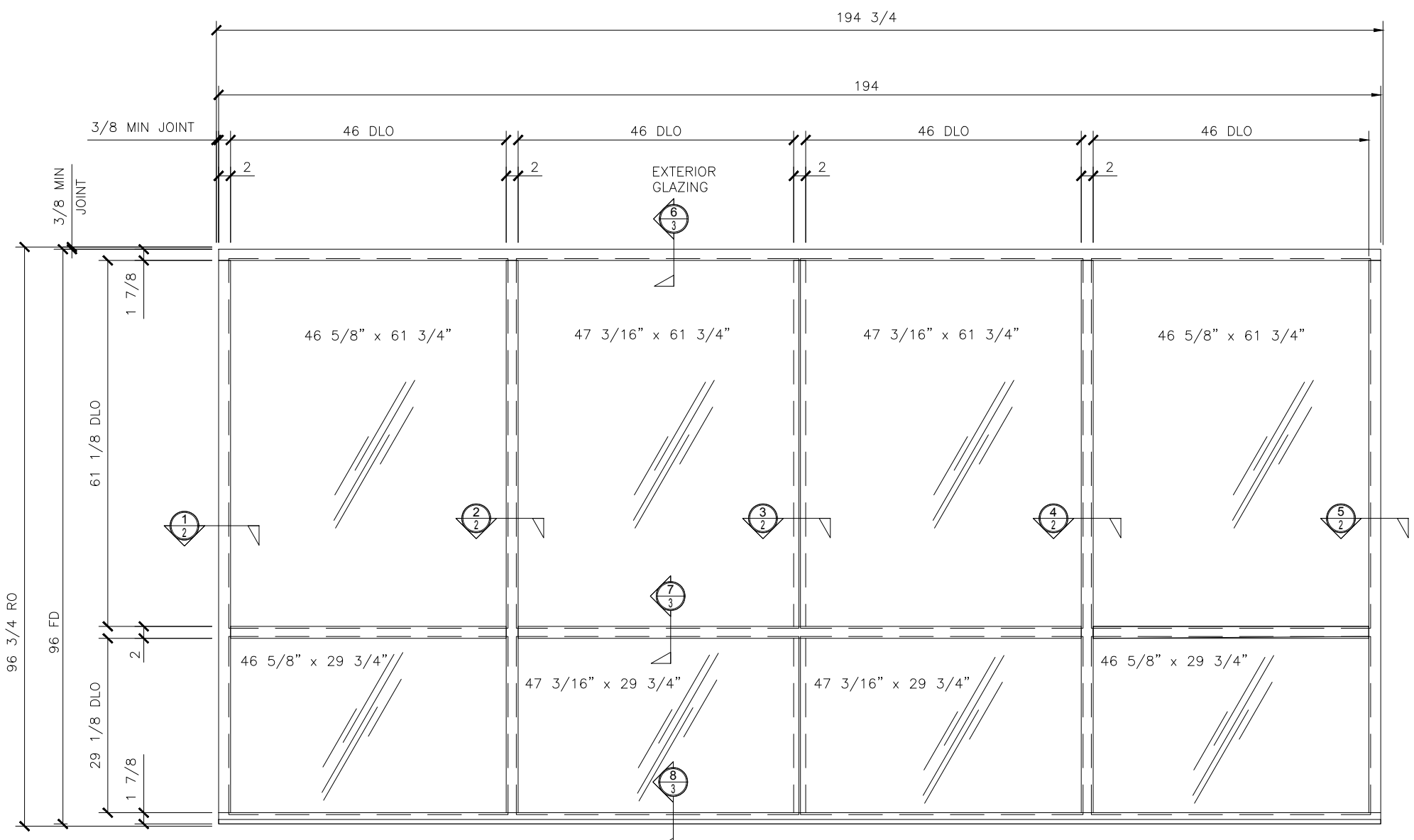
Test Report No.: G3061.01-301-47

Report Date: 09/23/16

Revision 1 Date: 09/27/16

## **Appendix B**

### **Drawings**



| ITEM |                  | PT. NO. | PART DESCRIPTION                                                                   |  |
|------|------------------|---------|------------------------------------------------------------------------------------|--|
| C1   | FRAME COMPONENTS | OG47611 | INSERT, SILL, OS, 1/4" GL.                                                         |  |
| C2   |                  | OG53411 | F-CAP, 2.0" X 0.449"                                                               |  |
| C3   |                  | OG43211 | INSERT, FLAT, 3.020"                                                               |  |
| C4   |                  | CS56311 | STACK-SILL CHANNEL                                                                 |  |
| C5   |                  | OG43311 | HORIZ, 1/4" GL, OS                                                                 |  |
| C6   |                  | OG46611 | INSERT, FOR CS568                                                                  |  |
| C7   |                  | CS56811 | STACK-HD CHANNEL                                                                   |  |
| C8   |                  | OG45111 | MULL, 1/4" GL                                                                      |  |
| C9   |                  | OG46211 | MULL, EXP, M-HALF, W/WS                                                            |  |
| C10  |                  | OG46911 | MULL, EXP, F-HALF, 2" X 4.5"                                                       |  |
| C11  |                  | OG45211 | JAMB, WALL, 1/4" GL, FF                                                            |  |
| C12  |                  | OG45511 | V-MULL, 1/4" GL                                                                    |  |
| C13  |                  | EC450   | EXT, ALUM, END DAM, W/SCRS                                                         |  |
| C14  |                  | OG53911 | F-CAP AT SILL                                                                      |  |
| C15  |                  |         |                                                                                    |  |
| W1   | WTHR. STRIP      | NP225   | GSKT, PUSH-IN, STD, EPDMTL                                                         |  |
| W2   |                  | SP450   | SILICONE SPACER GASKET                                                             |  |
| W3   |                  | VS200   | VINYL ISOLATOR 2-FINGER                                                            |  |
| W4   |                  |         |                                                                                    |  |
| G1   | GLASS            |         | .025 X .050 X .025<br>INSULATED GLASS (TEMPERED)<br>ALUMINUM SPACER<br>DUAL GLAZED |  |
| G2   |                  | SB141   | NEOPRENE SETTING BLOCK                                                             |  |
| G3   |                  | SB142   | NEOPRENE SETTING BLOCK INTERMEDIATE                                                |  |
| G4   |                  |         |                                                                                    |  |
| H1   | HARDWARE         | EF14    | CRL CLOSED CELL 1/4" DIA. BACKER ROD                                               |  |
| H2   |                  | EF12    | CRL CLOSED CELL 1/2" DIA. BACKER ROD                                               |  |
| H3   |                  | 795BL   | DOW CORNING 795 SILICONE BUILDING SEALANT                                          |  |
| H4   |                  | RTV408C | CRL CLEAR RTV408 NEUTRAL CURE SILICONE                                             |  |
| H5   |                  | ----    | 1/4" X 2" LAG BOLT ASME B15.2.1 ZINC COATED ASTM 153                               |  |
| H6   |                  | APK463  | SHEAR BLOCKS W/SCREWS                                                              |  |
| H7   |                  | ----    | ALUM ANGLE 1/8" X 1-1/2" X 1-1/2"                                                  |  |
| H8   |                  | ----    | #8 X 1/2" PH SMS ZINC PLATED                                                       |  |
| WD1  | WTR. DIVTR.      | WD190   | WATER DEFLECTOR                                                                    |  |
| WD2  |                  | WD150   | WATER DEFLECTOR                                                                    |  |
| WD3  |                  | WD160   | WATER DEFLECTOR                                                                    |  |
| WD4  |                  | WD180   | WATER DEFLECTOR                                                                    |  |

TEST REQUIREMENTS

AIR INFILTRATION:  
<.03 CFM/SQ.FT. @ 1.57 PSF  
<.06 CFM/SQ.FT. @ 6.24 PSF

STATIC WATER:  
8.15 PSF

DESIGN PRESSUR:  
30 PSF

STRUCTURAL OVERLOAD:  
45 PSF

TESTING SEQUENCE:  
Pre-load 50% DP (15psf)  
Air  
Water  
Dynamic  
Design Pressure  
Air  
Water  
Structural Overload

REVISIONS

CERTIFIED  
ISO9000  
COMPANY

CRL

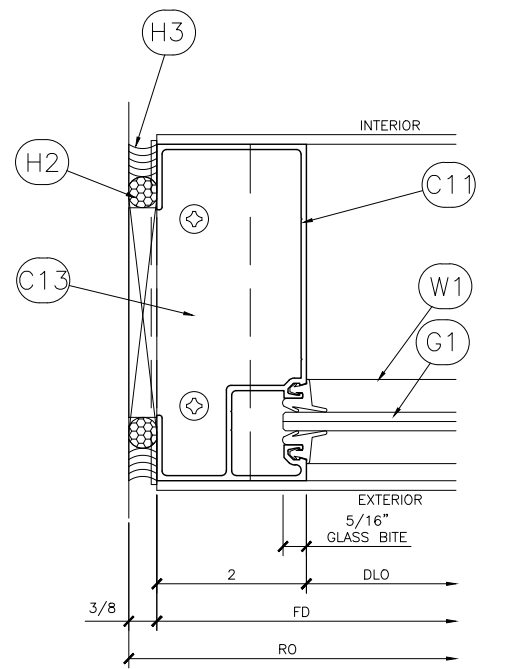
C.R.LAURENCE CO.  
ARCHITECTURAL PRODUCTS  
2100 E. 38TH Street, Los Angeles, CA 90058  
www.crlaurence.com

Job Name: SERIES OS450 OS2 SYSTEMS  
SERIES OS450SG OS2 SYSTEMS

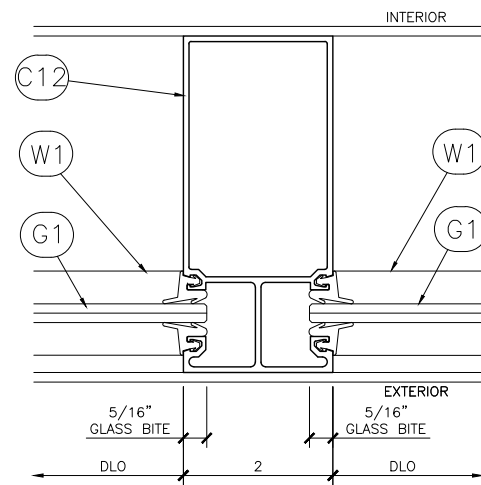
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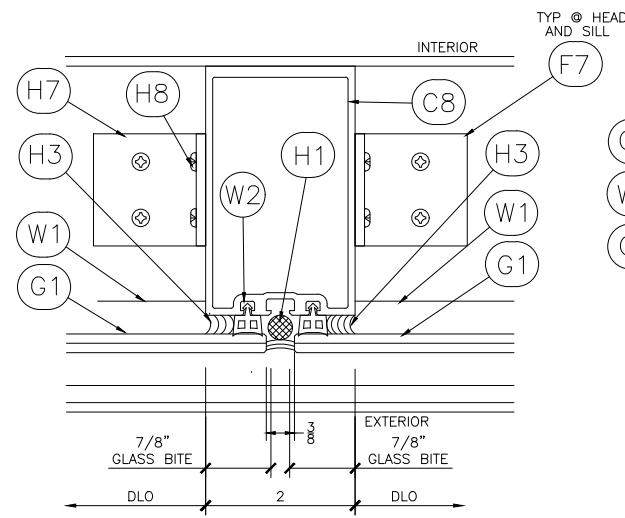
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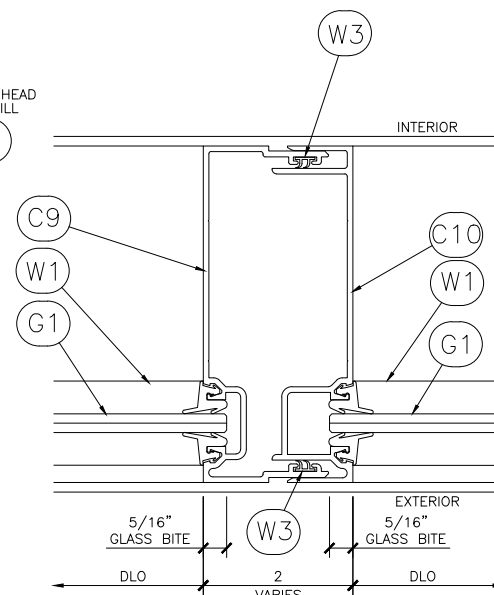
① SECTION DETAIL AT JAMB  
ARCH REF: N/A 1'-0"=1'-0"



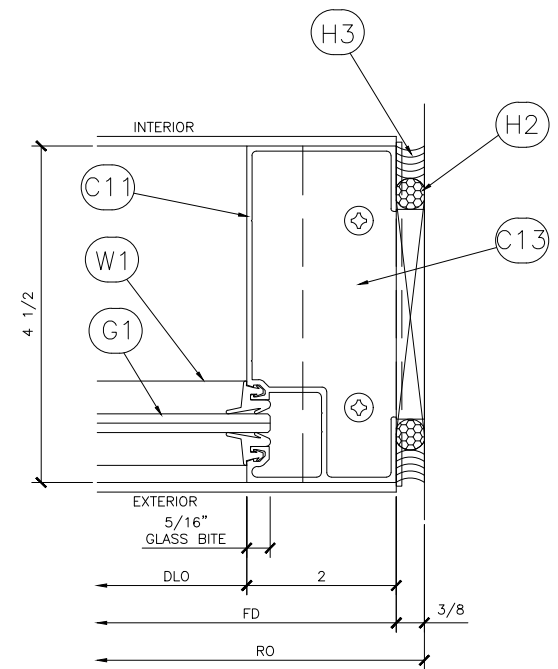
② SECTION DETAIL AT VERTICAL  
ARCH REF: N/A 1'-0"=1'-0"



③ SECTION DETAIL AT STRUCTURAL SILICONE  
ARCH REF: N/A 1'-0"=1'-0"



④ SECTION DETAIL AT EXPANSION MULLION  
ARCH REF: N/A 1'-0"=1'-0"



⑤ SECTION DETAIL AT JAMB  
ARCH REF: N/A 1'-0"=1'-0"

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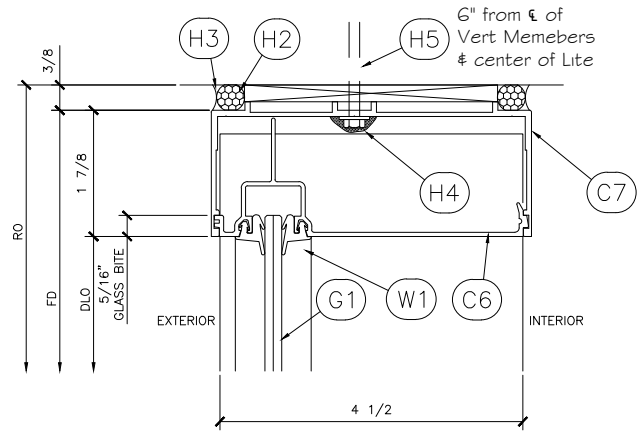
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Job Name:  
SERIES OS450 OS2 SYSTEMS  
SERIES OS450SG OS2 SYSTEMS

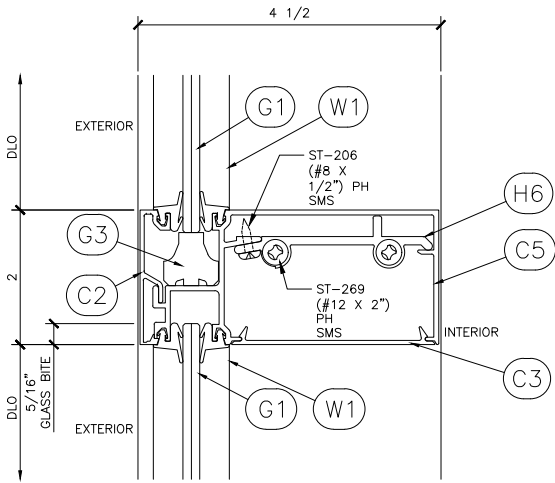
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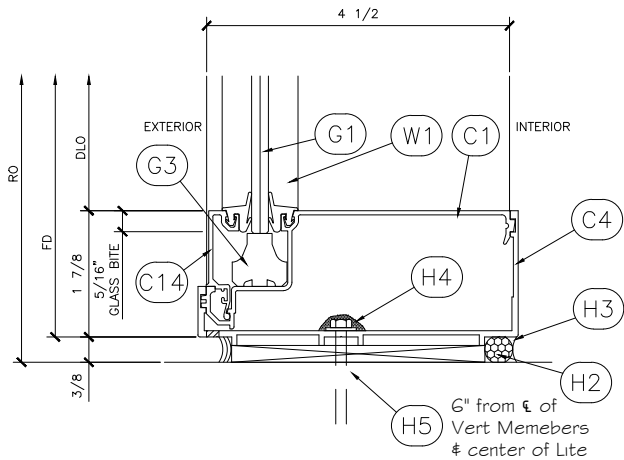
SHT 2 OF 3



**⑥ SECTION DETAIL AT HEAD**  
 ARCH REF: N/A EXTERIOR GLAZING 1'-0"=1'-0"



**⑦ SECTION DETAIL AT INTERMEDIATE HORIZONTAL**  
 ARCH REF: N/A EXTERIOR GLAZING 1'-0"=1'-0"



**⑧ SECTION DETAIL AT SILL**  
 ARCH REF: N/A EXTERIOR GLAZING 1'-0"=1'-0"

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