

**TAS 202 and AAMA 501 TEST REPORT**

**Report No.:** C5555.02-550-44

**Rendered to:**

CARDINAL COMMERCIAL PRODUCTS  
Louisville, Kentucky

**PRODUCT TYPE:** Framing System – Storefront  
**SERIES/MODEL:** CF450 (Interior Glazed)

**This report contains in its entirety:**

**Cover Page:** 1 page  
**Report Body:** 5 pages  
**Sketches:** 1 pages  
**Photographs:** 1 pages  
**Drawings:** 6 pages

**Test Dates:** 01/28/13  
**Through:** 01/29/13  
**Report Date:** 03/25/13  
**Test Record Retention End Date:** 03/25/17

**1.0 Report Issued To:** Cardinal Commercial Products  
4795 Shephersville Road  
Louisville, Kentucky 40218

**2.0 Test Laboratory:** Architectural Testing, Inc.  
1701 Westfork Drive, Suite 105-106  
Lithia Springs, Georgia 30122  
(770) 941-6916

**3.0 Project Summary:**

**3.1 Product Type:** Framing System – Storefront

**3.2 Series/Model:** CF450 (Exterior Glazed)

**3.3 Compliance Statement:** Results obtained are tested values and were secured by using the designated test method(s). The samples were tested per Florida Building Code, Test Protocols for High Velocity Hurricane Zone, Protocols TAS 202-94 and AAMA 501-05. The sample tested met the performance requirements for a  $\pm 60.00$  psf *Design Pressure* rating.

**3.4 Miami-Dade County Notification No.:** ATIGA13003

**3.5 Test Dates:** 01/28/13 – 01/29/13

**3.6 Test Location:** Architectural Testing, Inc.'s test facility in Lithia Springs, Georgia.

**3.7 Test Sample Source:** The test specimen was provided by the client. Representative samples of the test specimen will be retained by Architectural Testing for a minimum of four years from the test completion date.

**3.8 Drawing Reference:** The test specimen drawings have been reviewed by Architectural Testing and are representative of the test specimen reported herein. Test specimen construction was verified by Architectural Testing per the drawings located in Appendix C. Any deviations are documented herein or on the drawings.

**3.9 List of Official Observers:**

| <u>Name</u>    | <u>Company</u>               |
|----------------|------------------------------|
| J.D. Williams  | Aluminum Fronts, LLC         |
| Paul Stratford | Cardinal Commercial Products |
| José Colón     | Architectural Testing, Inc.  |
| Ian McKenzie   | Architectural Testing, Inc.  |
| Joel Ivey      | Architectural Testing, Inc.  |

#### 4.0 Test Specification(s):

AAMA 501-05, *Methods of Tests for Exterior Walls.*

TAS 202-94, *Criteria for Testing Impact and Non Impact Resistant Building Envelope Components Using Uniform Static Air Pressure Loading.*

ASTM E 283-04, *Test Method for Determining Rate of Airflow Through Exterior Windows, Curtain Walls and Doors Under Specified Pressure Differences Across the Specimen.*

ASTM E 330-02, *Test Method for Structural Performance of Exterior Windows, Curtain Walls and Doors by Uniform Static Air Pressure Difference.*

ASTM E 331-00, *Test Method for Water Penetration of Exterior Windows, Curtain Walls and Doors by Uniform Static Air Pressure Difference.*

#### 5.0 Test Specimen Description:

##### 5.1 Product Sizes:

|  |                       |                        |
|--|-----------------------|------------------------|
| <b>Overall Area:</b><br>97.5 ft <sup>2</sup> | <b>Width (inches)</b> | <b>Height (inches)</b> |
| Overall size                                 | 145.75                | 96                     |

##### 5.2 Frame Construction:

| Frame Member          | Material         | Part #   | Description              |
|-----------------------|------------------|----------|--------------------------|
| Head/Jambs            | 6063-T5 Aluminum | CF450-13 | 1.75" x 4.50" x 0.08"    |
| Sill/Horizontal       | 6063-T5 Aluminum | CF450-2  | 1.75" x 4.46" x 0.08"    |
| Vertical Mullion      | 6063-T5 Aluminum | CF450-1  | 1.75" x 4.50" x 0.08"    |
| Sill Receptor Pan     | 6063-T5 Aluminum | CF450-6  | 2.188" x 4.80" x 0.08"   |
| Mullion Pocket Filler | 6063-T5 Aluminum | CF450-4  | 0.86" x 3.875" x 0.062"  |
| Glass Stop            | 6063-T5 Aluminum | CF450-3  | 1.007" x 1.891" x 0.055" |

|             | Joinery Type | Detail   |
|-------------|--------------|--|
| All corners | Mechanical   | All members were square cut and butted, then fastened through screw splines with two (2). #12-14 x 1" PH-SQDR fasteners. |

### 5.3 Glazing:

| Glass Type | Spacer Type | Interior Lite    | Exterior Lite    | Glazing Method   |
|------------|-------------|------------------|------------------|--|
| 1" IG      | 1/2"        | 1/4"<br>Tempered | 1/4"<br>Tempered | Interior glazed with EPDM glazing gasket (Part # GSK-1) and Glass Stop. Exterior Glazed with glazing gasket (Part # GSK-1) |

| Quantity | Daylight Opening          | Glass Bite |
|----------|---------------------------|------------|
| 6        | 46-1/4" (w) x 45-3/8" (h) | 5/16"      |

### 5.4 Drainage:

| Drainage Method | Size | Quantity | Location  |
|-----------------|------|----------|---|
| Weep Holes      | 1/4" | 6        | Two (2) at sill located 2" on each side of vertical mullion |

### 6.0 Installation:

The specimen was installed into a steel test buck. The rough opening allowed for a 1/4" shim space. The exterior and interior perimeter of the window was sealed with Dow Corning 795 silicone sealant.

| Location  | Anchor Description       | Anchor Location   |
|-----------|--------------------------|---|
| Head/Sill | 1/4" x 1-1/2" Tek Screws | 4" from jambs, and 4" on either side of vertical mullions |
| Jambs     | 1/4" x 1-1/2" Tek Screws | Geometric midpoint (horizontal)                           |

**7.0 Test Results:** The temperature during testing was 66°F. The results are tabulated as follows:

| Title of Test                         | Results                   |
|---------------------------------------|---------------------------|
| Air Infiltration at 1.57 psf (25 mph) | 0.029 cfm/ft <sup>2</sup> |
| Air Infiltration at 6.24 psf (50 mph) | 0.063 cfm/ft <sup>2</sup> |
| Water Infiltration (+12.00 psf)       | PASS                      |

|  | Indicator Reading<br>(inches) |        |
|--|-------------------------------|--------|
|  | # 2                           | # 4    |
| Structural Loads<br>50% of Test Pressure (+45 psf) | # 2                           | # 4    |
| Maximum Deflection                                 | 0.036                         | 0.347  |
| Permanent Set                                      | 0.001                         | 0      |
| % Recovery   | 97.22                         | 100.00 |
| Design Pressure (+60 psf)                          | # 2                           | # 4    |
| Maximum Deflection                                 | 0.045                         | 0.471  |
| Permanent Set                                      | 0.001                         | 0.004  |
| % Recovery   | 97.80                         | 99.20  |
| 50% of Test Pressure (-45 psf)                     | # 2                           | # 4    |
| Maximum Deflection                                 | 0.040                         | 0.340  |
| Permanent Set                                      | 0.002                         | 0.001  |
| % Recovery   | 95.00                         | 99.70  |
| Design Pressure (-60 psf)                          | # 2                           | # 4    |
| Maximum Deflection                                 | 0.054                         | 0.451  |
| Permanent Set                                      | 0.004                         | 0.003  |
| % Recovery   | 92.60                         | 99.30  |
| Water Infiltration<br>(+12.00 psf)                 | PASS                          |        |
| Test Pressure (+90 psf)                            | # 2                           | # 4    |
| Maximum Deflection                                 | 0.094                         | 0.706  |
| Permanent Set                                      | 0.004                         | 0.004  |
| % Recovery   | 95.70                         | 99.40  |
| Test Pressure (-90 psf)                            | # 2                           | # 4    |
| Maximum Deflection                                 | 0.110                         | 0.714  |
| Permanent Set                                      | 0.008                         | 0.005  |
| % Recovery   | 93.18                         | 99.23  |

**Note # 1:** See Architectural Testing Sketch #1 for indicator locations. Location # 2 (middle horizontal), and Location # 5 (right vertical mullion) take account for support movement. Data shown is final.

**Note # 2:** 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.

**8.0 Laboratory Compliance Statements:** The following are provided as required by the protocols for the testing reported herein.

Upon completion of testing, specimens tested for TAS 202-94 met the requirements of Section 1620 of the Florida Building Code, Building (2007).

The service life of this report will expire on the stated Test Record Retention End Date, at which time such materials as drawings, data sheets, samples of test specimens, copies of this report, and any other pertinent project documentation, shall be discarded without notice.

If test specimen contains glazing, no conclusions of any kind regarding the adequacy or inadequacy of the glass in any glazed test specimen(s) can be made. 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(s) tested. This report may not be reproduced, except in full, without the written approval of Architectural Testing, Inc.

For ARCHITECTURAL TESTING, Inc.

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José E. Colón  
Director – Regional Operations

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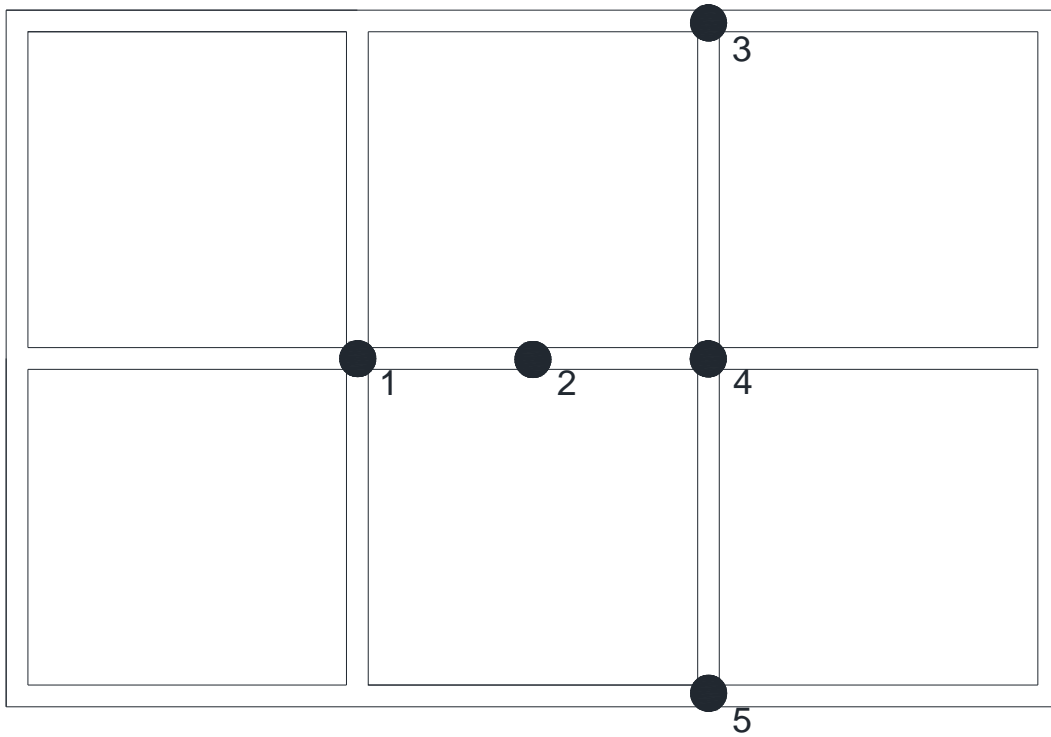
Vinu J. Abraham, P.E.  
Florida PE # 53820

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

- Appendix-A: Sketches (1)
- Appendix-B: Photographs (1)
- Appendix-C: Drawings (6)

## Appendix A

### Sketches



Sketch #1 – Deflection Gage Locations

## Appendix B Photographs



**Photo No. 1  
Front Elevation**





**Architectural Testing**

Test Report No.: C5555.02-550-44  
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Test Record Retention End Date: 03/25/17

## **Appendix C**

### **Drawings**

# ATI TEST - CF450 FRAMING SYSTEM - INTERIOR GLAZED

| DRAWING INDEX |   |
|---------------|---|
| 1             | DRAWING INDEX AND NOTES                 |
| 2             | ELEVATION E2 WITH CF450-5 HEAVY MULLION |
| 3             | STANDARD FRAMING DETAILS                |
| 4             | BILL OF MATERIALS/GLASS SCHEDULE        |
| 5             | PROFILE DRAWINGS                        |
| 6             | SUB-SILL FABRICATION LAYOUT             |



Test sample complies with these details.  
Deviations are noted.  
Report #: **C5555.02-550-44**  
Date: **3/25/13** Tech:

| REV | BY | DATE | DESCRIPTION |
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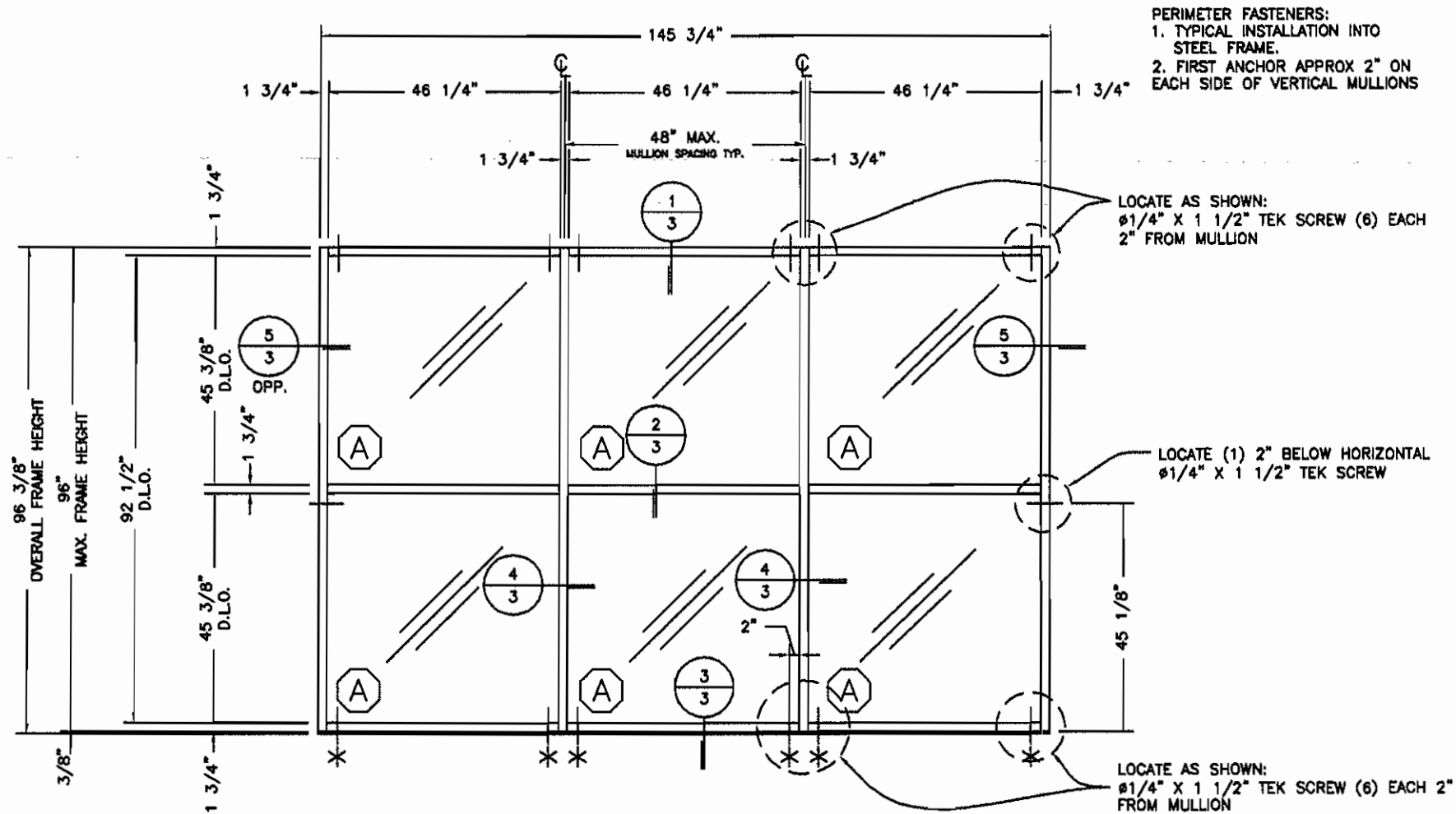
**MANUAL COMP**

CARDINAL COMMERCIAL PRODUCTS  
4795 SHEPHERDSVILLE ROAD  
LOUISVILLE, KY. 40218  
TEL: 502-969-4059  
FAX: 800-313-4195

ATI TEST  
- CF450 FRAMING SYSTEM -  
INTERIOR GLAZED  
DRAWING INDEX AND NOTES

|   |
|---|
| PROJECT NO.                                     |
| DRAWN<br><b>WRD</b>                             |
| DATE<br><b>9/11/12</b>                          |
| SCALE<br><b>12=1'-0"</b>                        |
| DRAWING NO.<br><b>CF450_02</b><br><b>1 OF 6</b> |

\* = 1/4" Ø WEEP HOLE  
 @ 2" FROM EACH  
 SIDE OF MULLIONS



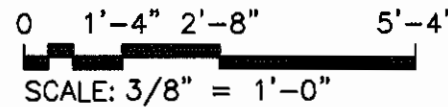
NOTES:

1. HORIZONTAL MULLION DETAIL 2/3 IS OPTIONAL IN ANY BAY
2. D.L.O.= DAYLIGHT OPENING
3. GLASS SIZE = D.L.O. + 5/8"

TEST PARAMETERS:

1. DESIGN PRESSURE = +60/-60 PSF
2. AIR TEST AT 6.24 PSF
3. WATER TEST AT 12 PSF
4. MAXIMUM DEFLECTION = L/180 OR .533

**E2**  
**TYPICAL ELEVATION**  
**INTERIOR GLAZED**  
**WITH CF450-5 HVY MULLION**



Test sample complies with these details.

Deviations are noted.

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| REV | BY | DATE | DESCRIPTION |
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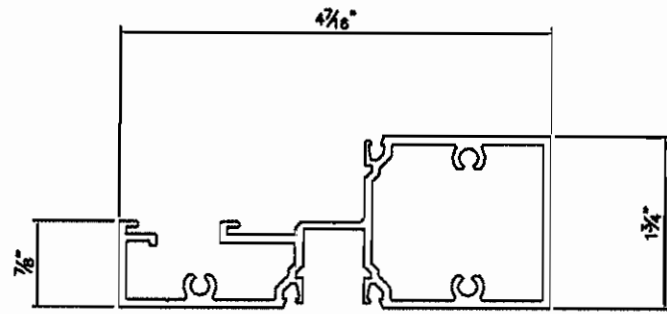
CARDINAL COMMERCIAL PRODUCTS  
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ATI TEST  
 - CF450 FRAMING SYSTEM -  
 INTERIOR GLAZED  
 FRAMING ELEVATIONS

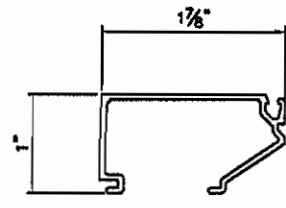
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|-------------|--------------------|
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| DRAWN       | DATE               |
| WRD         | 9/11/12            |
| SCALE       | 3/8" = 1'-0"       |
| DRAWING NO. | CF450_02<br>2 OF 6 |



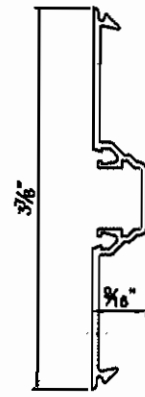




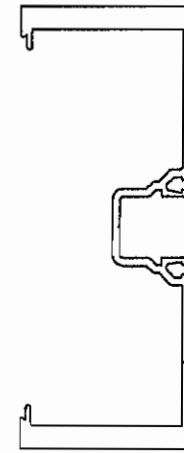
⑩  
CF450-2  
SILL/HORIZONTAL



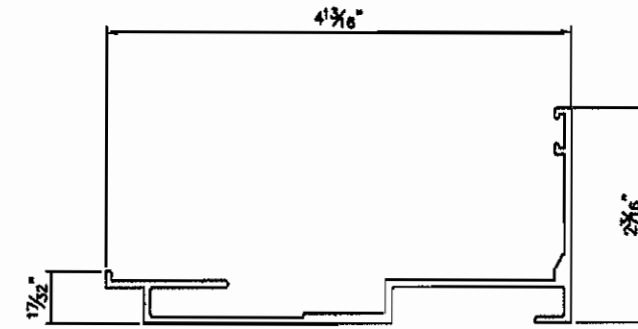
⑪  
CF450-3  
GLASS STOP



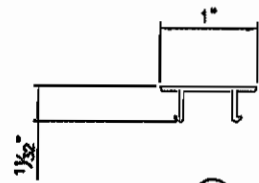
⑫  
CF450-4  
MULLION POCKET  
FILLER



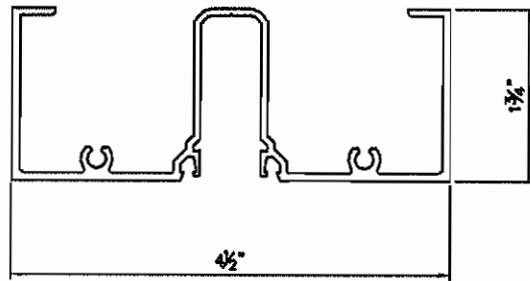
⑬  
CF450-5  
HVY MULLION



⑭  
CF450-6  
SILL RECEPTOR PAN



⑯  
CF450-16  
POCKET FILLER



⑮  
CF450-13  
WALL JAMB/HEAD



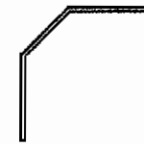
④  
GSK-1  
GLAZING  
GASKET



⑤  
SB-1  
SETTING  
BLOCK



⑥  
SB-2  
SETTING  
BLOCK



⑥  
WD450  
WATER  
DEFLECTOR



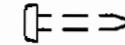
⑦  
ED450-1  
SILL END  
DAM



⑧  
WEEP  
BAFFLE



⑰  
AF10-4  
FASTENER



⑱  
AF12-4  
FASTENER



Architectural Testing

Test sample complies with these details.

Deviations are noted.

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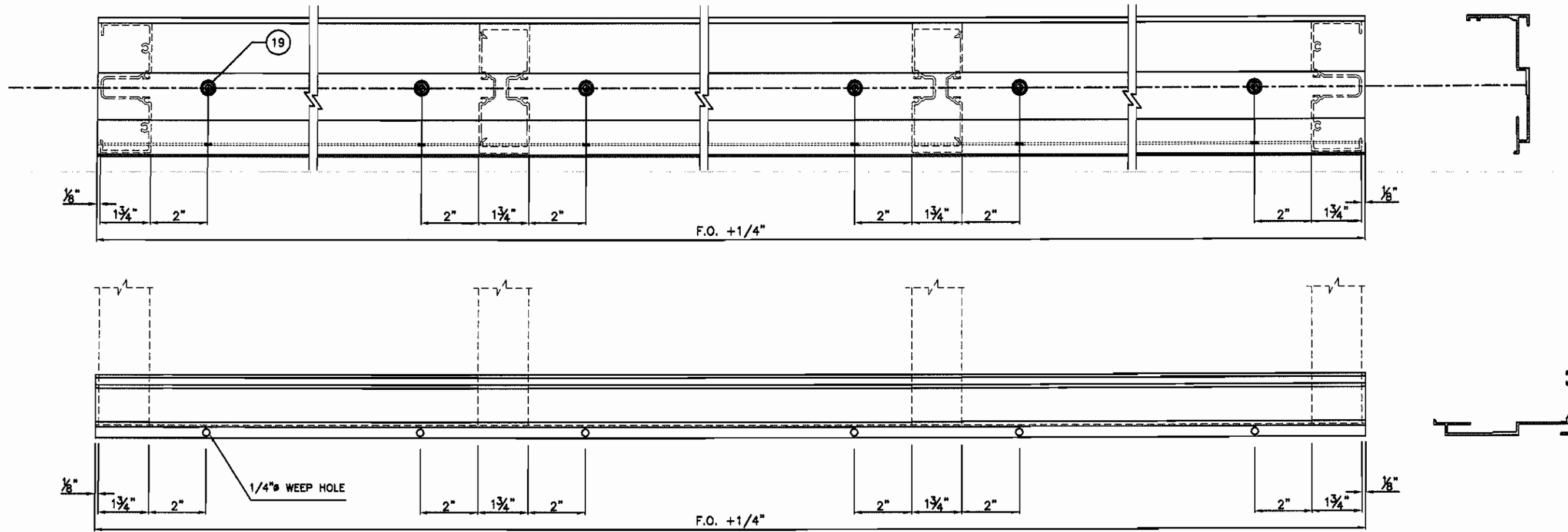
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MANUAL COMP

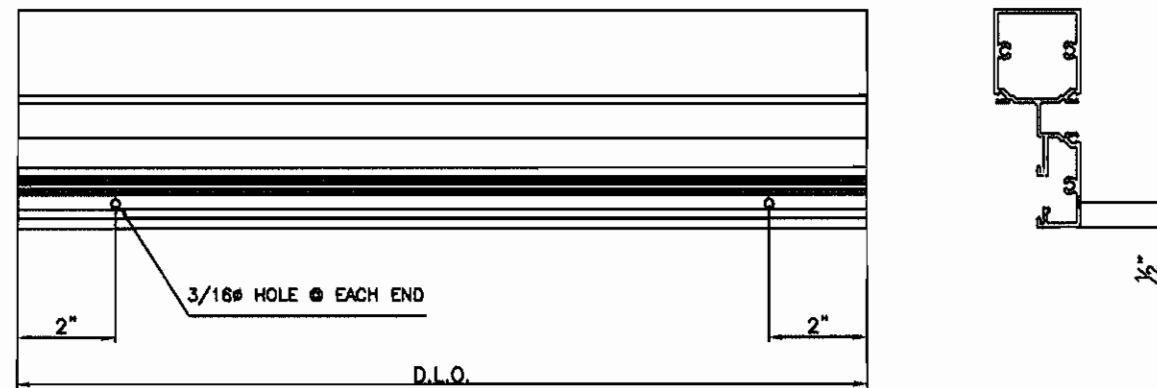
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ATI TEST  
- CF450 FRAMING SYSTEM -  
INTERIOR GLAZED  
PROFILE DRAWINGS

|             |          |
|-------------|----------|
| PROJECT     |          |
| PROJECT NO. |          |
| DRAWN       | DATE     |
| WRD         | 9/11/12  |
| SCALE       | 6"=1'-0" |
| DRAWING NO. | CF450_02 |
|             | 5 OF 6   |




CF450-6 SUB-SILL FABRICATION LAYOUT



CF450-2 SILL FABRICATION LAYOUT



Test sample complies with these details.  
 Deviations are noted.  
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 Date: **3/25/13** Tech: 

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 SUB-SILL FABRICATION LAYOUT

|             |            |
|-------------|------------|
| PROJECT     |            |
| PROJECT NO. |            |
| DRAWN       | DATE       |
| WRD         | 9/11/12    |
| SCALE       | 6" = 1'-0" |
| DRAWING NO. |            |
| CF450_02    |            |
| 6 OF 6      |            |