

HTL

Compliance Test Report



FLORIDA GEORGIA TEXAS
HTLTEST.COM

CORAL ARCHITECTURAL PRODUCTS

"FS-400T Framing System"

HTL Report # G402-0702-07



August 30, 2007

FLORIDA | GEORGIA | TEXAS

CORPORATE HEADQUARTERS
6655 Garden Road
Riviera Beach, Florida 33404
HTLTEST.COM

Mr. Grant McAllister
CORAL ARCHITECTURAL PRODUCTS
3010 Rice Mine Road
Tuscaloosa, Alabama 35406

Re: HTL # G402-0702-07

Dear Mr. McAllister;

Enclosed you will find the test report package for the FS-400T Framing System tests that were performed at Hurricane Test Laboratory, LLC (HTL) in Lithia Springs, Georgia.

This test report package includes the following items:

- Cover Letter
- HTL test report # G402-0702-07 for Specimen # 1 – 2
- Drawings

If you have any questions, please contact our office.

Sincerely,

HURRICANE TEST LABORATORY, LLC

Vinu J. Abraham, P.E.
FL Reg. # 53820



TEST REPORT



HURRICANE TEST LABORATORY, LLC
1701 WESTFORK DRIVE, SUITE 106
LITHIA SPRINGS, GEORGIA 30122
(770) 941-6916
FAX (770) 941-2930
www.htltest.com

Report #: G402-0702-07
Specimen # 1 – 2
Test Date: 7/9-10/07
Page 1 of 5

MANUFACTURER’S IDENTIFICATION

- 1.0 NAME OF APPLICANT:** CORAL ARCHITECTURAL PRODUCTS
3010 Rice Mine Road
Tuscaloosa, Alabama 35406
(800) 772-7737
- 2.0 CONTACT PERSON:** Grant McAllister
- 3.0 HTL TEST NOTIFICATION #:** N/A
- 4.0 HTL LAB CERTIFICATION:** Miami-Dade County (04-0806.02)
Florida Building Code #TST3892
IAS (TL-338)

PRODUCT IDENTIFICATION

- 5.0 Product Type:** Aluminum Glazed Wall Section
- 6.0 Model Number:** FS-400T FRAMING SYSTEM
- 7.0 Performance Class:**

| Specimen # | Design Pressure |
|------------------------|-----------------|
| 1 (Coral Elevation E1) | +/- 35 psf |
| 2 (Coral Elevation E2) | +/- 55 psf |

- 8.0 Overall Sample Size:**

| Specimen # | Size |
|------------------------|--------------------|
| 1 (Coral Elevation E1) | 146" (w) x 96" (h) |
| 2 (Coral Elevation E2) | 146" (w) x 96" (h) |

- 9.0 Configuration:** Both test units consisted of three (3) bays. See Coral drawings "FS400T_01", sheets 2 and 3 of 6 for an elevation of these test units.
- 10.0 Drawing:** This report is incomplete if not accompanied by Coral Architectural Products Drawing "FS400T_01" and accompanying sheets bearing the seal of Hurricane Test Laboratory, LLC.
- 11.0 Sample Source:** Samples provided by Coral Architectural Products.

PRODUCT DESCRIPTION

- 12.0 Frame Assembly:** The frame used in this sample was fabricated using the following aluminum extrusions:

| Description | Part # |
|-------------------------------------|--------|
| Vertical Mullion | FS404T |
| Filler | FS405 |
| Int. Horiz. Mull – Interior Glazing | FS406T |
| Glass Stop- Interior Glazing | FS403 |
| Head | FS401T |
| Wall Jamb | FS407T |
| Sill – Interior Glazing | FS402T |
| Int. Horiz. Mull – Exterior Glazing | FS408T |
| Sill – Exterior Glazing | FS409T |
| Expansion Mull-Male Half | FS410T |

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FL Reg. # 53820



| | |
|----------------------------|--------|
| Expansion Mull-Female Half | FS411T |
| Glass Stop | CS403 |

The following procedures (typical) were utilized when assembling this individual frame:

Frame Corner Construction: At each frame corner, the vertical frame members ran through while the horizontal frame member was butted and mechanically fastened using two (2), #14 x 1" HHSTS per corner.

Frame Joint Sealant: Each frame joint was sealed using a bead of Dow Corning 795 Silicone Sealant.

13.0 Glazing:

13.1 Glazing Material: The glazing material used in this sample was 1" insulated glass with the following components:

- ¼" tempered glass
- ½" air space
- ¼" tempered glass

13.2 Glazing Method: Each glass lite used in this sample was glazed using the following (typical) procedures:

Interior/Exterior Side: Using continuous strips of an extruded EPDM gasket (Part #NG1). Each corner of the gasket is sealed using a 2" long cap bead of Dow Corning 795 Structural Silicone Sealant in both directions of the gasket.

13.3 Daylight Opening:

| Specimen # 1 (Elevation E1) & 2 (Elevation E2) | | |
|------------------------------------------------|-------------------|------------|
| Qty. | Daylight Opening | Glass Bite |
| 3 | 46" (w) x 42" (h) | 7/16" |
| 3 | 46" (w) x 48" (h) | |

14.0 Sealant's Used:

| Location | Sealant |
|---------------------|----------------------------------|
| Perimeter Sealant | Dow Corning 795 Silicone Sealant |
| Frame Joint Sealant | |
| Internal Sealant | Dow Corning 995 Silicone Sealant |

INSTALLATION

15.0 Following is a description of how this sample was installed in the steel test buck when viewed from the exterior side:

| Location | Anchor Description & Schedule |
|----------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Frame Head and Sill. | The frame head and sill are attached to the opening using ¼" x 1-1/4" HHW Tek Screws located 2" from the ends and 2" on each side of the vertical mullions. |
| Frame Jambs | None Used |

NOTE: There is a 1/4" shim space used around the entire perimeter of this test sample.

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TEST RESULTS

16.0 SUMMARY OF RESULTS:

| Specimen # 1 (CORAL Elevation E1) | | | |
|---------------------------------------------|-------------------|------------------------------|------------------------------|
| Test Method | Test Conditions | Measured | Allowed |
| Air Infiltration Test (ASTM E283) | 1.57 psf | 0.004 cfm/ft ² | 0.060 cfm/ft ² |
| | 6.24 psf | 0.008 cfm/ft ² | 0.060 cfm/ft ² |
| Water Infiltration Test (ASTM E331) | 15 psf | PASSED per ASTM E331 | |
| Uniform Load Deflection Test (ASTM E330) | + 35 psf | Deflection | |
| | | Left Vertical Mullion | |
| | | 0.309" | 0.533" |
| | Center Horizontal | | |
| | 0.056" | | 0.256" |
| | - 35 psf | Left Vertical Mullion | |
| 0.311" | | 0.533" | |
| Center Horizontal | | | |
| 0.047" | | 0.256" | |
| Uniform Load Structural Test (ASTM E330) | + 52.50 psf | Permanent Set | |
| | | Left Vertical Mullion | |
| | | 0.000" | 0.384" |
| | Center Horizontal | | |
| | 0.005" | | 0.184" |
| | - 52.50 psf | Left Vertical Mullion | |
| 0.005" | | 0.384" | |
| Center Horizontal | | | |
| 0.009" | | 0.184" | |

• THESE TESTS WERE COMPLETED ON 7/9/07

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| Specimen # 2 (CORAL Elevation E2) | | | |
|---------------------------------------------|-------------------|------------------------------|------------------------------|
| Test Method | Test Conditions | Measured | Allowed |
| Air Infiltration Test (ASTM E283) | 1.57 psf | 0.002 cfm/ft ² | 0.060 cfm/ft ² |
| | 6.24 psf | 0.003 cfm/ft ² | 0.060 cfm/ft ² |
| Water Infiltration Test (ASTM E331) | 15 psf | PASSED per ASTM E331 | |
| Uniform Load Deflection Test (ASTM E330) | + 55 psf | Deflection | |
| | | Left Vertical Mullion | |
| | | 0.517" | 0.533" |
| | Center Horizontal | | |
| | 0.063" | | 0.256" |
| | - 55 psf | Left Vertical Mullion | |
| 0.517" | | 0.533" | |
| Center Horizontal | | | |
| 0.063" | | 0.256" | |
| Uniform Load Structural Test (ASTM E330) | + 82.50 psf | Permanent Set | |
| | | Left Vertical Mullion | |
| | | 0.023" | 0.384" |
| | Center Horizontal | | |
| | 0.021" | | 0.184" |
| | - 82.50 psf | Left Vertical Mullion | |
| 0.012" | | 0.384" | |
| Center Horizontal | | | |
| 0.013" | | 0.184" | |

• **THESE TESTS WERE COMPLETED ON 7/10/07**

MISCELLANEOUS INFORMATION

17.0 CERTIFICATION & DISCLAIMER STATEMENT:

All tests performed on this test specimen were conducted in accordance with the specifications of the applicable codes, standards & test methods listed below by the Hurricane Test Laboratory, LLC located at 1701 Westfork Drive, Suite 106, Lithia Springs, Georgia 30122. HTL does not have, nor does it intend to acquire or will it acquire, a financial interest in any company manufacturing or distributing products tested at HTL. HTL is not owned, operated or controlled by any company manufacturing or distributing products it tests. This report is only intended for the use of the entity named in section 1.0 of this report. Detailed assembly drawings showing wall thickness of all members, corner construction and hardware applications are on file and have been compared to the test specimen submitted. A copy of this test report along with representative sections of the test specimen will be retained at HTL.

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for a period of four (4) years. All results obtained apply only to the specimen tested and they do indicate compliance with the performance requirements of the test methods and specifications listed in the following section. Please note that a copy of this report will be forwarded to the AAMA Validator if requested and that this report does not constitute AAMA certification of this product, which may only be granted by the AAMA Validator.

18.0 APPLICABLE CODES, STANDARDS & TEST METHODS:

ASTM E283-04 - Standard Test Method For Determining The Rate of Air Leakage Through Exterior Windows, Curtain Walls, and Doors Under Specified Pressure Differences.

ASTM E330-02 - Standard Test Method for Structural Performance of Exterior Windows, Curtain Walls, and Doors by Uniform Static Air Pressure Difference.

ASTM E331-00 - Standard Test Method for Water Penetration of Exterior Windows, Curtain Walls, and Doors by Uniform Static Air Pressure Difference.

AAMA 501-05 - Methods of Tests for Exterior Walls

19.0 LIST OF OFFICIAL OBSERVERS:

Vinu J. Abraham, P.E. - HTL, CEO

José E. Colón, E.I. - HTL, Operations Manager

Kevin Rouse - HTL

Ian McKenzie - HTL

Al Fite - HTL

James Bateman - CORAL ARCHITECTURAL PRODUCTS

Grant McAllister - CORAL ARCHITECTURAL PRODUCTS

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8/30/07



DRAWINGS

HTL TEST REPORT DRAWINGS FOR FS400T FRAMING SYSTEM

INDEX TO DRAWINGS

| | |
|---------|------------------------------------|
| SHEET 1 | INDEX TO DRAWINGS |
| SHEET 2 | TYPICAL ELEVATION STANDARD MULLION |
| SHEET 3 | TYPICAL ELEVATION HEAVY MULLION |
| SHEET 4 | FRAMING DETAILS |
| SHEET 5 | FRAMING DETAILS |
| SHEET 6 | BILL OF MATERIALS |

ABBREVIATIONS:
D.L.O. = DAY LIGHT OPENING

Hurricane Test Laboratory



**Tested unless
Otherwise Noted**

Date 9/12/07
Job # 6-402-0702-07

HTL TEST REPORT DRAWINGS FOR
FS400T FRAMING SYSTEM

INDEX TO DRAWINGS

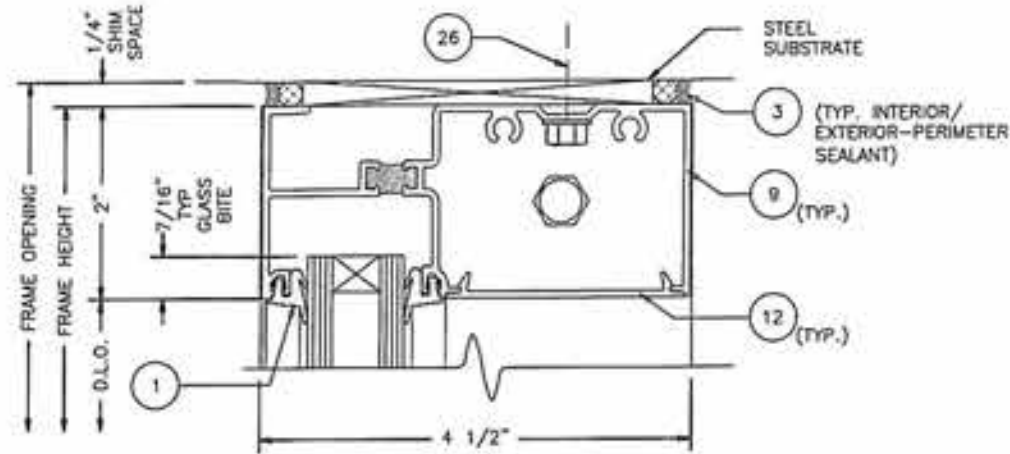
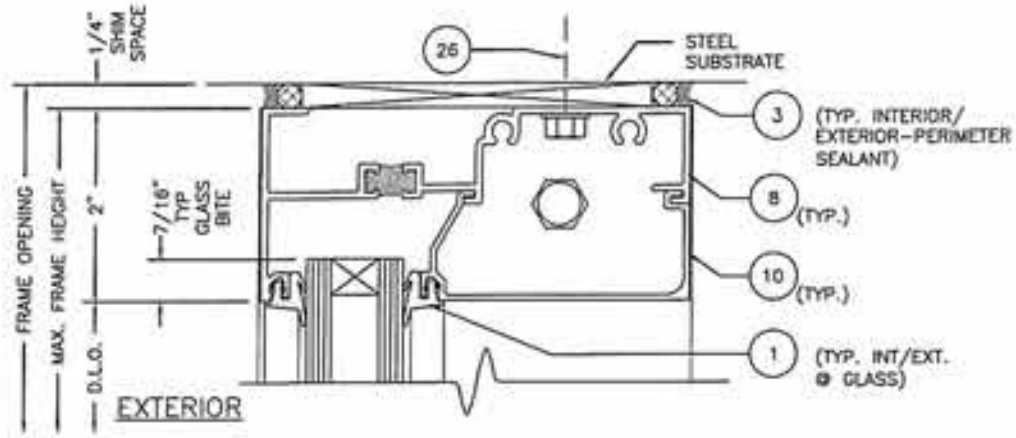
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|-------------|-----------|----------|
| DATE | 7/11/2007 | |
| DRAWN | CHECKED | APPROVED |
| PCH | JDW | JDW |
| PROJECT NO. | HTL TEST | |
| DRAWING NO. | FS400T_01 | |
| SHEET | 1 OF 6 | |

Cirral
Architectural Products
3010 RICE BLVD. ROAD, TUSCALOOSA, AL 35406
PHONE 205-737-7777 FAX 205-735-7320

| REV | BY | DATE | DESCRIPTION |
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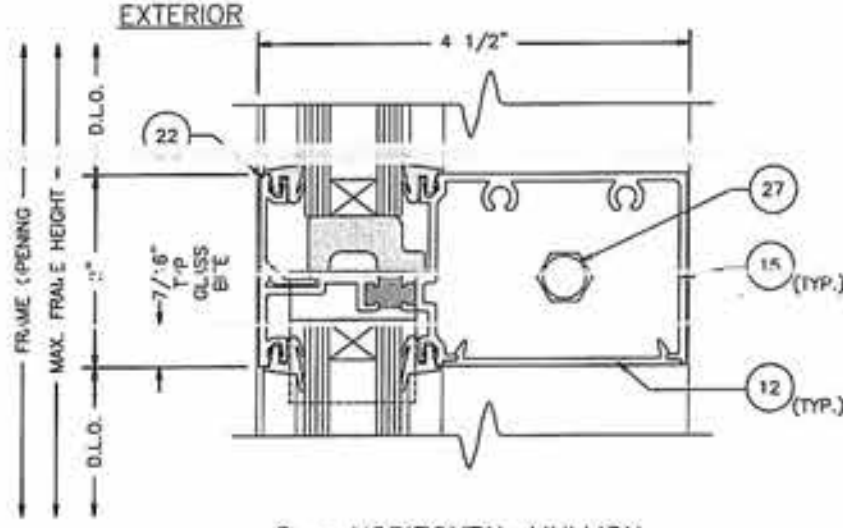
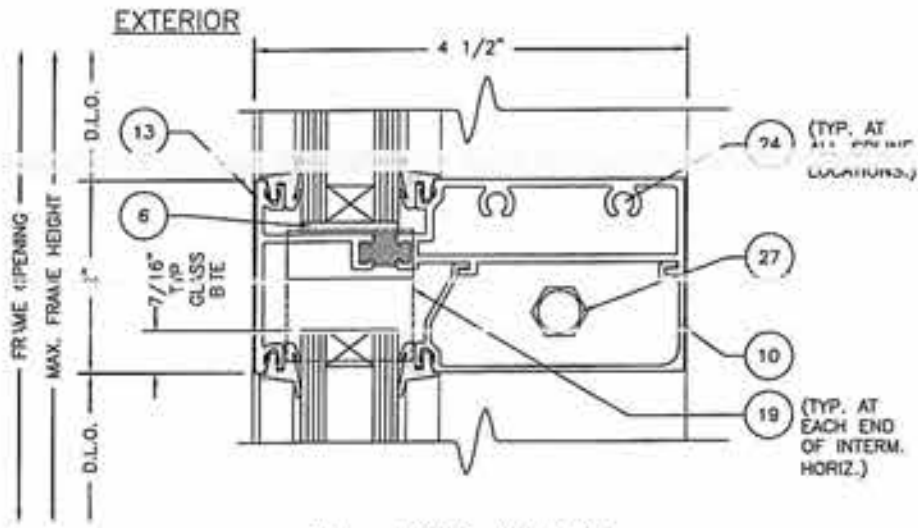
INTERIOR GLAZING

EXTERIOR GLAZING



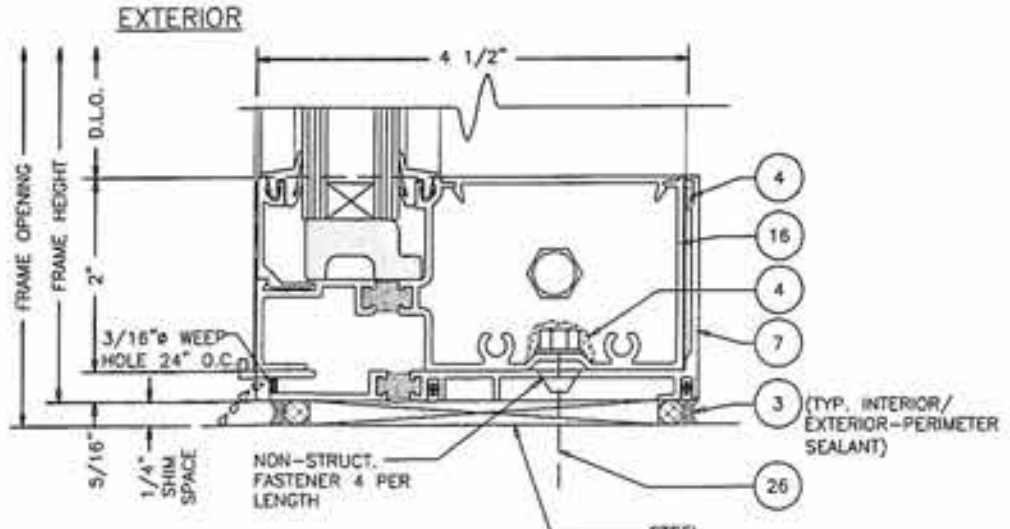
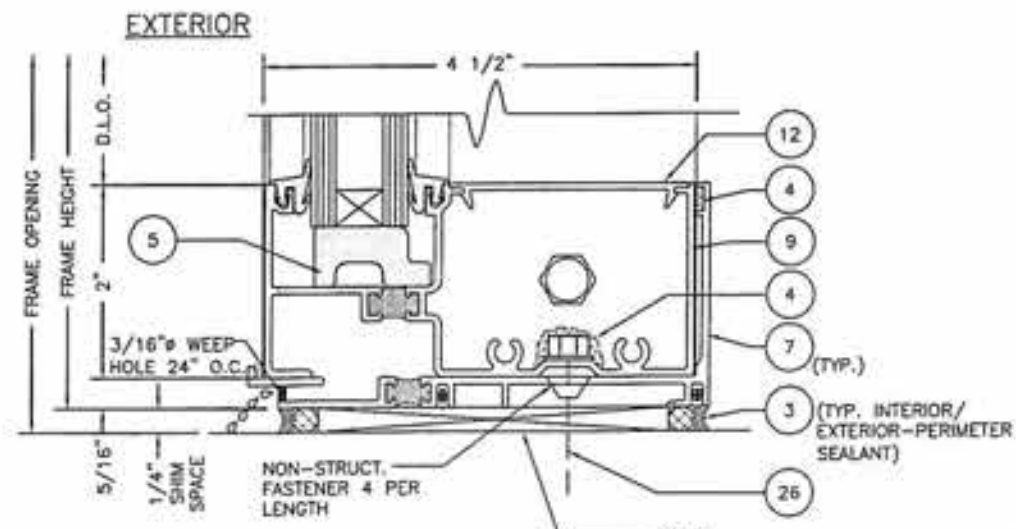
1 - STANDARD HEAD
1:2

4 - HEAD
1:2



2 - HORIZ. MULLION
1:2

5 - HORIZONTAL MULLION
1:2



3 - SILL
1:2

6 - SILL
1:2

Crinal
 Architectural Products
 3015 PRICE AVE. ROAD, TUSCALOOSA, AL 35408
 PHONE: 1-772-7737 FAX: 800-255-7203

HTL TEST REPORT DRAWINGS FOR
 FS400T FRAMING SYSTEM
 FRAMING DETAILS

Hurricane Test Laboratory

 Tested unless
 Otherwise Noted
 Date: 9/12/07
 Job # G-402-C702-C7

| | | |
|-------------|-----------|----------|
| DATE | 7/11/2007 | |
| DRAWN | CHECKED | APPROVED |
| FCH | JDW | JDW |
| PROJECT NO. | HTL TEST | |
| DRAWING NO. | FS400T_01 | |
| SHEET | 4 OF 6 | |

BILL OF MATERIALS

| ITEM NO. | PART # | DESCRIPTION | DIMENSIONS | MATERIAL | MANUFACTURER | NOTES |
|----------|----------|----------------------------------------|----------------------------------------|--------------------------|-----------------|-----------------------------------------------|
| 1 | NG1 | GLAZING GASKET EXTERIOR/INTERIOR | 0.197 SPACE | EPDM | VARIES | EXTERIOR/INTERIOR • GLASS |
| 2 | SM5601 | JOINT SEALANT TAPE | 1/8" X 1/2" VARIES | BUTYL | SCHNEE-MOREHEAD | USED AT HORIZ. TO VERT. JOINT INTERSECTIONS |
| 3 | 795 | SEALANT | FILL SPACE | SILICONE | DOW | PERIMETER SEALANT |
| 4 | 995 | SEALANT | FILL SPACE | SILICONE | DOW | INTERNAL SEALANT |
| 5 | SB3 | SETTING BLOCK AT INTERM. HORIZ/SILL | 0.625 X 4.000 X 1.500 | EPDM | VARIES | 4" LONG |
| 6 | SB12 | SETTING BLOCK AT INT. GLAZ. HORIZ. | 0.125 X 1.062 X 4.000 | EPDM | VARIES | 4" LONG |
| 7 | FL339T | SUBSILL FLASHING | 2.312 X 4.788 X 0.078 | 6063-T6 ALUMINUM | CORAL | |
| 8 | FS401T | HEAD - INTERIOR GLAZING | 2.000 X 4.460 X 0.070 | 6063-T6 ALUMINUM | CORAL | |
| 9 | FS402T | SILL - INTERIOR GLAZING | 2.000 X 4.460 X 0.070 | 6063-T6 ALUMINUM | CORAL | |
| 10 | FS403 | GLASS STOP - INTERIOR GLAZING | 1.135 X 2.792 X 0.057 | 6063-T6 ALUMINUM | CORAL | |
| 11 | FS404T | VERTICAL MULLION | 2.000 X 4.500 X 0.070 | 6063-T6 ALUMINUM | CORAL | |
| 12 | FS405 | FILLER | 0.265 X 2.504 X 0.070 | 6063-T6 ALUMINUM | CORAL | |
| 13 | FS406T | INT. HORIZ. MULL - INTERIOR GLAZING | 2.000 X 4.460 X 0.080 | 6063-T6 ALUMINUM | CORAL | |
| 14 | FS407T | WALL JAMB | 2.000 X 4.500 X 0.070 | 6063-T6 ALUMINUM | CORAL | |
| 15 | FS408T | INT. HORIZ MULL - EXTERIOR GLAZING | 2.000 X 4.460 X 0.080 | 6063-T6 ALUMINUM | CORAL | |
| 16 | FS409T | SILL - EXTERIOR GLAZING | 2.000 X 4.460 X 0.080 | 6063-T6 ALUMINUM | CORAL | |
| 17 | FS410T | EXPANSION MULL - MALE HALF | 0.870 X 4.500 X 0.070 | 6063-T6 ALUMINUM | CORAL | |
| 19 | WD300-1 | WATER DEFLECTOR | 1.358 X 1.500 X 0.040 | INJECTION MOLDED PLASTIC | CORAL | LOCATE ONE AT EACH END OF EACH ITEM #13 & #15 |
| 20 | CS104T | FLAT FILLER | 0.265 X 3.750 X 0.700 | 6036-T6 ALUMINUM | CORAL | |
| 21 | CS300T-1 | ANCHOR CLIP | 1.295 X 3.73 X 0.094 | 6063-T6 ALUMINUM | CORAL | 4" LONG |
| 22 | CS403 | GLASS STOP | 0.582 X 1.152 X 0.070 | 6063-T6 ALUMINUM | CORAL | |
| 23 | ED339-1 | END DAM | 3.313 X 4.813 X 0.063 | RIGID PVC | CORAL | |
| 24 | AS16 | SPLINE ASSEMBLY SCREW | #14 X 1" HHSTS | STEEL | VARIES | TYPICAL SPLINE SCREW |
| 25 | AS31 | ASSEMBLY SCREW | #6 X 1/4" PPH | STEEL | VARIES | |
| 26 | FASTENER | FOR ATTACHING FRAME TO STEEL SUBSTRATE | 1/4" X 1 1/4" TEX | STEEL | VARIES | |
| 27 | FASTENER | STEEL REINFORCEMENT ATTACHMENT BOLT | 1/4"-20 X 1" BOLT W/WASHER AND NUT | STEEL | VARIES | LOCATE AT HEAD & SILL |
| 28 | SR404 | STEEL REINFORCEMENT | 10 GAUGE | GALVANIZED STEEL | VARIES | FITS IN ITEM #11 |
| 29 | FASTENER | STEEL REINFORCEMENT ATTACHMENT BOLT | 1/4"-20 X 2-1/2" BOLT W/WASHER AND NUT | STEEL | VARIES | LOCATE AT CENTER OF INTERM. HONTALORIZ |

| GLAZING SCHEDULE | | | | |
|-------------------|--------------------------------------------------------------------------|--------------|---------------------|---------------------|
| GLASS MARK SYMBOL | GLASS TYPE | MANUFACTURER | MAXIMUM D.L.O. SIZE | MAXIMUM SQUARE FEET |
| A | 1/4" TEMPERED OUTER SURFACE, 1/2" AIR SPACE, 1/4" TEMPERED INNER SURFACE | VARIES | 46" x 48" | 15.3 |

Hurricane Test Laboratory



Tested unless
Otherwise Noted

Date 7/12/07
Job # 642-0702-07

DATE 7/11/2007

DRAWN BY: JCH CHECKED BY: JDW APPROVED BY: JDW

PROJECT NO. HTL TEST

DRAWING NO. FS400T_01

SHEET 6 OF 6

Coral

• Architectural Products •
3015 RICE M. ROAD, TUSCALOOSA, AL 35408
PHONE: 800-727-7273 FAX: 205-255-1700

HTL TEST REPORT DRAWINGS FOR FS400T FRAMING SYSTEM

BILL OF MATERIALS

DESCRIPTION

DATE

BY

REV