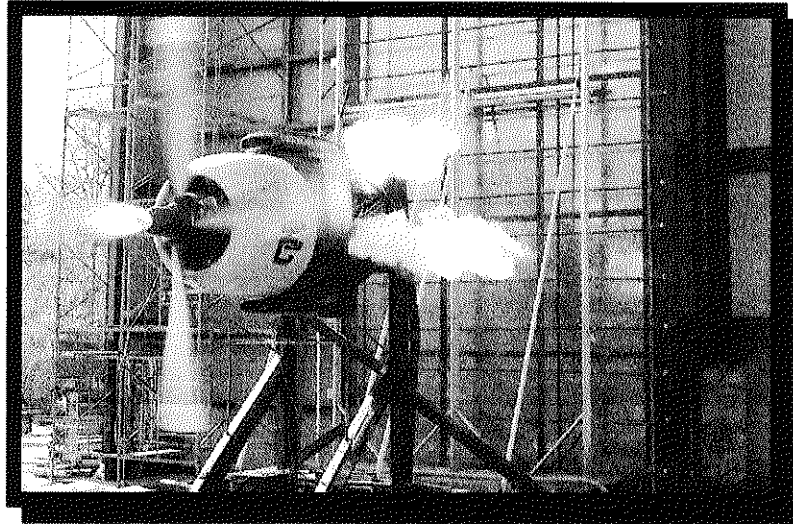




CONSTRUCTION CONSULTING LABORATORY, *INTERNATIONAL*



TEST REPORT:

**AAMA 501 PERFORMANCE TESTING
CROWN CORR SERIES CCI 1000 DRY SYSTEM
REPORT #CCLI-04-201**

November 10, 2004

Prepared for:

CROWN CORR, INC.
2321 E. Pioneer Dr.
Irving, TX 75061

1601 Luna Road
Carrollton, Texas 75006

S-UNITED, INC.
A Quality Control Company

Office: (972) 242-0556
FAX: (972) 245-6047



TABLE OF CONTENTS

1. PROJECT DATA	1
2. MOCK-UP DESCRIPTION	2
3. TEST EQUIPMENT	3
4. TESTING ALLOWABLES	4
5. TESTING SEQUENCE	4
6. TESTING and RESULTS.....	5
7. CONCLUSION.....	9

APPENDIXES

APPENDIX A: CCI 1000 MOCK-UP DRAWINGS

APPENDIX B: DIAL INDICATOR LOCATION DIAGRAM

APPENDIX C: STRUCTURAL DEFLECTION TABLES

APPENDIX D: PHOTOGRAPHS



AAMA 501 PERFORMANCE TESTING
CROWN CORR SERIES CCI 1000 DRY SYSTEM
REPORT #CCLI-04-201

November 12, 2004
Page 1 of 9

1. PROJECT DATA

<u>Project:</u>	AAMA 501 Mock-Up Performance Testing CCI 1000 Dry System
<u>Test Completion:</u>	October 26, 2004
<u>Tested For:</u>	Crown Corr, Inc. 2321 E. Pioneer Drive Irving, TX 75061

Witnessed By: (All or Partial Viewing)

Griff Rausch	Crown Corr, Inc.
Jeffrey Crump	Construction Consulting Laboratory, <i>International</i>
Juvenal Azua	Construction Consulting Laboratory, <i>International</i>
Brandon Newman	Construction Consulting Laboratory, <i>International</i>
Chevis Wilson	Construction Consulting Laboratory, <i>International</i>
Wesley A. Wilson	Construction Consulting Laboratory, <i>International</i>



AAMA 501 PERFORMANCE TESTING
CROWN CORR SERIES CCI 1000 DRY SYSTEM
REPORT #CCLI-04-201

November 12, 2004
Page 2 of 9

2. MOCK- UP DESCRIPTION

PRODUCT TYPE: Composite Panel System, **Product Drawings, Appendix A; Photographs, Appendix D**
SERIES/MODEL: Crown Corr Series CCI 1000 Dry System
FRAME SIZE: 24'-0" x 12'-6"

Weather-stripping: .250" high bulb vinyl at the interior face of panel frame extrusions.

Wall Construction: Typical wall construction with 16-gauge metal studs spaced on 24" centers attached to sill and head stud channel with $\frac{1}{8}$ " SST pop rivets at interior and exterior face of stud. Exterior sheathing is $\frac{5}{8}$ " G.P. Dens glass attached to metal stud with $1\frac{5}{8}$ " drywall screws spaced approximately 4" from each end and on 12" centers. J-flashing installed over dens glass edge full perimeter at chamber opening. Tyvek commercial underlayment applied to the exterior face of sheathing installed with staples with seams taped with Tyvek adhesive tape.

Glazing Material: 4 mm composite panels consisting of two sheets of aluminum with alpolyc polyethylene core. Panel returns attached to aluminum extrusion members with $\frac{1}{8}$ " SST pop rivets spaced 1" from each end and on approximate 12" centers. Dow Corning series 795 silicone applied to the exterior face of panel frames to composite panel and at interior face of frame miter joint.

Glazing: Fastener Schedule **F-3**-#12 x 2" SST hex head "B" screw; 18 gauge hat channel attached through Tyvek underlayment, exterior sheathing, and J-flashing into studs with two (2) F-3 fasteners per wall stud. Panels are stack installed from bottom to top with jamb extrusion attached to lower hat channel with F-3 fastener spaced 6" from each end and on 18" centers. T-extrusion set inside receiver groove at lower panel head and attached to hat channel with F-3 fasteners spaced 6" from each end and on 18" centers. Z-extrusion placed in upper panel frame receiver groove and attached through hat channel with F-3 fasteners spaced 6" from each end and on 18" centers.

Weep Arrangement: Water is controlled by panel frames towards the vertical seams and down to base of wall.

Installation: Stud head and sill channel and jamb studs set in Dow Corning Series 795 structural silicone at chamber steel and attached with #14 x $\frac{1}{2}$ " SST hex head screws spaced 4" from each end and on 12" centers.

Date testing started: September 29, 2004
Date testing completed: October 26, 2004
Testing performed at: Construction Consulting Laboratory, *International* in Carrollton, Texas.



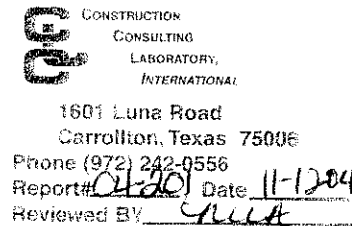
AAMA 501 PERFORMANCE TESTING
CROWN CORR SERIES CCI 1000 DRY SYSTEM
REPORT #CCLI-04-201

November 12, 2004
Page 3 of 9

Reference drawings, titled "Boston Logan International Airport", **Appendix A**.

<u>DRAWING</u>	<u>DATE</u>
Sheet C1.00	5/12/04
Sheet P1.00	5/12/04
Sheet D1.00	5/12/04
Typical Horizontal	

Refer to Mock-Up drawings in **Appendix A**. This report is not complete unless these drawings are stamped and initialed by **CCLI** as illustrated below.



3. TEST EQUIPMENT

- 3.1 Test chamber consisted of structural steel tubes, columns, and bulkheads and was accessible through one (1) bulkhead door.
- 3.2 Pressure differentials were created with reversible pumps for positive/negative loading.
- 3.3 Pressure differentials between the specimen interior and the atmosphere were measured with manometers.
- 3.4 Air infiltration was measured with a Meriam laminar flow element and a Dwyer inclined manometer.
- 3.5 Water was applied to the specimen from a spray rack equipped with swirl-type nozzles spaced two feet on center in vertical and horizontal directions, which, under controlled pressure, delivered a minimum of five gallons per square foot per hour on the specimen.
- 3.6 Dynamic winds were generated by a Curtiss Wright 3350 radial aircraft engine with a four (4) bladed propeller, 13'-6" diameter, which formulates typical and atypical wind conditions.
- 3.7 Structural variations were measured with dial indicator gauges with maximum movement hands located throughout the test specimen.



AAMA 501 PERFORMANCE TESTING
CROWN CORR SERIES CCI 1000 DRY SYSTEM
REPORT #CCLI-04-201

November 12, 2004
Page 4 of 9

4. TESTING ALLOWABLES

4.1 **AIR INFILTRATION:** Total amount of air infiltration shall not exceed .06 cfm per square foot of the curtain wall area tested. Due to mock-up design, the perimeter condition was included in the test of the mock-up.

MAXIMUM ALLOWABLE **18.00 cfm (Based upon a calculated area of 300.00 square feet)**

4.2 **STATIC WATER PENETRATION:** There shall be no uncontrolled water penetration during or at the conclusion of this test at a minimum static pressure of **6.24 PSF**.

Note: "Uncontrolled water" is defined as any water that appears on any normally exposed interior surfaces, that is not contained or drained back to the exterior, or that can cause damage to adjacent materials or finishes. Water contained within drained flashings, gutters, and sills is not considered water leakage. The collection of up to one half (½) ounce of water (14.8 cc) in a fifteen (15) minute test period on top of any interior stop or stool integral with the wall system shall not be considered leakage.

4.3 **DYNAMIC WATER PENETRATION:** There shall be no uncontrolled water penetration during or at the conclusion of this test at a minimum slipstream velocity of 50.00 mph.

4.4 **DESIGN LOAD DEFLECTIONS:** There shall be no system failure and deflection of aluminum members at 100% of design load and shall not exceed L/180.

Vertical Span Allowable: $150"/180 = 0.833$ inches

4.5 **PROOF LOAD RESIDUAL:** The permanent deformation of the wall studs shall be noted at each structural load. Crown Corr, Inc. shall perform interpretation for compliance of noted values.

5 TESTING SEQUENCE

As used throughout this report, positive pressure applied to the test specimen is considered to be **inward** acting and negative pressure is considered to be **outward** acting. All location references or comments are as viewing the test specimen from the interior (room side) of the test chamber and wall system.

	TEST	TEST STANDARD
1.	Preload to 10.00 PSF inward design pressure	ASTM E330-02
2.	Static Pressure Air Infiltration Test @ 6.24 PSF	ASTM E283-04
3.	Static Pressure Water Penetration Test @ 6.24 PSF	ASTM E331-00
4.	Dynamic Water Penetration @ 75 mph	AAMA 501.1
5.	Structural Deflection by Static Pressure Test with Sheathing in tact	ASTM E330-02
6.	Structural Deflection by Static Pressure Test with Sheathing removed	ASTM E330-02
7.	Static Pressure Water Penetration Test @ 6.24 PSF	ASTM E331-00
8.	Structural Load by Static Pressure Test 150% x Design Loads	ASTM E330-02



6. TESTING AND RESULTS

6.1 Preload to 10.00 PSF Positive Pressure per ASTM E330-02

Subject the test specimen to a static pressure differential of **10.00 PSF**. This load was maintained for ten (10) seconds and released. An inspection was made to determine if any failure occurred.

Results: No visible differences were observed within the specimen or test chamber. All materials were intact.

6.2 Static Pressure Air Infiltration Test @ 6.24 PSF per ASTM E283-04

The specimen and perimeter sealant joints were completely covered with an impervious visqueen material and sealed at the perimeter with tape, thus allowing no movement of air through the specimen, **Photograph 1, Appendix D**.

The exterior face of the specimen was then subjected to a positive pressure differential of **6.24 PSF**. Air infiltration was measured and recorded, thus indicating the amount of infiltration through the chamber.

Chamber Reading: **105.96 Cfm**

The visqueen material covering the specimen was removed and the exterior face of the specimen was subjected to a positive pressure differential of **6.24 PSF**. Air infiltration was measured, thus indicating the amount of infiltration through the chamber and the specimen. Subtracting the previous reading (chamber only) from this reading yields the amount of infiltration through the specimen.

Chamber and Specimen Reading: **123.66 Cfm**

6.24 PSF Results:

CHAMBER & SPECIMEN	CHAMBER	SPECIMEN ONLY (YIELD)	Cfm/Ft ²	ALLOWABLE (NOT TO EXCEED)
123.66 Cfm	105.96 Cfm	17.77 Cfm	.059	18.00 Cfm

1.57 PSF Results:

CHAMBER & SPECIMEN	CHAMBER	SPECIMEN ONLY (YIELD)	Cfm/Ft ²	ALLOWABLE (NOT TO EXCEED)
55.81 Cfm	46.17 Cfm	9.64 Cfm	.032	18.00 Cfm



6.3 Static Pressure Water Penetration Test @ 6.24 PSF per ASTM E331-00

Water was applied to the exterior face of the specimen at a minimum rate of five (5) gallons per square foot per hour of wall area, in such a way as to completely and continuously cover the face of the specimen, **Photograph 2, Appendix D**. Simultaneously, a positive **inward** differential static pressure of **6.24 PSF** was applied against the face. The application of pressure and water was maintained for a period of fifteen (15) minutes with observers inside the chamber checking for water penetration.

Results: No Water penetration was observed.

6.4 Static Pressure Water Penetration Test @ 8.00 PSF per ASTM E331-00

Water was applied to the exterior face of the specimen at a minimum rate of five (5) gallons per square foot per hour of wall area, in such a way as to completely and continuously cover the face of the specimen, simultaneously, a positive **inward** differential static pressure of **8.00 PSF** was applied against the face. The application of pressure and water was maintained for a period of fifteen (15) minutes with observers inside the chamber checking for water penetration.

Results: No water penetration was noted.

6.5 Dynamic Water Penetration @ 75.00 mph Slipstream Velocity per AAMA 501.1-94

Water was applied to the exterior face of the specimen at a minimum rate of five (5) gallons per square foot per hour of wall area, in such a way as to completely and continuously cover the face of the specimen. Simultaneously, the wall was subjected to sufficient airflow from an aircraft engine with a four-bladed propeller, approximately 13'-6" in diameter, approximately 20'-0" in front of the specimen, **Photograph 3, Appendix D**. The application of airflow and water was maintained for a period of fifteen (15) minutes with observers inside the chamber checking for water penetration.

Results: No water penetration was observed.

6.6 Uniform Structural Deflection Load Test per ASTM E330-02

Note: Exterior sheathing in-tact

Dial indicators were installed to measure deflection and residuals at ends and midspan of metal stud located at the center of wall width.

Test: With the specimen set in a positive mode, all indicators were set on zero. A positive pressure starting at **10.00 PSF increasing in increments of 5.00 PSF up to 30.00 PSF (inward)** was applied and held for ten (10) seconds per load. Dial indicators were read and the data recorded for each incremental load.



AAMA 501 PERFORMANCE TESTING
CROWN CORR SERIES CCI 1000 DRY SYSTEM
REPORT #CCLI-04-201

November 12, 2004
Page 7 of 9

Results: All the net midspan deflections were below the allowable stated in **Section 3** of this report. Refer to Structural Deflection Table #1 in **Appendix C**.

The vacuum/blower pumps were reversed and set to perform in a negative mode. The test specimen was subjected to a negative pressure of **-10.00 PSF increasing in increments of 5.00 PSF up to -30.00 PSF (outward)** was applied and held for ten (10) seconds per load. Dial indicators were read and the data recorded for each incremental load.

Results: All the net midspan deflections were below the allowable stated in **Section 3** of this report. Refer to Structural Deflection Table 1 in **Appendix C**.

6.7 **Uniform Structural Deflection Load Test per ASTM E330-00**

Note: To pressurize the composite panels and record the center of panel deflection, the exterior sheathing was cut in two locations on each side of the center wall stud (4 cuts total). Sheathing cut was approximately 22 inches wide by 24 inches tall at the center of mock-up vertical span, **Photograph 4, Appendix D**.

Dial indicators were installed to measure deflection and residuals at ends and midspan of metal stud located at the center of wall width and at the center of one of the largest composite panels.

Test: With the specimen set in a positive mode, all indicators were set on zero. A positive pressure at **25.00 PSF** and **35.00 PSF (inward)** was applied and held for ten (10) seconds per load. Dial indicators were read and the data recorded for each incremental load.

Results: All the net midspan deflections were below the allowable stated in **Section 3** of this report. Refer to Structural Deflection Table 2 in **Appendix C**.

The vacuum/blower pumps were reversed and set to perform in a negative mode. The test specimen was subjected to a negative pressure of **-25.00 PSF** and **-35.00 PSF (outward)** was applied and held for ten (10) seconds per load. Dial indicators were read and the data recorded for each incremental load.

Results: All the net midspan deflections were below the allowable stated in **Section 3** of this report. Refer to Structural Deflection Table 2 in **Appendix C**.



6.8 Static Pressure Water Penetration Test @ 8.00 PSF per ASTM E331-00

Water was applied to the exterior face of the specimen at a minimum rate of five (5) gallons per square foot per hour of wall area, in such a way as to completely and continuously cover the face of the specimen. Simultaneously, a positive **inward** differential static pressure of **8.00 PSF** was applied against the face. The application of pressure and water was maintained for a period of fifteen (15) minutes, with observers inside the chamber checking for water penetration.

Results: No uncontrolled water penetration was observed.

6.9 Uniform Structural Deflection Load Test per ASTM E330-02

Dial indicators were installed to measure deflection and residuals at ends and midspan of metal stud located at the center of wall width and at the center of one of the largest composite panels.

Test: With the specimen set in a positive mode, all indicators were set on zero. A positive pressure at **40.00 PSF** and **45.00 PSF (inward)** was applied and held for ten (10) seconds per load. Dial indicators were read and the data recorded for each incremental load.

Results: All the net midspan deflections were below the allowable stated in **Section 3** of this report. Refer to Structural Deflection Table 2 in **Appendix C**.

The vacuum/blower pumps were reversed and set to perform in a negative mode. The test specimen was subjected to a negative pressure of **-40.00 PSF** and **-45.00 PSF (outward)** was applied and held for ten (10) seconds per load. Dial indicators were read and the data recorded for each incremental load.

Results: All the net midspan deflections were below the allowable stated in **Section 3** of this report. Refer to Structural Deflection Table 2 in **Appendix C**.

6.10 Uniform Structural Deflection Load Test per ASTM E330-02

Test: With the specimen set in a positive mode, all indicators were set on zero. A positive pressure of **52.50 PSF, (inward)** was applied and held for ten (10) seconds, then released. The indicators were read and the data recorded.

Results: Specimen passed 10-second structural load with 0.063" permanent set noted at the center vertical wall stud.



AAMA 501 PERFORMANCE TESTING
CROWN CORR SERIES CCI 1000 DRY SYSTEM
REPORT #CCLI-04-201

November 12, 2004
Page 9 of 9

The vacuum/blower pumps were reversed and set to perform in a negative mode. The test specimen was subjected to a negative pressure of **-52.50 PSF (outward)**. The pressure was held for ten (10) seconds and released.

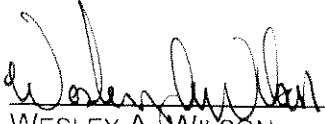
Results: Specimen passed 10-second structural load with 0.125" permanent set noted at the center vertical wall stud.

7. CONCLUSION


The tested specimen performed within the specified criteria.

Respectfully submitted,

CONSTRUCTION CONSULTING LABORATORY, *INTERNATIONAL*



WESLEY A. WILSON
LABORATORY MANAGER



JEFFREY CRUMP
TEST TECHNICIAN



AAMA 501 PERFORMANCE TESTING
CROWN CORR SERIES CCI 1000 DRY SYSTEM
REPORT #CCLI-04-201

November 12, 2004

APPENDIXES



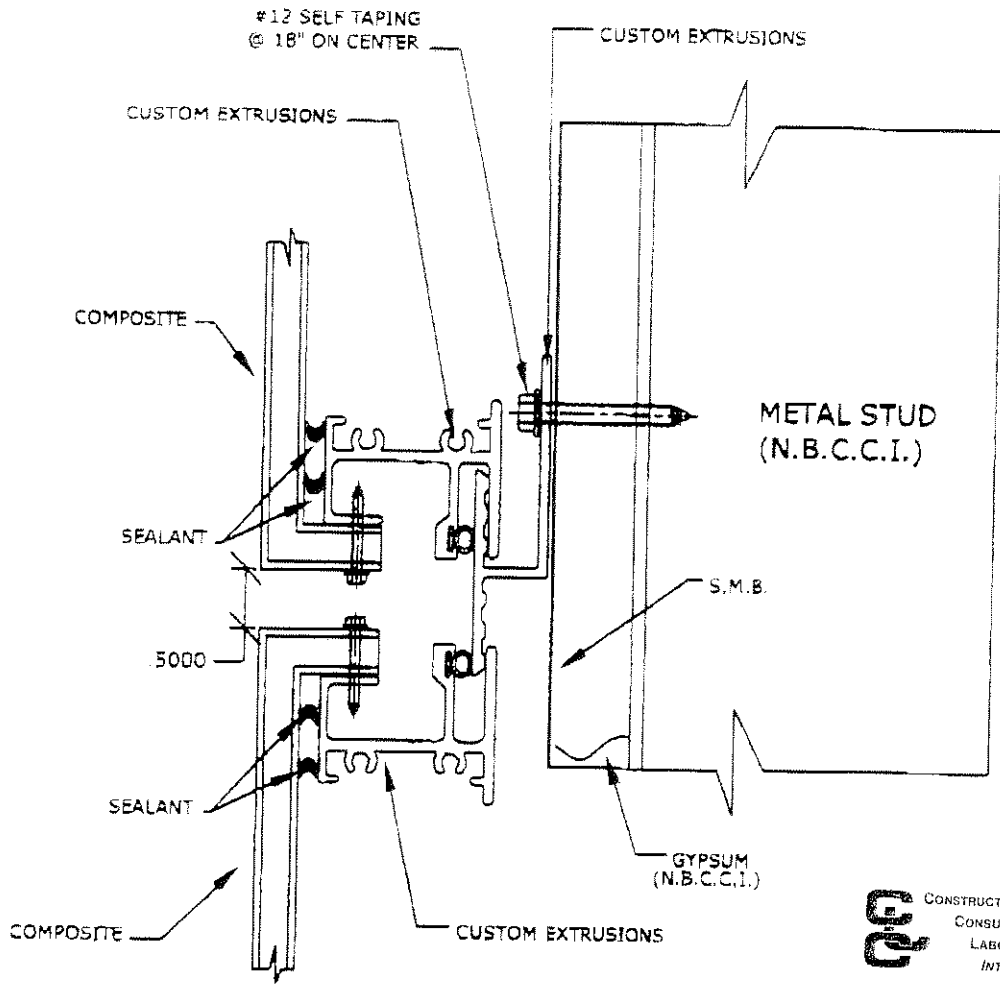
AAMA 501 PERFORMANCE TESTING
CROWN CORR SERIES CCI 1000 DRY SYSTEM
REPORT #CCLI-04-201

November 12, 2004

APPENDIX A

CCI 1000 MOCK-UP DRAWINGS

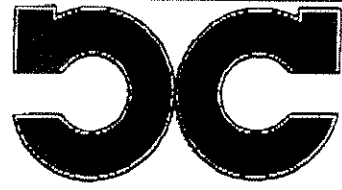
<u>DRAWING</u>	<u>DATE</u>	<u>REVISION</u>
Sheet C1.00	5/12/04	Issue
Sheet P1.00	5/12/04	Issue
Sheet D1.00	5/12/04	Issue
Typical Horizontal		



CCI CONSTRUCTION CONSULTING LABORATORY INTERNATIONAL

1601 Luna Road
 Carrollton, Texas 75006
 Phone (972) 242-0556
 Report# DL-201, Date 1/10/04
 Reviewed BY MIA

TYPICAL HORIZONTAL JOINT 3



CROWN CORR
 7100 WEST 21ST AVE.
 GARY, INDIANA 46406

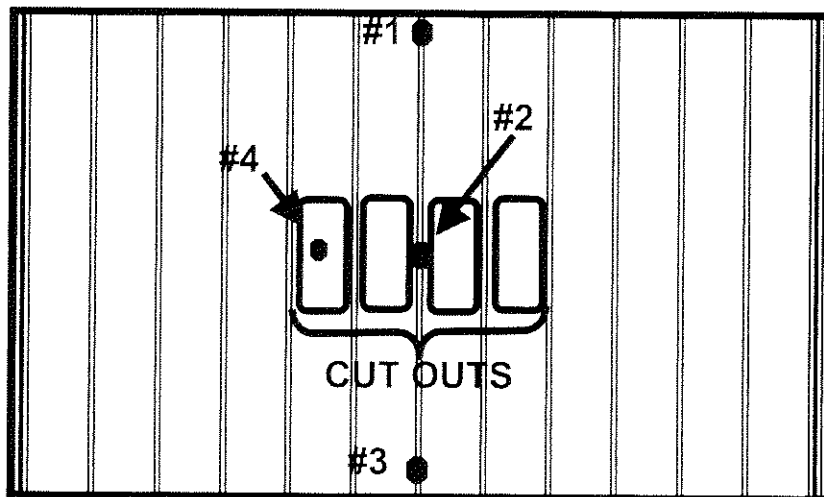
CCI DRY-1000 SYSTEM

JOB NO.	DWG NO.	REV
SCALE (NTS)	DRAWN ATG	SHEET



APPENDIX B

DIAL INDICATOR LOCATION DIAGRAM



DIAL INDICATOR LOCATIONS

INDICATOR	LOCATION (VIEWED FROM INTERIOR)
1	Top of center wall stud
2	Mid span of center wall stud
3	Bottom of center wall stud
4	Center of composite panel



AAMA 501 PERFORMANCE TESTING
CROWN CORR SERIES CCI 1000 DRY SYSTEM
REPORT #CCLI-04-201

November 12, 2004

APPENDIX C

STRUCTURAL DEFLECTION TABLES



AAMA 501 PERFORMANCE TESTING
CROWN CORR SERIES CCI 1000 DRY SYSTEM
REPORT #CCLI-04-201

November 12, 2004

STRUCTURAL DEFLECTION DATA							
Exterior sheathing intact							
+10.00 PSF (10 Second)				-10.00 PSF (10 Second)			
Indicator #	Total	Residual	Net Deflection	Total	Residual	Net Deflection	Allowable
1	.01	.00		.02	.00		
2	.15	.00	.125	.20	.02	.165	.833
3	.04	.00		.05	.00		
+15.00 PSF (10 Second)				-15.00 PSF (10 Second)			
Indicator #	Total	Residual	Net Deflection	Total	Residual	Net Deflection	Allowable
1	.01	.00		.02	.00		
2	.15	.00	.125	.20	.02	.165	.833
3	.04	.00		.05	.00		
+20.00 PSF (10 Second)				-20.00 PSF (10 Second)			
Indicator #	Total	Residual	Net Deflection	Total	Residual	Net Deflection	Allowable
1	.03	.00		.02	.01		
2	.37	.02	.310	.36	.02	.310	.833
3	.09	.00		.08	.01		
+25.00 PSF (10 Second)				-25.00 PSF (10 Second)			
Indicator #	Total	Residual	Net Deflection	Total	Residual	Net Deflection	Allowable
1	.04	.01		.04	.01		
2	.43	.02	.400	.45	.02	.375	.833
3	.02	.01		.11	.01		
+30.00 PSF (10 Second)				-30.00 PSF (10 Second)			
Indicator #	Total	Residual	Net Deflection	Total	Residual	Net Deflection	Allowable
1	.04	.01		.04	.01		
2	.54	.02	.465	.52	.02	.445	.833
3	.11	.01		.11	.01		

STRUCTURAL DEFLECTION TABLE 1

(Deflections shown in hundredths of an inch.)
 Movement in direction of load is shown as positive.
 See Appendix B for specific indicator locations.

Definitions:

TOTAL DEFLECTION is the amount of movement recorded by the maximum movement hand at the full load indicated.

RESIDUAL DEFLECTION is the amount of change recorded between the before and after load dial indicator position.

NET DEFLECTION is the amount of movement of midspan member minus the average movement recorded at the anchors or end points.



AAMA 501 PERFORMANCE TESTING
CROWN CORR SERIES CCI 1000 DRY SYSTEM
REPORT #CCLI-04-201

November 12, 2004

STRUCTURAL DEFLECTION DATA							
Exterior sheathing cut two locations each side of center vertical wall stud							
+25.00 PSF (10 Second)				-25.00 PSF (10 Second)			
Indicator #	Total	Residual	Net Deflection	Total	Residual	Net Deflection	Allowable
1	.04	.01		.05	.01		
2	.46	.01	.385	.50	.02	.420	.833
3	.11	.01		.11	.01		
4	.96	.06		1.00	.10		
+35.00 PSF (10 Second)				-35.00 PSF (10 Second)			
Indicator #	Total	Residual	Net Deflection	Total	Residual	Net Deflection	Allowable
1	.04	.01		.08	.02		
2	.64	.02	.545	.73	.02	.625	.833
3	.15	.01		.13	.02		
4	1.27	.10		1.36	.11		
+40.00 PSF (10 Second)				-40.00 PSF (10 Second)			
Indicator #	Total	Residual	Net Deflection	Total	Residual	Net Deflection	Allowable
1	.06	.01		.09	.01		
2	.76	.06	.645	.81	.02	.705	.833
3	.18	.01		.12	.00		
4	1.43	.10		1.69	.14		
+45.00 PSF (10 Second)				-45.00 PSF (10 Second)			
Indicator #	Total	Residual	Net Deflection	Total	Residual	Net Deflection	Allowable
1	.06	.01		.08	.01		
2	.83	.10	.700	.95	.02	.800	.833
3	.20	.01		.22	.01		
4	1.43	.11		1.98	.13		

STRUCTURAL DEFLECTION TABLE 2
 (Deflections shown in hundredths of an inch.)
 See Appendix B for specific indicator locations.

Definitions:

TOTAL DEFLECTION is the amount of movement recorded by the maximum movement hand at the full load indicated.

RESIDUAL DEFLECTION is the amount of change recorded between the before and after load dial indicator position.

NET DEFLECTION is the amount of movement of midspan member minus the average movement recorded at the anchors or end points.



AAMA 501 PERFORMANCE TESTING
CROWN CORR SERIES CCI 1000 DRY SYSTEM
REPORT #CCLI-04-201

November 12, 2004

APPENDIX D

PHOTOGRAPHS



AAMA 501 PERFORMANCE TESTING
CROWN CORR SERIES CCI 1000 DRY SYSTEM
REPORT #CCLI-04-201

November 12, 2004



PHOTOGRAPH 1

Static Pressure Air Infiltration Test @ 6.24 PSF per ASTM E283-04

The specimen and perimeter sealant joints were completely covered with an impervious visqueen material and sealed at the perimeter with tape, thus allowing no movement of air through the specimen.



AAMA 501 PERFORMANCE TESTING
CROWN CORR SERIES CCI 1000 DRY SYSTEM
REPORT #CCLI-04-201

November 12, 2004



PHOTOGRAPH 2

Static Pressure Water Penetration Test @ 6.24 PSF per ASTM E331-00

Water was applied to the exterior face of the specimen at a minimum rate of five (5) gallons per square foot per hour of wall area, in such a way as to completely and continuously cover the face of the specimen. Simultaneously, a positive **inward** differential static pressure of **6.24 PSF** was applied against the face. The application of pressure and water was maintained for a period of fifteen (15) minutes with observers inside the chamber checking for water penetration.



AAMA 501 PERFORMANCE TESTING
CROWN CORR SERIES CCI 1000 DRY SYSTEM
REPORT #CCLI-04-201

November 12, 2004

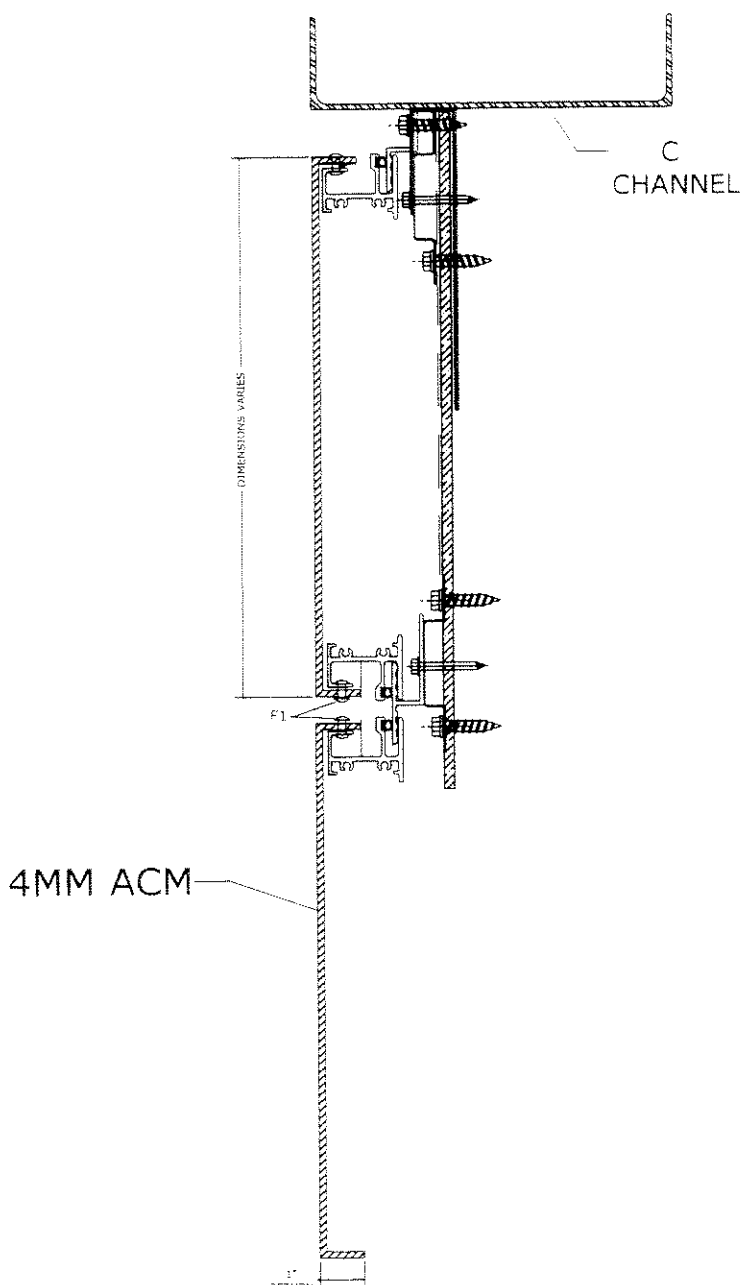


PHOTOGRAPH 3

Dynamic Water Penetration @ 75.00 mph Slipstream Velocity per AAMA 501.1-94

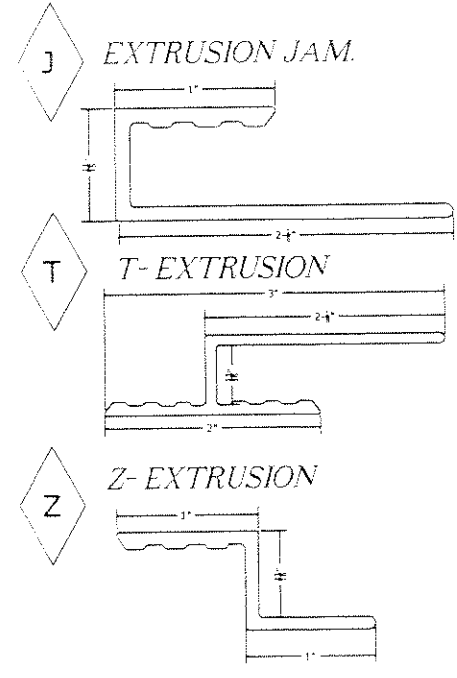
Water was applied to the exterior face of the specimen at a minimum rate of five (5) gallons per square foot per hour of wall area, in such a way as to completely and continuously cover the face of the specimen. Simultaneously, the wall was subjected to sufficient airflow from an aircraft engine with a four-bladed propeller, approximately 13'-6" in diameter, approximately 20'-0" in front of the specimen. The application of airflow and water was maintained for a period of fifteen (15) minutes with observers inside the chamber checking for water penetration.

CCI 1000 DRY SYSTEMS TEST

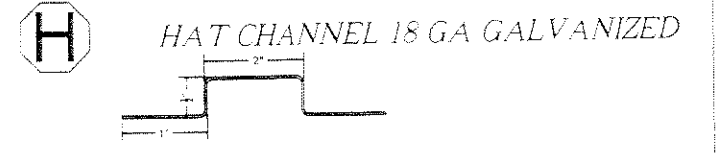


TYPICAL PANEL PROFILE

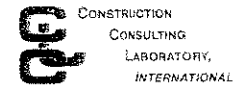
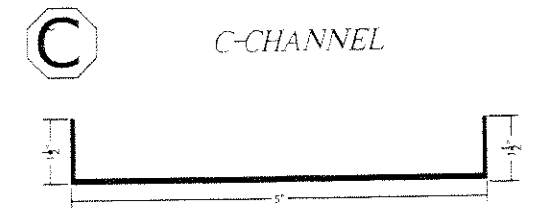
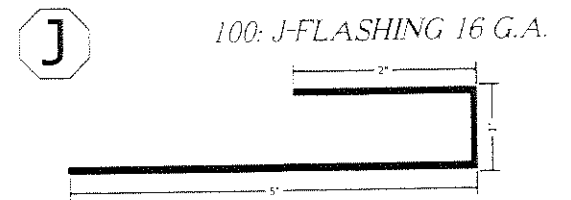
SYMBOLS:



HAT CHANNEL:



FLASHING:



1601 Luna Road
Carrollton, Texas 75006

Phone (972) 242-0556
Report 01-20 Date 11-20-04
Reviewed By MCA

MATERIAL:

1. CCI-1000-4MIL MATERIAL STANDARD PE-CORE ROUTED RETURN DRY.
2. 4 MM ALUMINUM COMPOSITE MATERIAL.
3. UNDERLAYMENT (TYVEK COMMERCIAL WRAP)
4. SHEATHING 5/8" G.P. DENS GLASS

FASTENERS INDEX:

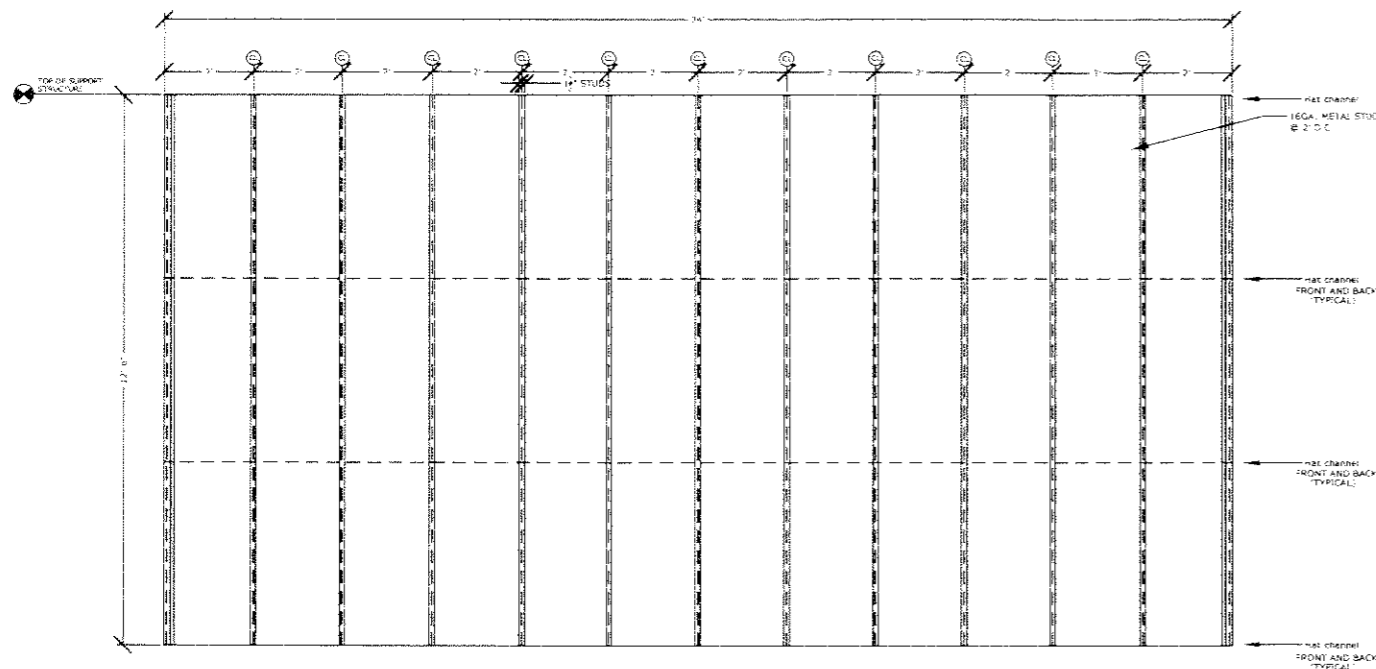
- F-1: 1/8" SST POP RIVETS.
F-2: #14 X 1/2" SST HEX HEAD SCREW.
F-3: #12 X 1/2" SST HEX HEAD " B" SCREWS.
2"

SEALANT:

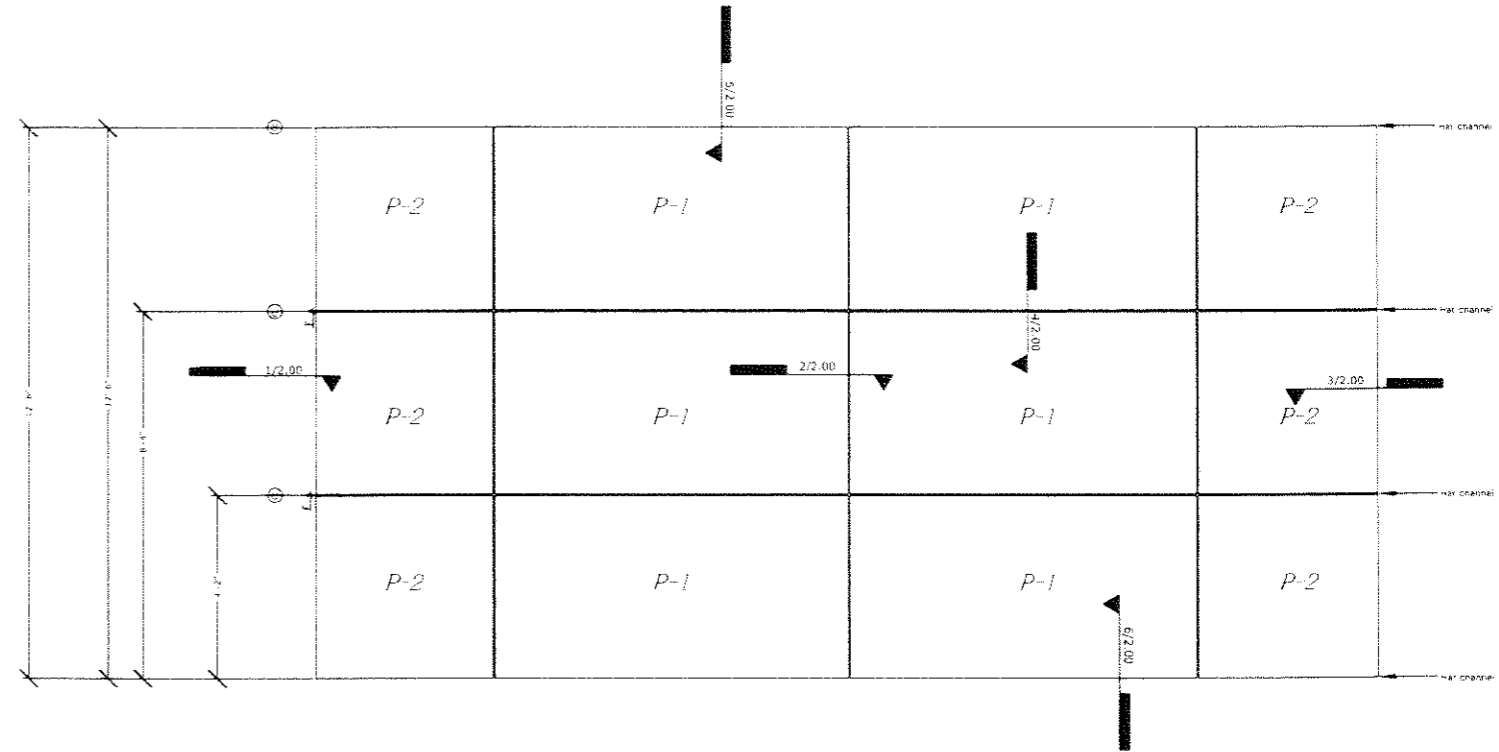
S1: DOW 795 SILICONE.

ISSUE	FOR APPROVAL	5/12/04	ATG
REVISION OR ISSUE	DESCRIPTION	DATE	BY
	CROWN CORR, INC. (IRVING, TEXAS) 2321 E. PIONEER DRIVE IRVING, TEXAS 75061 TEL. (972) 721-1825 FAX. (972) 721-0618		
	CCI CORPORATE GARY, INDIANA	CCI SEATTLE, WASHINGTON	
	CCI DETROIT, MICHIGAN	CCI INDIANAPOLIS, INDIANA	
	www.crowndcorr.com		
DRAWING TITLE	TITLE CCI DALLAS MOCK-UP 1000 SERIES		
ARCHITECT	ARCHITECT		
CONTRACTOR	CONTRACTOR		
OWNER	OWNER		
BUILDING	BUILDING		
LOCATION	LOCATION CONST. CONSUL LAB		
JOB NO.	DATE	DRAWN BY	ATG
	5/12/04	CHKD BY	G.R.
		DWG. NO.	C1.00

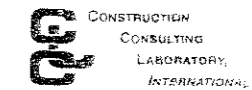
CCI1000 DRY SYSTEMS TEST



1 SUPPORT STRUCTURE
A1.00 Scale: 1/2"=1'-0"

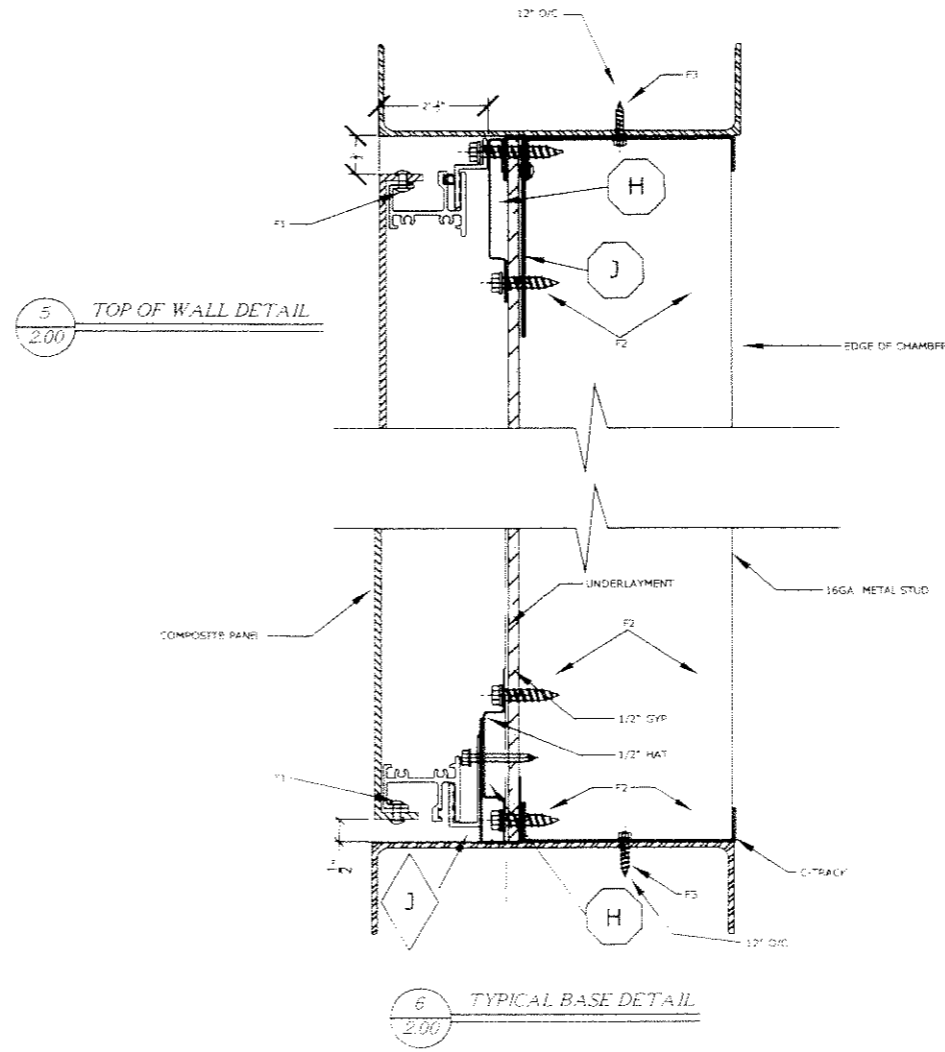
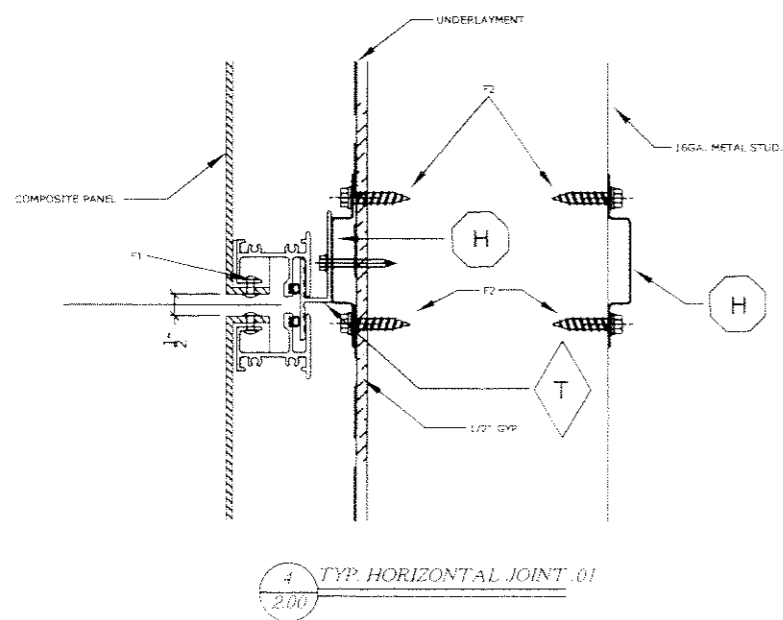
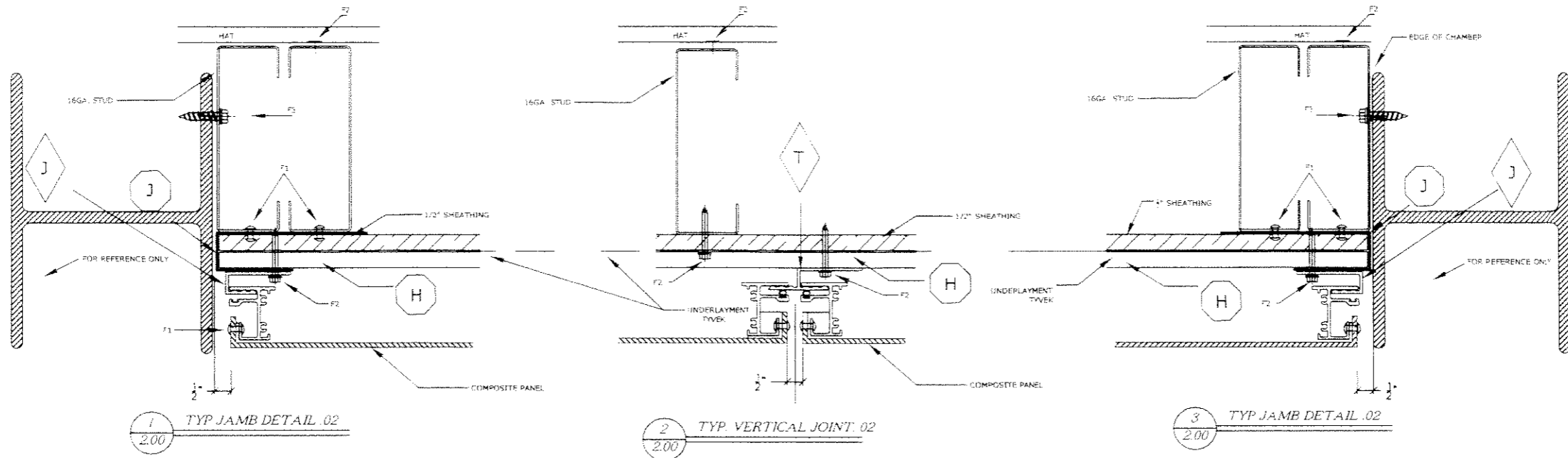


2 PANEL LAYOUT
A1.00 Scale: 1/2"=1'-0"



CONSTRUCTION CONSULTING LABORATORY INTERNATIONAL
1601 Luna Road
Carrollton, Texas 75006
Phone (972) 242-0556
Report# 04201, Date 11-12-04
Reviewed BY PLA

ISSUE	FOR APPROVAL	5/12/04	ATG
REVISION OR ISSUE	DESCRIPTION	DATE	BY
	CROWN CORR. INC. (IRVING, TEXAS) 2321 E. PIONEER DRIVE DALLAS, TEXAS 75061 TEL. (972) 721-1825 FAX. (972) 721-0018		
	CCI CORPORATE GARY, INDIANA	CCI SEATTLE, WASHINGTON	
	CCI DETROIT, MICHIGAN	CCI INDIANAPOLIS, INDIANA	
	www.crowncorr.com		
DRAWING TITLE	TITLE CCI DALLAS MOCK-UP 1000 SERIES		
ARCHITECT	ARCHITECT		
ENGINEER	CONTRACTOR		
CONTRACTOR	OWNER		
OWNER	BUILDING		
BUILDING	LOCATION CONST. CONSUL LAB		
LOCATION	DATE	DRAWN BY	DWG. NO.
	5/12/04	ATG	P1.00
		CHKD BY G.R.	



CC CONSTRUCTION CONSULTING LABORATORY INTERNATIONAL

1601 Luna Road
 Carrollton, Texas 75006
 Phone (972) 242-0556
 Reports *DL-201* Date *11-12-04*
 Reviewed BY *ALCA*

ISSUE	FOR APPROVAL	5-12-04	ATG
REVISION OR ISSUE	DESCRIPTION	DATE	BY
	CROWN CORR, INC. (IRVING, TEXAS) 2321 E. PIONEER DRIVE IRVING, TEXAS 75061 TEL (972) 721-1825 FAX (972) 721-0618		
	CCI CORPORATE GARY, INDIANA	CCI SEATTLE, WASHINGTON	
	CCI DETROIT, MICHIGAN	CCI INDIANAPOLIS, INDIANA	
www.crowncorr.com			
DRAWING TITLE	TITLE CCI DALLAS NOCK-UP 1000 SERIES		
ARCHITECT	ARCHITECT		
CONTRACTOR	CONTRACTOR		
OWNER	OWNER		
BUILDING	BUILDING		
LOCATION	LOCATION CONST. CONSUL LAB		
JOB NO.	DATE	DRWN. BY	DWG. NO.
	5/12/04	ATG	<i>D1.00</i>
		CHKD. BY	G.R.

SCALE AT 1/2" = 1'
 PLOT SCALE = 1/2"