Altech Panel System/
Mitsubishi Chemical America Alpolic Material

STRUCTURAL PERFORMANCE TEST

NCTL-210-3064-1

NATIONAL CERTIFIED TESTING LABORATORIES

NATIONAL CERTIFIED TESTING LABORATORIES

8350 PARKLINE BLVD SUITE 12 • ORLANDO, FLORIDA 32809 • TELEPHONE (407) 240-1356
FAX (407) 240-8882
www.nctlinc.com

NCTL Report No:	*210-3064-1*
TEST DATE:	*11/22/04*
REPORT DATE:	*01/11/05*
REVISION DATE:	*05/11/09*

DC Not No: 04015

NCTL Certification No: 06-0119.04

Test Requested By – *Altech Panel System.*
1 Johnson Street Suite 118
Cartersville, GA 30120

Mitsubishi Chemical America, Inc
401 Volvo Parkway
Chesapeake, VA 23320

Tests Conducted - *Dade County Building Code Compliance Office Protocol TAS 201-94, Impact Test Procedures. Dade County Building Code Compliance Office, TAS 202-94, "Criteria for Testing Impact and Non-Impact Resistant Building Envelope Components using Uniform Static Air Pressure." Dade County Building Code Compliance Office TAS 203-94, "Criteria For Testing Products Subjected To Cyclic Wind Pressures Subject to Cyclic Wind Pressure Loading."*

Design Pressures:

Specimen 1	*TAS 202*	*+ 50 .0 psf Positive*	*-50 .0 psf Negative*
Specimen 2	*TAS 201,203*	*+ 50 .0 psf Positive*	*-50 .0 psf Negative*
Specimen 3	*TAS 201,203*	*+ 50 .0 psf Positive*	*-50.0 psf Negative*
Specimen 4	*TAS 201,203*	*+ 50 .0 psf Positive*	*-50.0 psf Negative*

LARGE MISSILE DATA:	*2 x 4 Southern Yellow Pine (S4S)*
Length:	*8'2"*
Weight:	*9 lbs.*
Velocity:	*34 mph - 50 ft. per second*

DESCRIPTION OF UNIT:

Model Designation – *Aluminum Composite Wall Panel System Utilizing Mitsubishi Chemical's Alpolic Materials*

Overall Size - *152.5" wide x 108.5" high.*

Configuration - *XX*
X

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MATERIAL CHARACTERISTICS:

Main Frame Construction - The main frame was constructed from 16ga steel stud framing. The first stud was located 8" from left side and 16" on center thereafter. Each stud was fasten to the track at the top and bottom with # 12 x 1"Tek screw front and back. There were three (3) 4mm aluminum composite panels measuring Top panel 120.0"wide x 48.0" high. Bottom panel 120.0"wide x 60.0" high. Side panel 32.0" wide x 108.5". All caulk joints measured 1/2" wide. An Aluminum extrusion die # ALTP-1 measuring the full length of the sill was attached to each stud with # 12 x 1.5" Tex screws. Each panel had a 1.0" return. The top and bottom panels had an aluminum extrusion die # ALTP-3 attached to the return on all four sides with thirty nine (39) # #8 x .750 Phillips flat head self-drilling screws. The side panel had an aluminum extrusion die # ALTP-3 attached to the return on all four sides with thirty six (36) # #8 x .750 Phillips flat head self-drilling screws See drawing attached. Horizontal between top and bottom panels located on each stud there was a bracket measuring 3" x 3" die # ALTP-2 each bracket was attached to the stud with one (1) # 12 x 1.5" hex head screw.Vertical between top and bottom and side panels on the stud there was ten (10) brackets measuring 3" x 3" die # ALTP-2 located 4.0", 17.5", 32.5", 44.75" 51.25", 65.75"81.25", 92.0", 103.5" and 106.0" measuring from top to bottom each bracket was attached to the stud with one (1) # 12 x 1.5" hex head screw all the panels interlock into the brackets. The head and both sides were attached to the studs with .125" x 1.25" 6063-T5 aluminum flat bar with # 12 X 1.5" Tex screws located both sides 4.0", 14.0", 27.0", 38.5" 50.5", 62.5", 74.5", 86.5", 97.0" and 106.0" measuring from top to bottom. Located in the head 9.0", 27.5", 41.5",58.75", 83.25",110.75", 126.75", 133.75", 142.25", 150.25" and 161.25" measuring from left to right.

Glazing - N/A.

Glazing Material- N/A

Weather-stripping – N/A

Hardware – N/A

Weepholes - N/A

Reinforcement - There was two (2) 3/4" x 3-1/2" boards fastens to the back of the specimen located 36.0" and 72.0" down and attached to each stud with # 12 x 1.5" Tex screws.

Sealant - The unit was sealed to the wooden test buck on the perimeter and joints with Dow Corning 795 Silicone Building Sealant.

INSTALLATION: The specimen was tested in a 2" 12" PT wooden test buck. The specimen was anchored with fifty (50) # 12 x 1.5" Tex screws see drawing attached.

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SEQUENCE OF TESTS PERFORMED:

Test Sequence: TAS 202

1. Air Infiltration
2. 1/2 Test Pressure Positive
3. 1/2 Test Pressure Negative
4. Design Pressure Positive
5. Design Pressure Negative
6. Water Infiltration Positive Direction
7. Full Test Pressure Positive
8. Full Test Pressure Negative

AIR INFILTRATION TEST

Air Infiltration Tests were conducted in accordance with TAS 202-94.

Specimen # 1

	Measured	Allowable
Air at 1.57 psf	0.006 cfm/ft²	0.3 cfm/ft²
Air at 6.24 psf	0.002 cfm/ft²	0.3 cfm/ft²

WATER INFIL TRATION TEST

Water Infiltration Test was conducted in accordance with TAS 202-94.

Specimen # 1 ASTM E 331-93

WTP= 15.0 psf load duration 15 minutes No water penetration over sill

STATIC AIR PRESSURE TEST

Static Tests were conducted in accordance with TAS 202

Specimen #1

Design Load	+50.0 psf, -50.0 psf			Measured	Allowed
Positive Loads	Time (Sec.)	psf Load		Def.	Perm. Set
1/2 Test	30	37.50			
Design	30	50.00			
Test	30	75.00	Loc#1	0.039"	0.480"
			Loc#2	0.017"	0.432"
Negative Loads	Time (Sec.)	psf Load		Def.	Perm. Set
1/2 Test	30	37.50			
Design	30	50.00			
Test	30	75.00	Loc#1	0.028"	0.480"
			Loc#2	0.011"	0.432"

Loc # 1 Maximum Allowable Permanent Set (0.4% of 120.0" span) = 0.480"
Loc # 2 Maximum Allowable Permanent Set (0.4% of 108.0" span) =0.432"
Loc # 1 Maximum allowable Deflection (L/180 of 120.0" span) = 0.685"
Loc # 2 Maximum allowable Deflection (L/180 of 108.0" span) =0.617"

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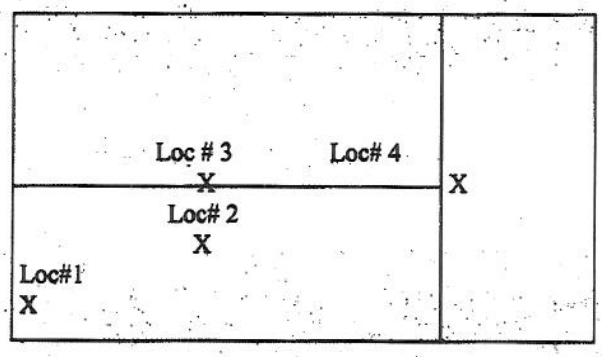
LARGE MISSILE IMPACT TEST

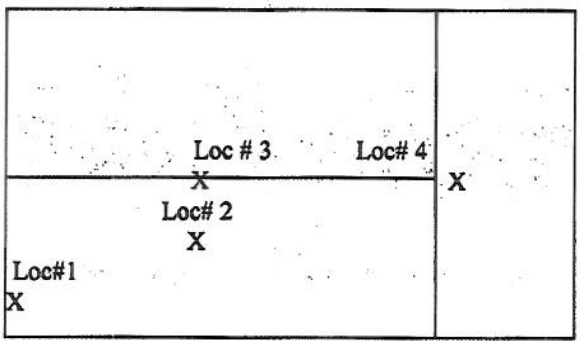
Impact tests were conducted in accordance with TAS 201-94

Specimens # 2



Location # 1 Bottom left corner of Panel
Location # 2 Mid-span of bottom Panel
Location # 3 Mid-span of Horizontal Scheme
Location # 4 Mid-span of Vertical Scheme
Description of specimens after impact test:
There was no penetration

Specimens # 3



Location # 1 Bottom left corner of Panel
Location # 2 Mid-span of bottomPanel
Location # 3 Mid-span of Horizontal Scheme
Location # 4 Mid-span of Vertical Scheme

Description of specimens after impact test:
There was no penetration

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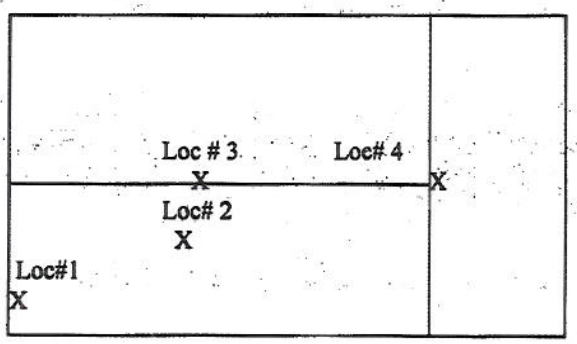
LARGE MISSILE IMPACT TEST Con,t
Specimens # 4



Location # 1 Bottom left corner of Panel
Location # 2 Mid-span of bottom Panel
Location # 3 Mid-span of Horizontal Scheme
Location # 4 Mid-span of Vertical Scheme

Description of specimens after impact test:
There was no penetration

CYCLE TEST

Cycle tests were conducted in accordance with TAS 203-94

Specimen 2
Design Load psf *+ 50.0 psf* *- 50.0 psf*

Range of test Positive loads	*Actual load psf*		*# of cycles*	*cycles/min*
+ .2 - .5	*10.0*	*25.0*	*3500*	*40*
+ .0 - .6	*0.00*	*30.0*	*300*	*40*
+ .5 - .8	*25.0*	*40.0*	*600*	*40*
+ .3 - 1.0	*15.0*	*50.0*	*100*	*40*

Range of test Negative loads	*Actual load psf*		*# of cycles*	*cycles/min*
- .3 - 1.0	*15.0*	*50.0*	*50*	*40*
- .5 - .8	*25.0*	*40.0*	*1050*	*40*
- .0 - .6	*00.0*	*30.0*	*50*	*40*
- .2 - .5	*10.0*	*25.0*	*3350*	*40*

9000 cycles completed
Description of specimen after cycle test:
Specimen showed no resultant failure or duress after cycle test. No failure of fasteners or separation from the aluminum frame.

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CYCLE TEST (Con't)

Specimen 3
Design Load psf + 50.0 psf - 50.0 psf

Range of test Positive loads	Actual load psf		# of cycles	cycles/min
+.2 - .5	10.0	25.0	3500	40
+.0 - .6	0.00	30.0	300	40
+.5 - .8	25.0	40.0	600	40
+.3 - 1.0	15.0	50.0	100	40

Range of test Negative loads	Actual load psf		# of cycles	cycles/min
-.3 - 1.0	15.0	50.0	50	40
-.5 - .8	25.0	40.0	1050	40
-.0 - .6	00.0	30.0	50	40
-.2 - .5	10.0	25.0	3350	40

9000 cycles completed
Description of specimen after cycle test:
Specimen showed no resultant failure or duress after cycle test. No failure of fasteners or separation from the aluminum frame.

Specimen 4
Design Load psf + 50.0 psf - 50.0 psf

Range of test Positive loads	Actual load psf		# of cycles	cycles/min
+.2 - .5	10.0	25.0	3500	40
+.0 - .6	0.00	30.0	300	40
+.5 - .8	25.0	40.0	600	40
+.3 - 1.0	15.0	50.0	100	40

Range of test Negative loads	Actual load psf		# of cycles	cycles/min
-.3 - 1.0	15.0	50.0	50	40
-.5 - .8	25.0	40.0	1050	40
-.0 - .6	00.0	30.0	50	40
-.2 - .5	10.0	25.0	3350	40

9000 cycles completed
Description of specimen after cycle test:
Specimen showed no resultant failure or duress after cycle test. No failure of fasteners or separation from the aluminum frame.

***Note: There were no stiffers used in the panels for testing.**

05/11/09

Observers –

Mr. Brain Guertin (NCTL)
Mr. Daniel Ocasio (NCTL)
Mr. Ricky Moffett (NCTL)
Mr. Jerry L. Radford (Altech Panel Systems)
Mr. Gerry Ferrera (P.E.)

Dade County Witness: None Present

NATIONAL CERTIFIED TESTING LABORATORIES

Rick Moffett
Laboratory Technician

Christopher Bennett
Division Manager

Disclaimer: *This test report was prepared by National Certified Testing Laboratory (NCTL), for the exclusive use of the above named client; it does not constitute certification of this product. The results are for that particular specimen tested and does not imply the quality of similar or identical products manufactured or installed from specifications identical to the tested product. NCTL is a testing lab and assumes that all information provided by the client is accurate and does not guarantee or warranty any product tested or installed.*

05/11/09

Laboratory Compliance Letter

Notification No: *NCTL - 04015*

Laboratory Certification No: *06-0119.04*

To Whom It May Concern,

On November 22nd, 2004 Altech Panel Systems/ Mitsubishi Chemical America, Inc started testing at National Certified Testing Laboratories in Orlando, FL. All tests were performed in full accordance with all Dade County requirements with no deviations.

Test Report No.
NCTL 210-3064-1

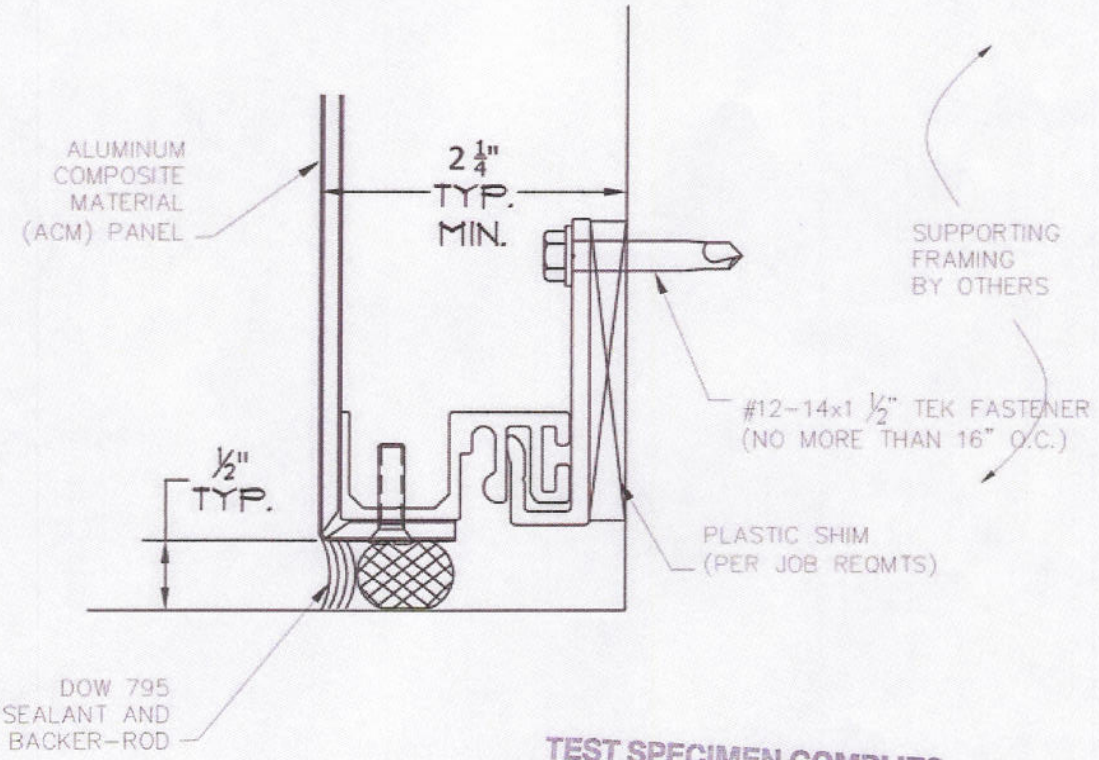
Product Series Description
Aluminum Composite Wall Panel Utilizing Mitsubishi Chemical's Alpolic Materials

NATIONAL CERTIFIED TESTING LABORATORIES

Gerald J. Ferrara, P.E.
200 West Wisconsin Avenue
Deland, Florida 32720
(386) 734-8792
(386) 734-8692 - FAX

05/11/09

ALTECH PANEL SYSTEMS, L.L.C.
1 Johnson St., Suite 118
Cartersville, Georgia 30120
Phone: (678) 721-4569
FAX: (678) 721-4958



TEST SPECIMEN COMPLIES WITH THESE DETAILS. ANY DEVIATION IS NOTED.
REPORT NO. NCTL - 210 - 3064-1-1A
TEST DATE: 11/22/04

1/1A SILL TERMINATION (WET SEAL)
SCALE: NONE

ALTECH PANEL SYSTEMS, L.L.C.
1 Johnson St., Suite 118
Cartersville, Georgia 30120
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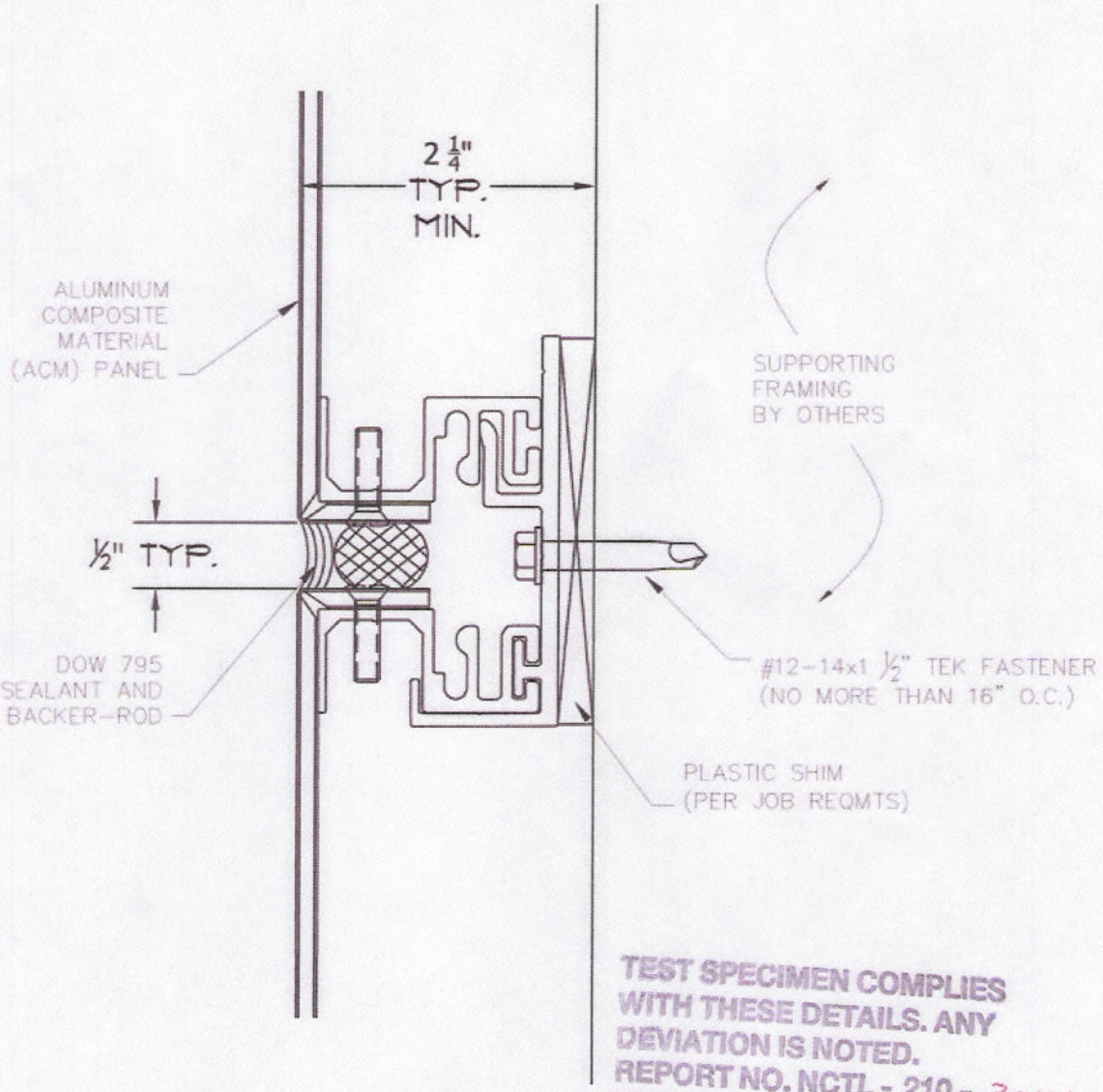

TEST SPECIMEN COMPLIES WITH THESE DETAILS. ANY DEVIATION IS NOTED.
REPORT NO. NCTL - 210 - 3046-1-1A
TEST DATE: 11/22/04

1/2A TYP. HORIZONTAL JT. (WET SEAL)
SCALE: NONE

ALTECH PANEL SYSTEMS, L.L.C.
1 Johnson St., Suite 118
Cartersville, Georgia 30120
Phone: (678) 721-4569
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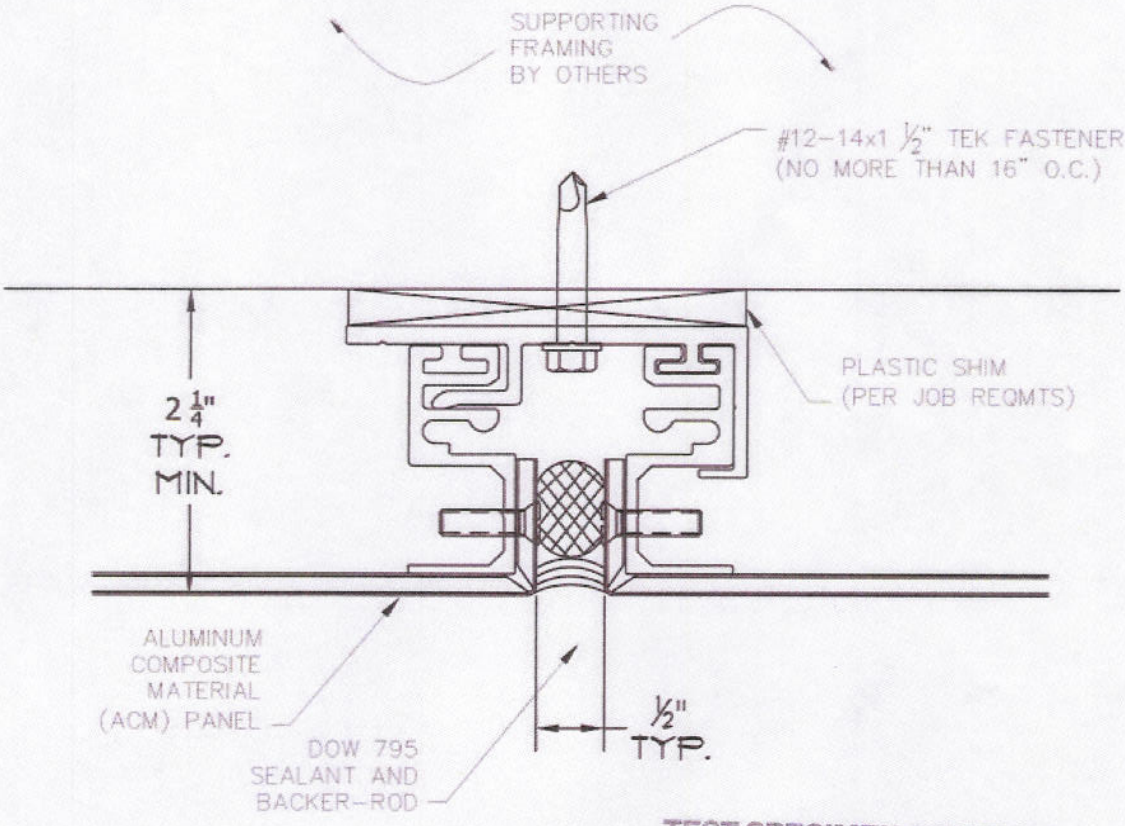
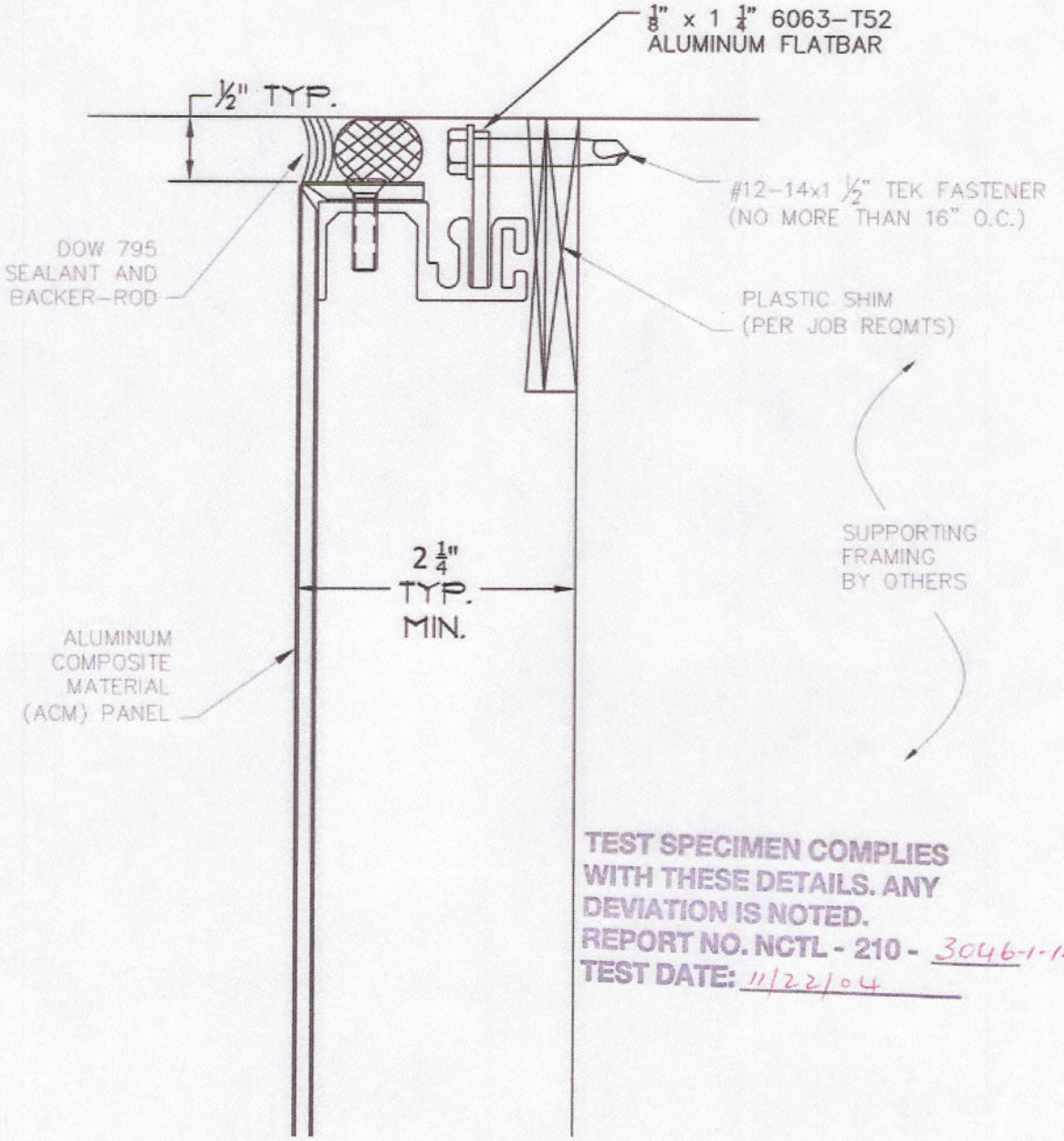


TEST SPECIMEN COMPLIES WITH THESE DETAILS. ANY DEVIATION IS NOTED.
REPORT NO. NCTL - 210 - 3064-1-1A
TEST DATE: 11/22/04

1/3A TYP. VERTICAL JT. (WET SEAL)
SCALE: NONE

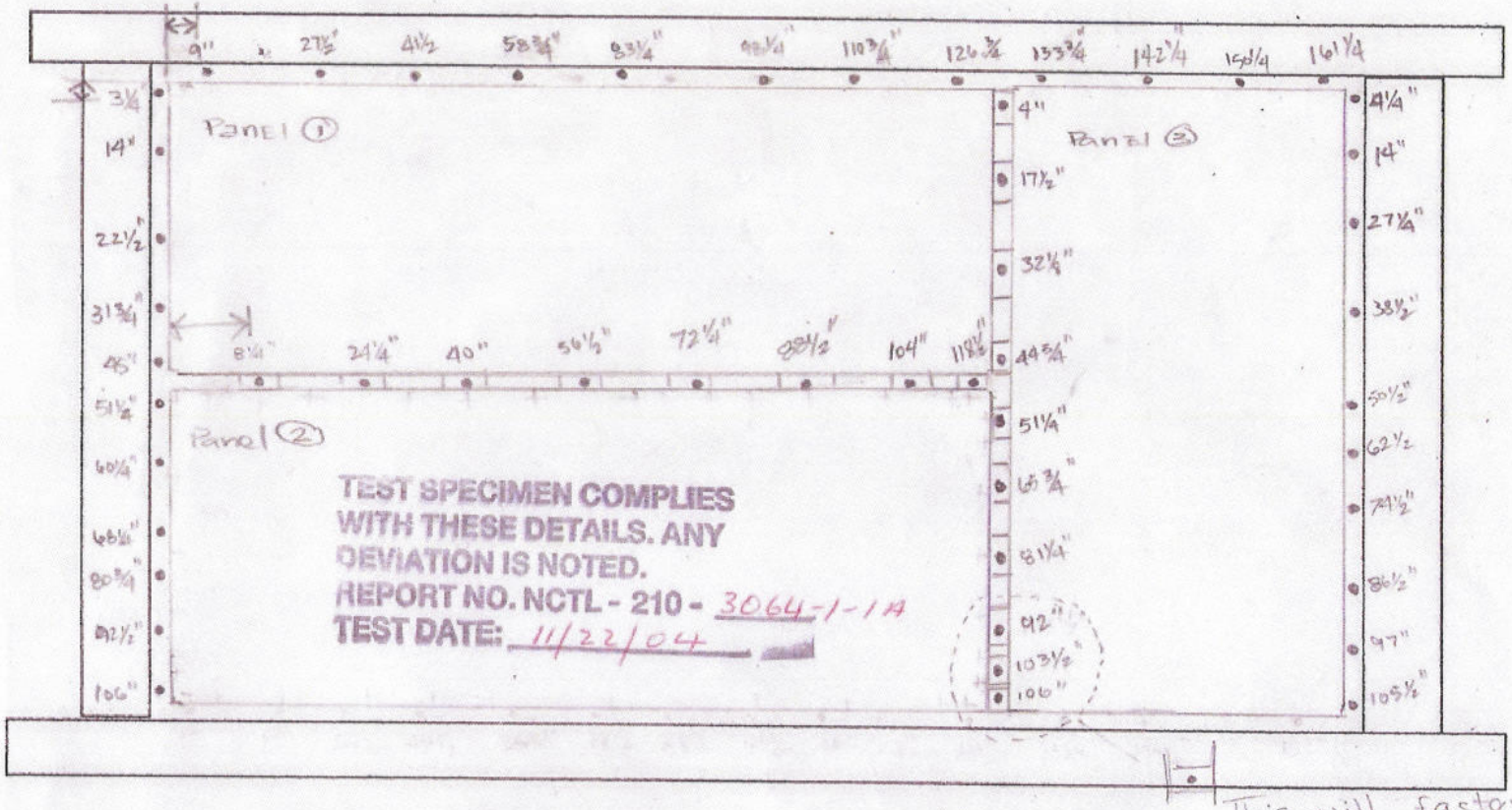
ALTECH PANEL SYSTEMS, L.L.C.
1 Johnson St., Suite 118
Cartersville, Georgia 30120
Phone: (678) 721-4569
FAX: (678) 721-4958



TEST SPECIMEN COMPLIES WITH THESE DETAILS. ANY DEVIATION IS NOTED.
REPORT NO. NCTL - 210 - 3046-1-1A
TEST DATE: 11/22/04

1/4A **HEAD TERMINATION**
SCALE: NONE

FASTENER LOCATIONS



This will fasten the panel to a metal stup using a Aluminum Brace.

Denotes surface mount fastener

Denotes flange mount fasteners

The test specimen was mounted to the test buck using fasteners at the locations shown. Surfaco mount specimens are measured from rough opening and flange mount specimens are measured from exterior dimensions.

Mounting Type: _____

Buck Type: _____

No. of Fasteners: _____

Type of fasteners: _____

- #12 X 1½" TEK. SCREW HEX. HEAD.

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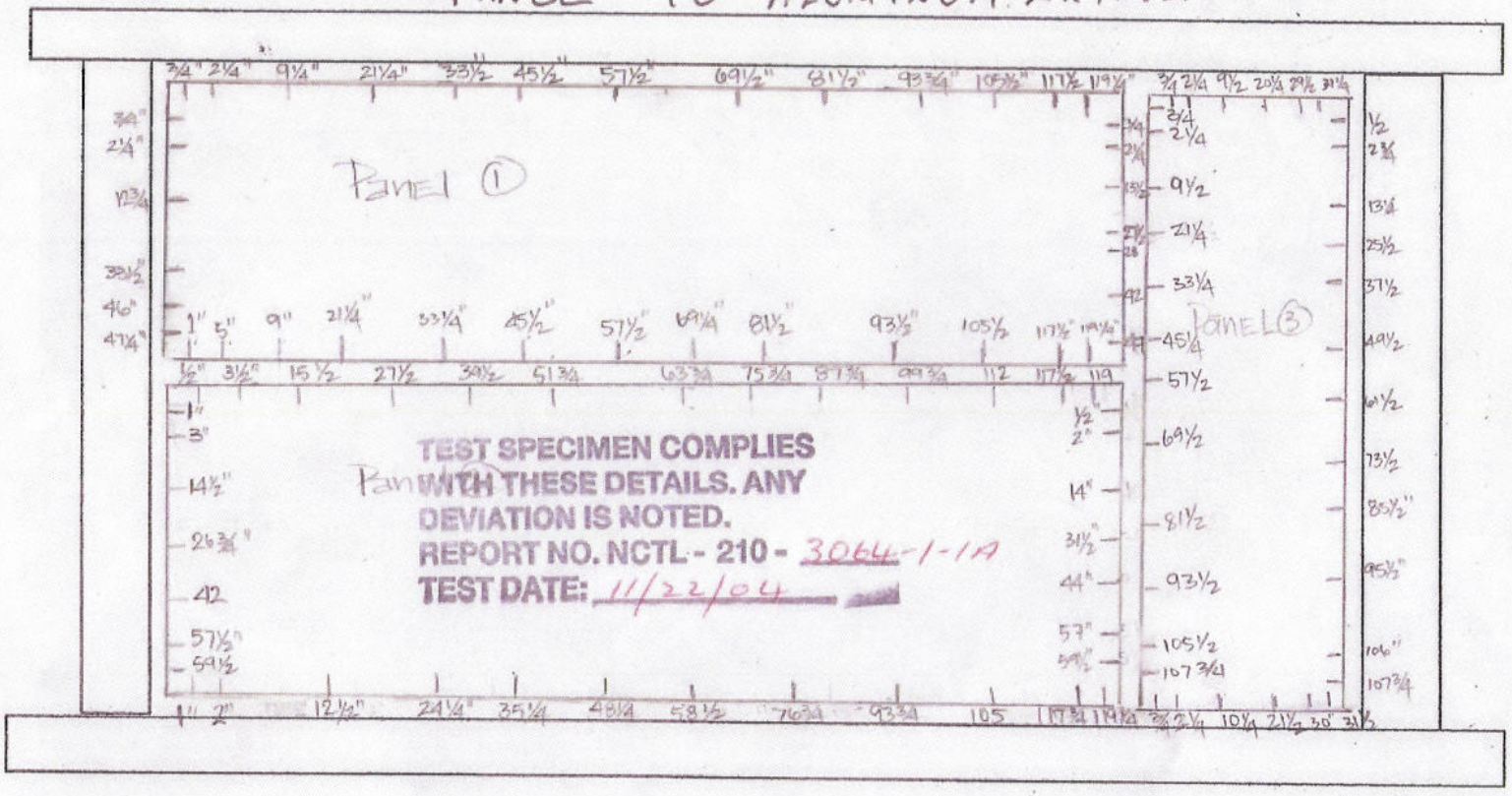
JOB NO.: NCTL-210-3064-1

COMPANY: ALTECH PANEL SYSTEMS LLC

TEST DATE: 11/22/04

FASTENER LOCATIONS

PANEL TO ALUMINUM EXTRUSION DIE # ALTP-3.



Denotes surface mount fastener

Denotes flange mount fasteners

The test specimen was mounted to the test buck using fasteners at the locations shown. Surfaco mount specimens are measured from rough opening and flange mount specimens are measured from exterior dimensions.

Mounting Type: _____

Buck Type: _____

No. of Fasteners: _____

Type of fasteners: _____

#8 X 3/4" P. F.H. Self Drill. This fastens the aluminum Rail to the panels

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JOB NO.: NCTL-210-3064-1

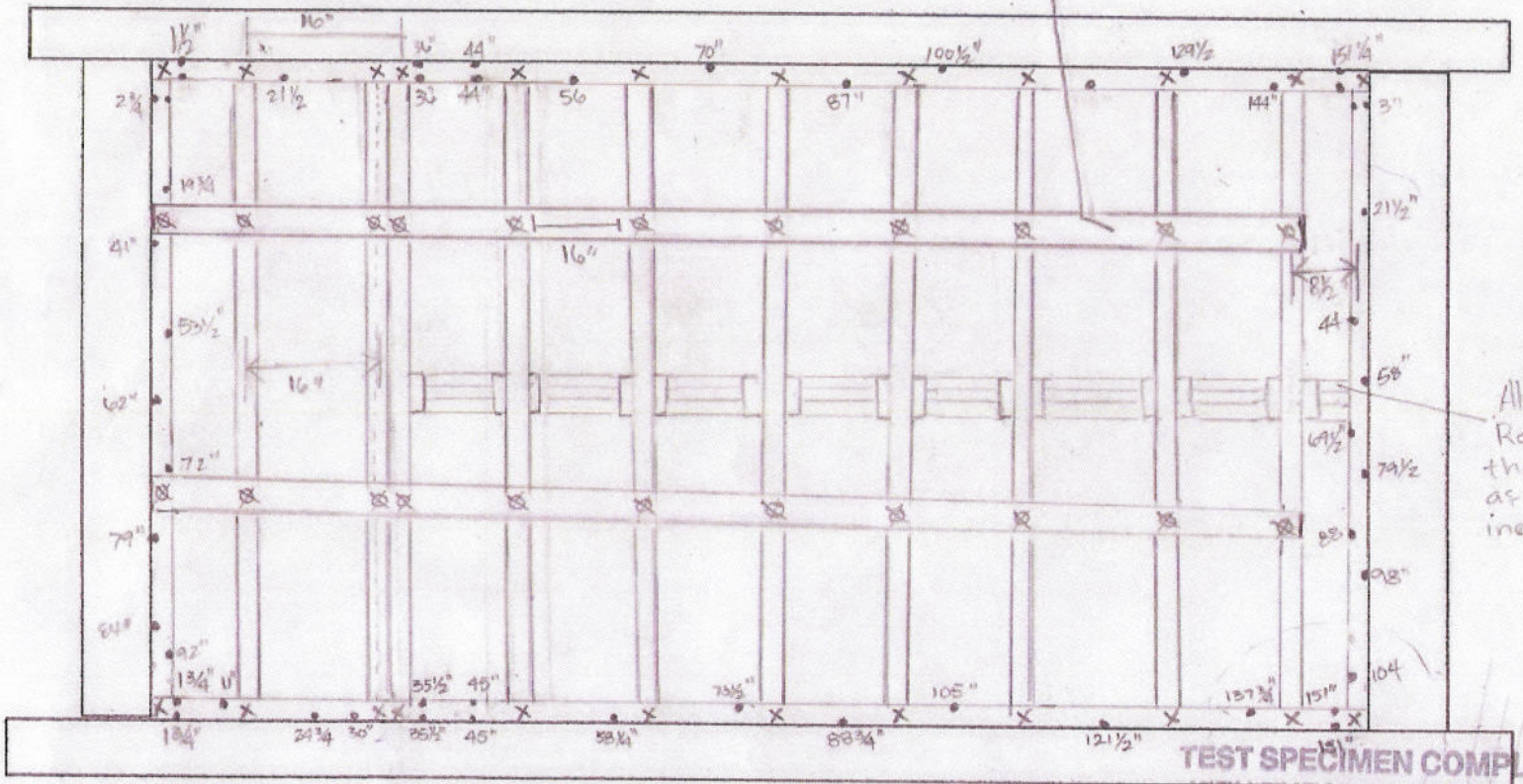
COMPANY: ALTECH PANEL SYSTEMS, LLC

TEST DATE: 11/22/04

Back of Panel System

FASTENER LOCATIONS

3/4 x 3 1/2 Boards
⊗ Fasten with #12 x 1 1/2, Tek Screw to Steel Stud for reinforcement



TEST SPECIMEN COMPLIES WITH THESE DETAILS. ANY DEVIATION IS NOTED.
REPORT NO. NCTL - 210 - 3064-1
TEST DATE: 11/22/04

L Denotes surface mount fastener

● Denotes flange mount fasteners

The test specimen was mounted to the test buck using fasteners at the locations shown. Surfaco mount specimens are measured from rough opening and flange mount specimens are measured from exterior dimensions.

Mounting Type: _____

Buck Type: _____

No. of Fasteners: _____

Type of fasteners: _____

● #12 x 1 1/2" T.S. Self Drilling fastens Steel Studs to wood Buck

X #12 x 1 1/2 T.S Holds Vertical & Horizotal Steel Studs together

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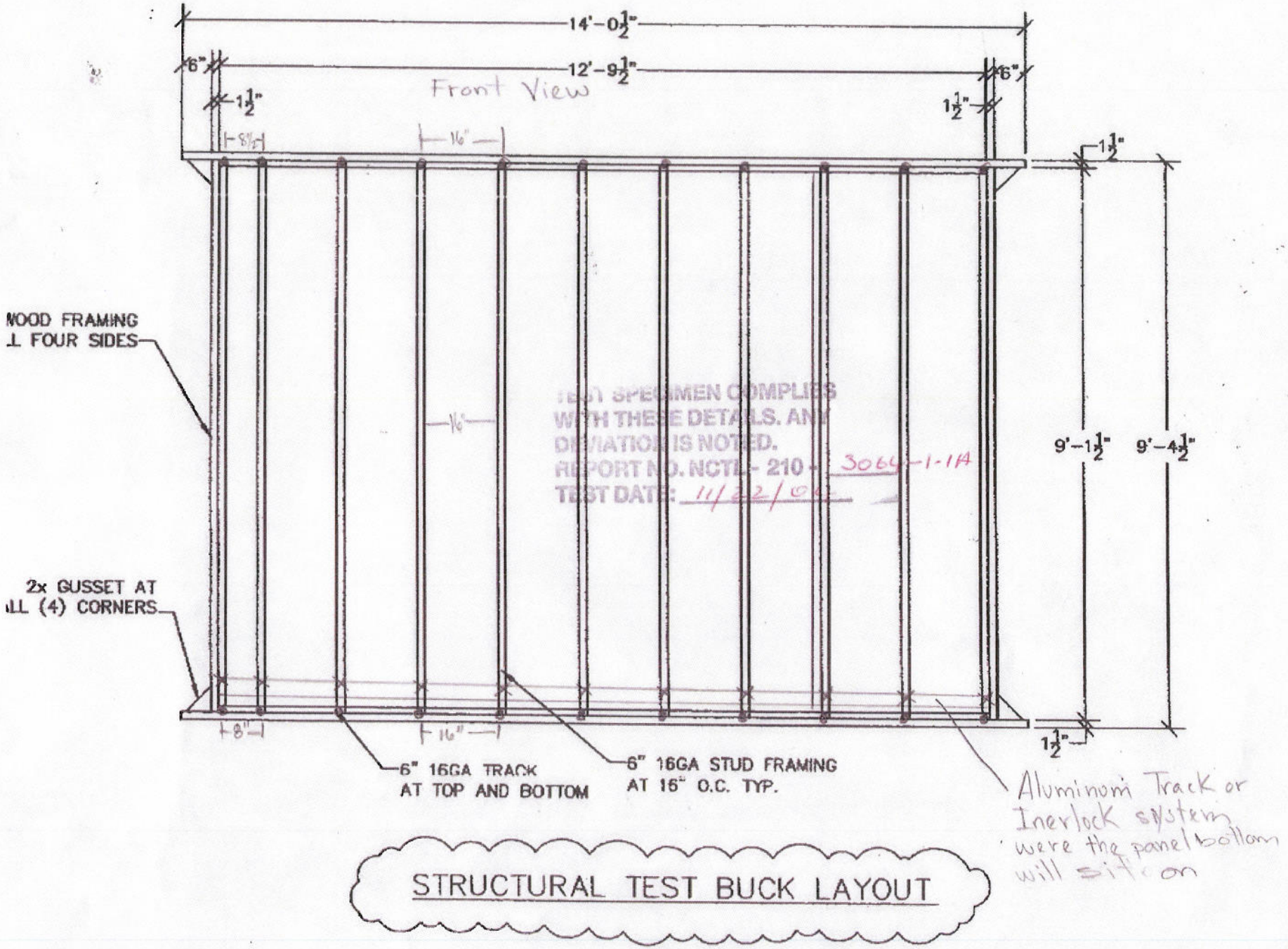
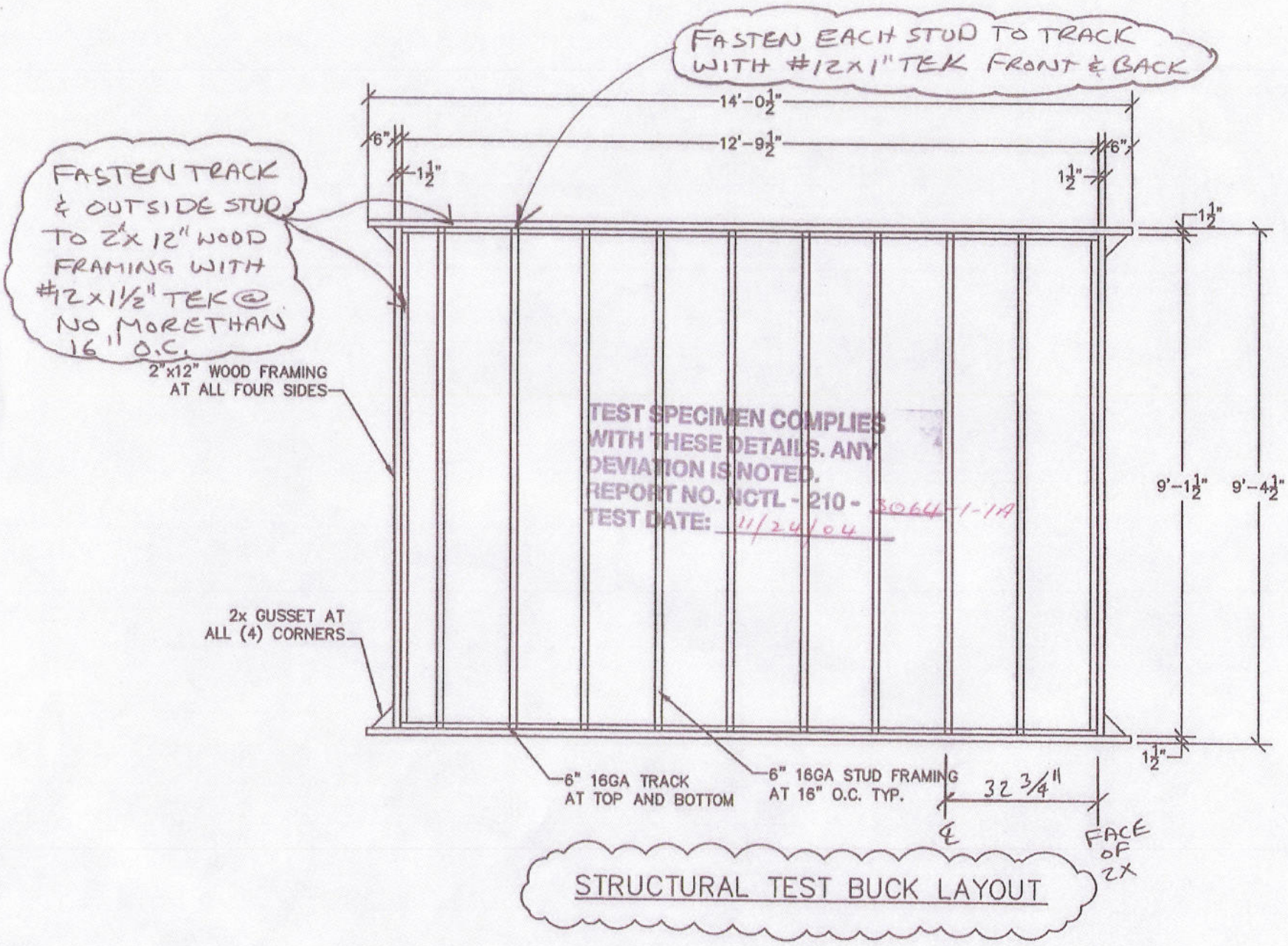
COMPANY: ALTECH PANEL SYSTEMS LLC

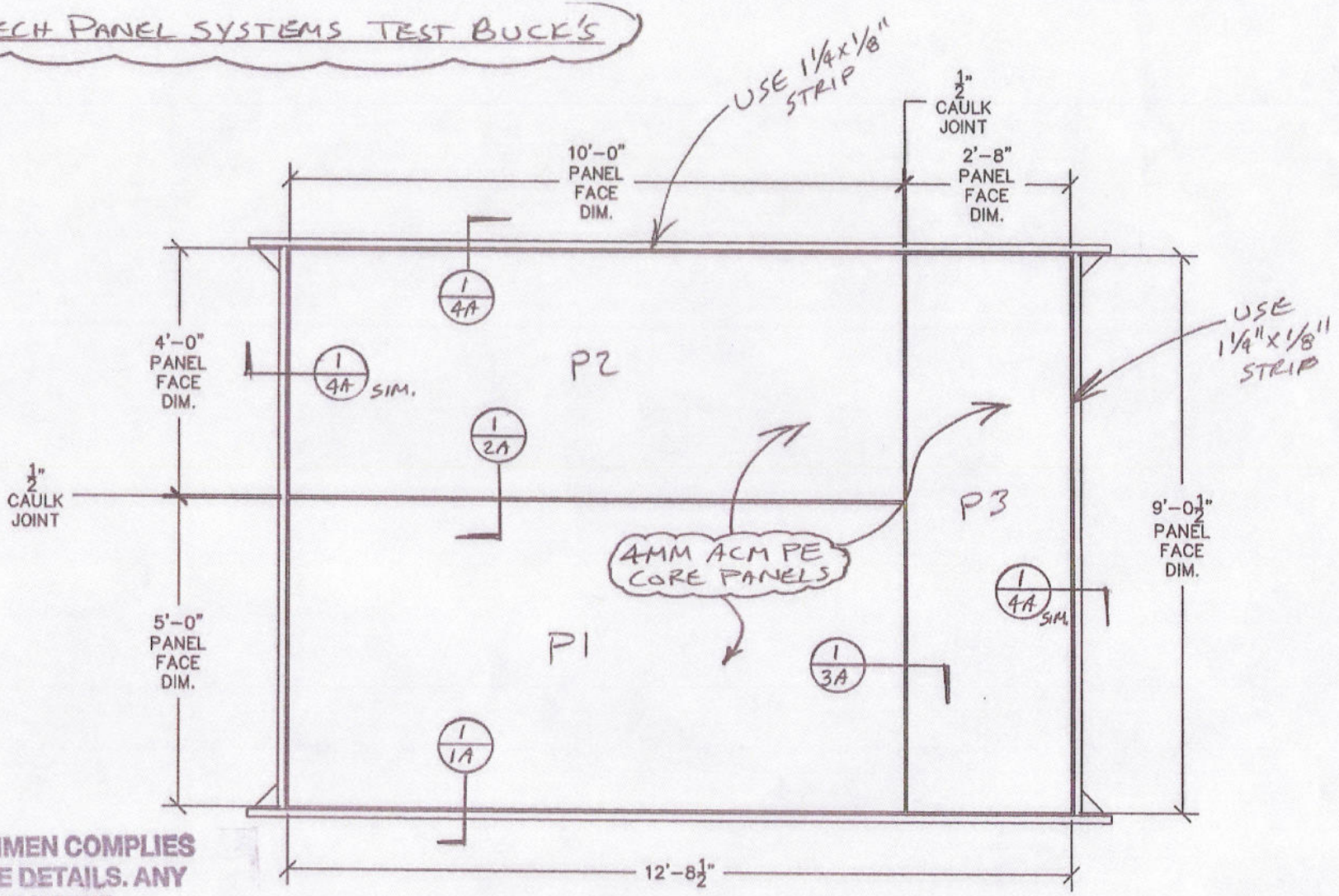
TEST DATE: 11/22/04



STRUCTURAL TEST BUCK LAYOUT


FASTEN EACH STUD TO TRACK WITH #12x1" TEK FRONT & BACK
FASTEN TRACK & OUTSIDE STUD TO 2"x12" WOOD FRAMING WITH #12x1½" TEK @ NO MORETHAN 16" O.C.
2"x12" WOOD FRAMING AT ALL FOUR SIDES
2x GUSSET AT ALL (4) CORNERS
14'-0½"
12'-9½"
6"
6"
1½"
1½"
1½"
1½"
9'-1½"
9'-4½"
TEST SPECIMEN COMPLIES WITH THESE DETAILS. ANY DEVIATION IS NOTED.
REPORT NO. NCTL - 210 - 3064-1-1A
TEST DATE: 11/24/04
6" 16GA TRACK AT TOP AND BOTTOM
6" 16GA STUD FRAMING AT 16" O.C. TYP.
32 3/4"
℄
FACE OF 2X
STRUCTURAL TEST BUCK LAYOUT

ALTECH PANEL SYSTEMS TEST BUCK'S



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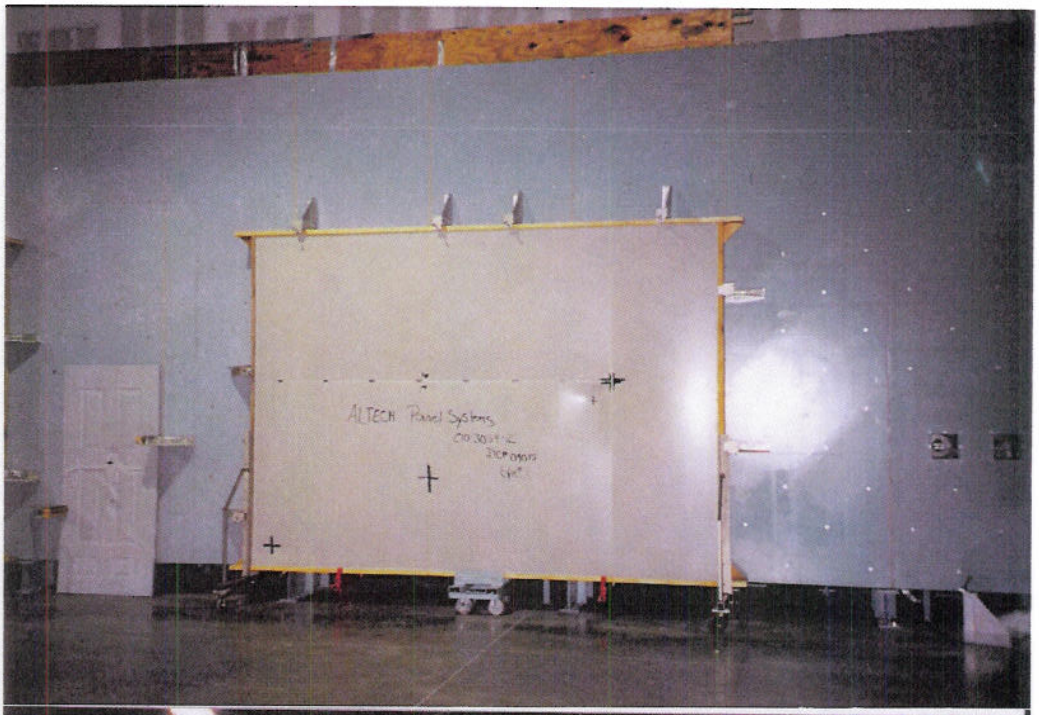
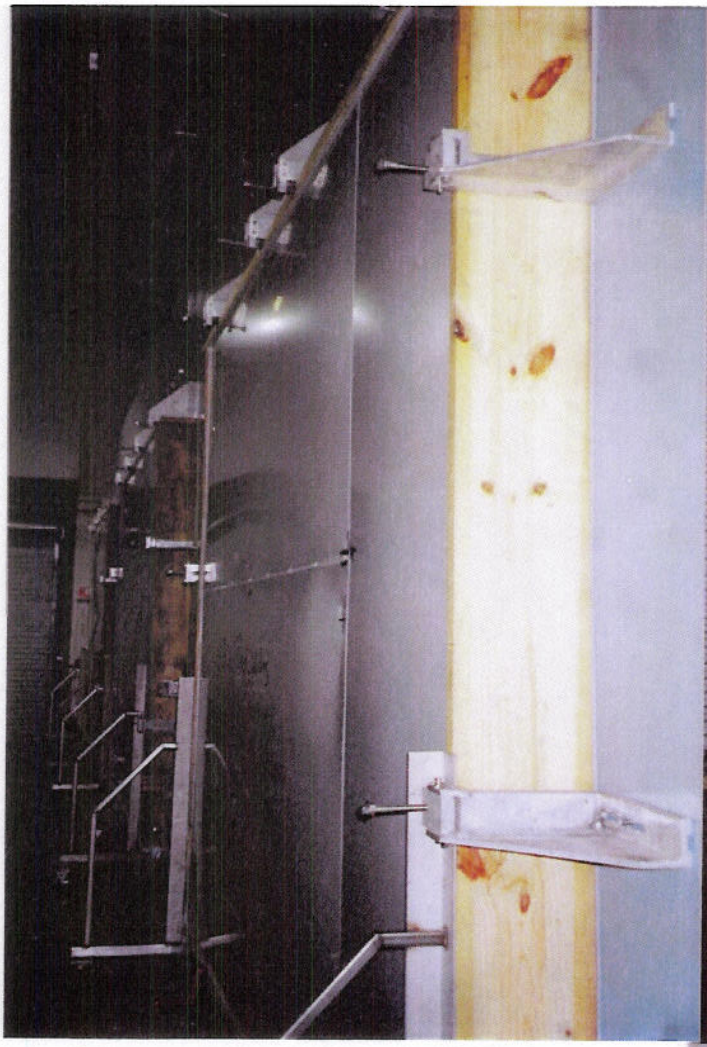
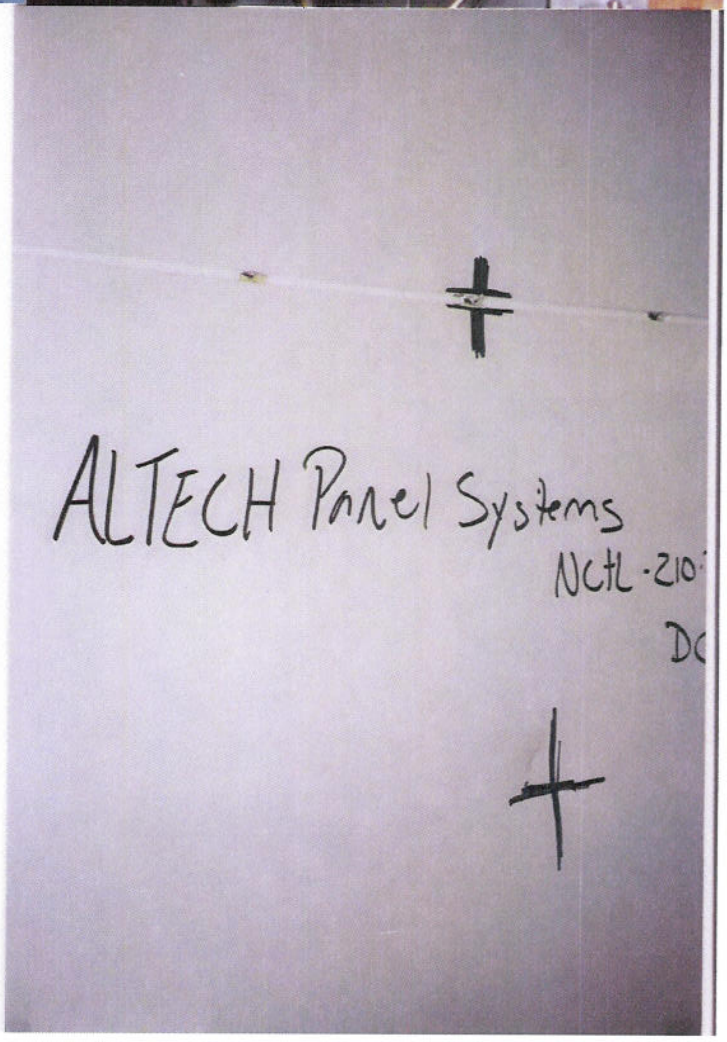
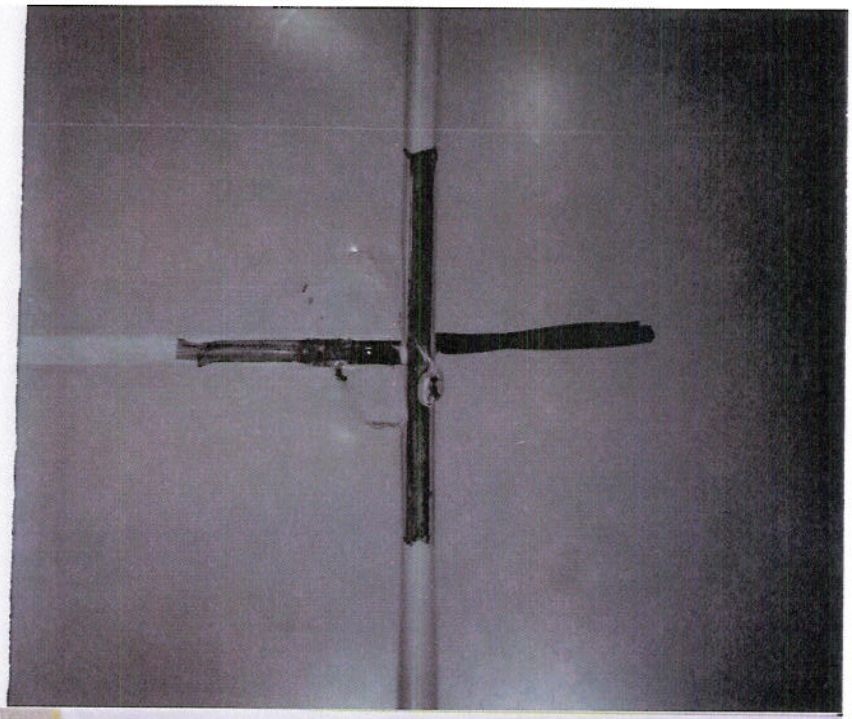
ALUMINUM COMPOSITE PANEL SIZES AND LAYOUT

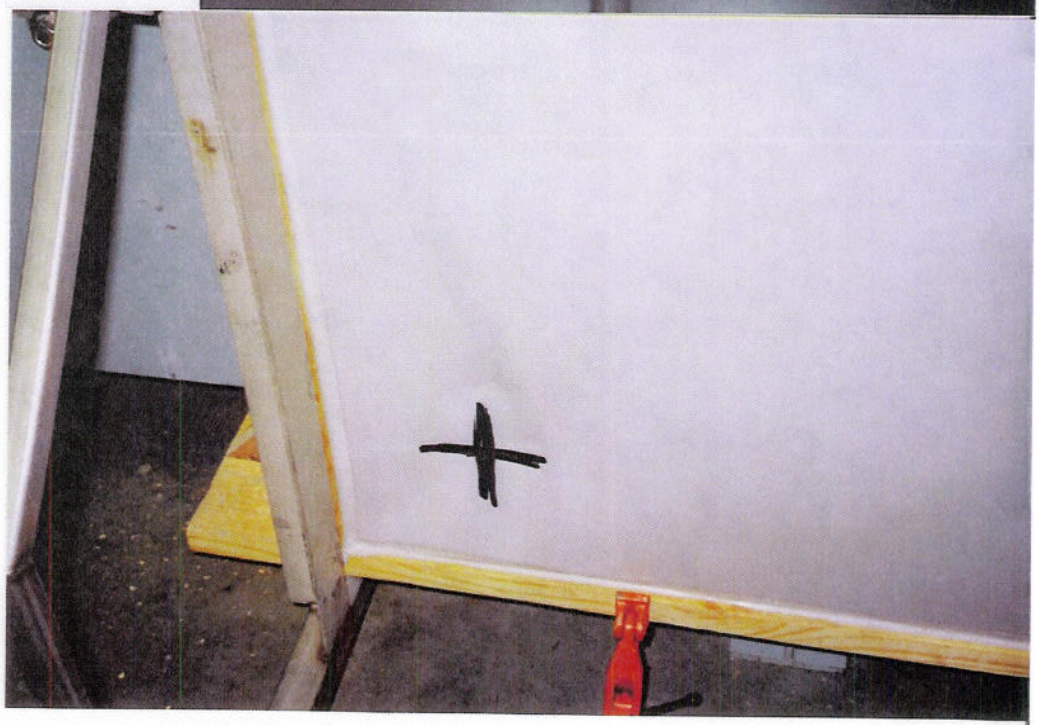

ALTECH Panel Systems

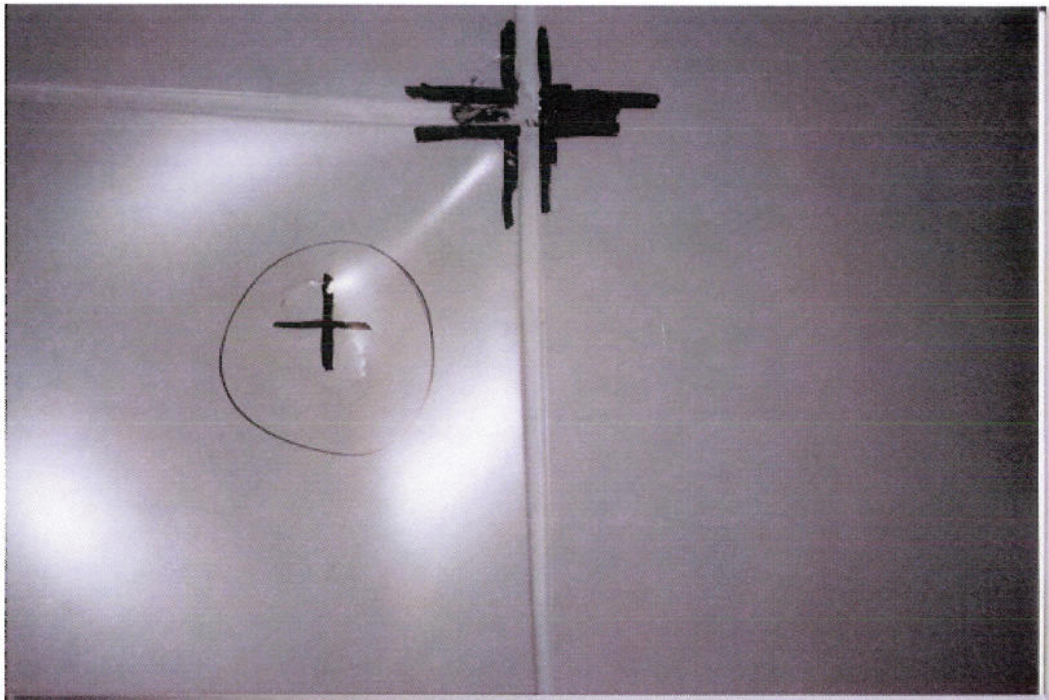


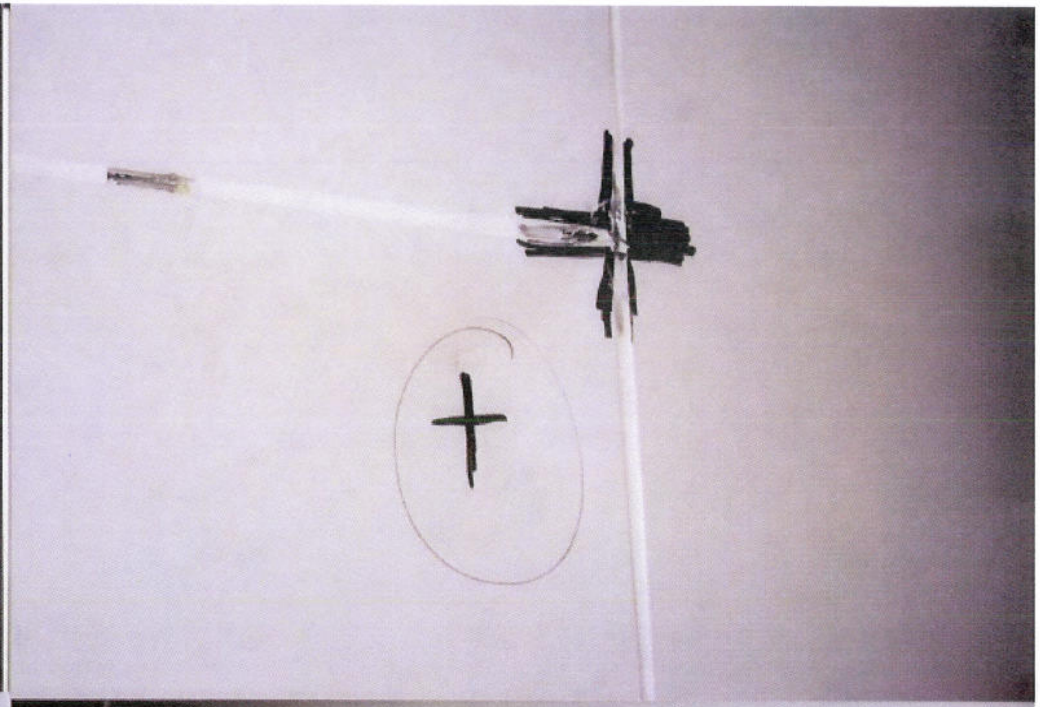

EXIT

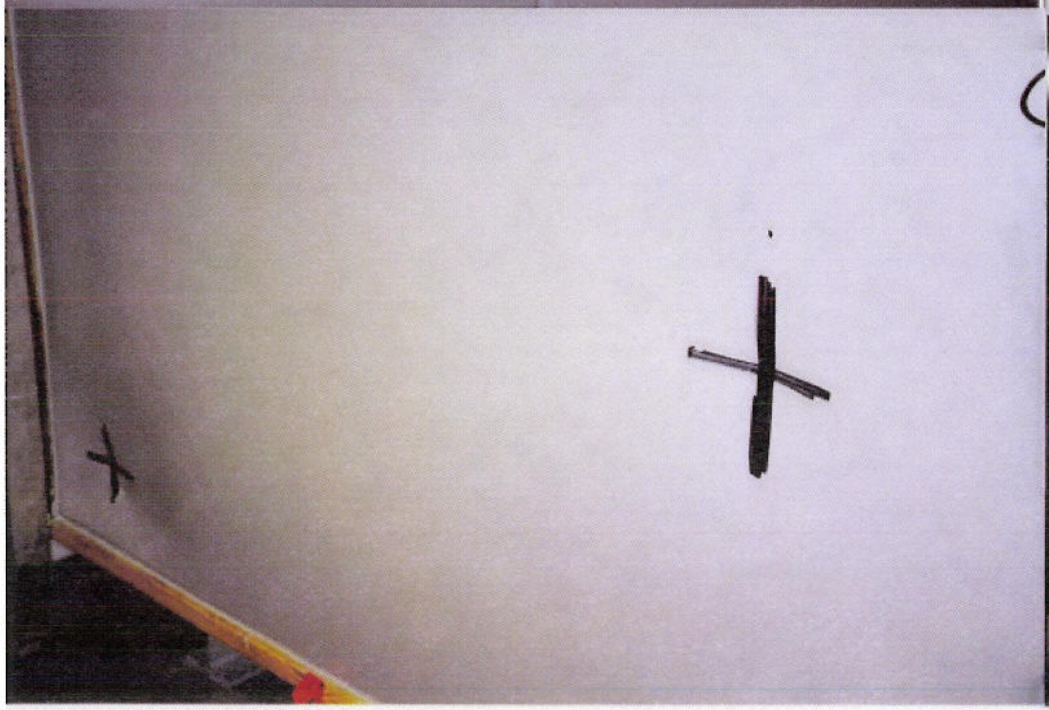

ALTECH Panel Systems
NCTL-210
DC












ALTECH Panel Systems