Tests performed in the United States

Schnell Home
Via Borghetto, 2 - zona Ind. San Liberio
61030 Montemaggiore al Metauro (PU) Italia
Tel: +39 0721 878711| Fax: +39 0721 8787330
Website: www.schnell.it

FIRE TEST
WFCI - Western Fire Center Inc (Fire testing facility - Kelso, WA)

WESTERN FIRE CENTER, INC.
2204 Parrott Way, Kelso, Washington 98626
Phone: 360-423-1400 | Fax: 360-423-5003

Fire Performance of ASTM E119 Evaluation of a Symmetric, Load-Bearing Wall Assembly

Indicative testing conducted in accordance with the test methodology described in ASTM E119, Standard Test Methods for Fire Tests of Building Construction and Materials

Conducted For:

Schnell Home s.r.l.
Via Borghetto, 2B - zona Ind. San Liberio
61030 Montemaggiore al Metauro (PU) Italia

WFCi Report #12160ar3

Test Date: October 14, 2013

Original Report Issued: October 25, 2013

Revision Issued: February 20, 2015

ACCREDITED
TL - 180

FIRE TEST
WFCI - Western Fire Center Inc (Fire testing facility - Kelso, WA)

WESTERN FIRE CENTER, INC.
2204 Parrott Way, Kelso, Washington 98626
Phone: 360-423-1400 | Fax: 360-423-5003

Fire Resistance Testing of Floor/Ceiling Assembly

Indicative testing conducted in accordance with the test methodology described in ASTM E119, Standard Test Methods for Fire Tests of Building Construction and Materials

Conducted For:

Schnell Home s.r.l.
Via Borghetto, 2B - zona Ind. San Liberio
61030 Montemaggiore al Metauro (PU) Italia

WFCi Report #14030b

Test Date: December 15, 2014

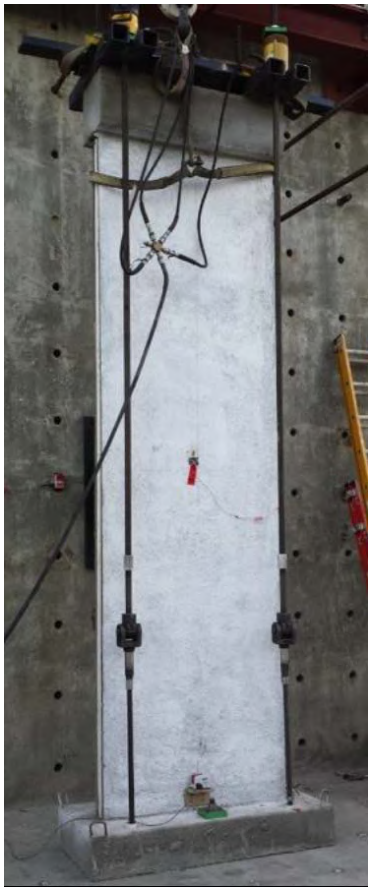
Report Issued: January 30, 2015

ACCREDITED
TL - 180

Structural Engineering Testing Hall (SETH) Civil & Environmental Engineering Department The Henry Samueli School of Engineering University of California, Irvine

Monotonic and cyclic shear test

Flexural test



Centered compression test

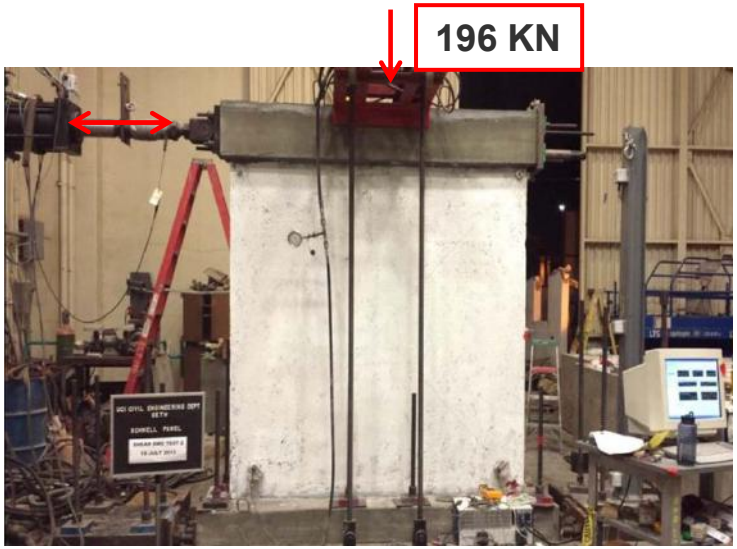
Eccentric compression test

Monotonic and cyclic shear test, h=1,82m and h=2,43m

Monotonic test results

Horizontal load average: 103 KN

	Analytical Results (kips)	Experimental Results (kips)
SH-SM-08-01	20	22.78
SH-SM-08-02	20	20.17
SH-SM-08-03	20	24.75
SH-SM-06-01	26.8	28.42
SH-SM-06-02	26.8	25.29
SH-SM-06-03	26.8	28.36



Cyclic test results

Horizontal load average: 117,6 KN

	Analytical Results, (kips)	Experimental Results, (kips)
SH-SM-08-01	20	42.22
SH-SM-08-02	20	23.68
SH-SM-08-03	20	25.68
SH-SM-06-01	26.8	32.14
SH-SM-06-02	26.8	27.82
SH-SM-06-03	26.8	29.69

Wall compression test, h=2,43m and h=4,26m

Centered test results

	Experimental Results: $P_{Exp.}$ (kips)
SH-WC-08-01	183.86
SH-WC-08-02	158.57
SH-WC-08-03	185.00
SH-WC-14-01	170
SH-WC-14-02	180
SH-WC-14-03	175

Eccentric test results

SPECIMEN CODE	*DIMENSIONS (L X H X T*)*	*ULTIMATE LOAD kips, [kN]*
SH-WFC-08-01	4′X7.5′X 6″	25.60 [113.87]
SH-WFC-08-02	4′X7.5′X 6″	28.28 [125.80]
SH-WFC-08-03	4′X7.5′X 6″	18.62 [82.83]
SH-WFC-14-01	4′X13.5′X 6″	21.81 [97.00]
SH-WFC-14-02	4′X13.5′X 6″	21.90 [97.41]
SH-WFC-14-03	4′X13.5′X 6″	19.51 [86.78]

Centered

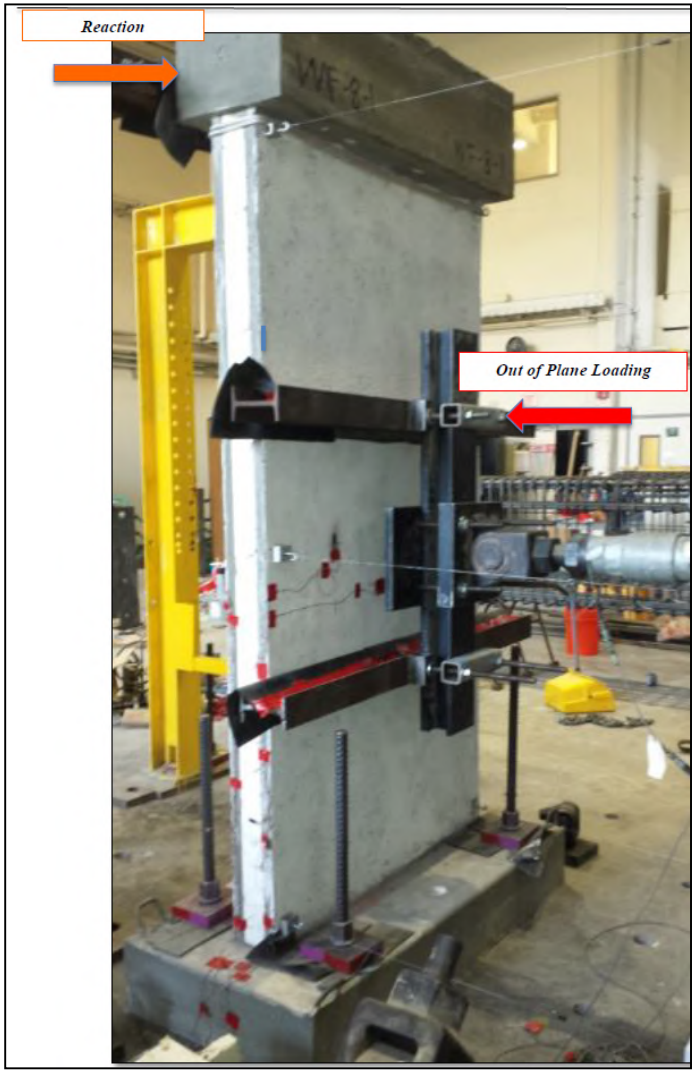
Average load= 775 KN

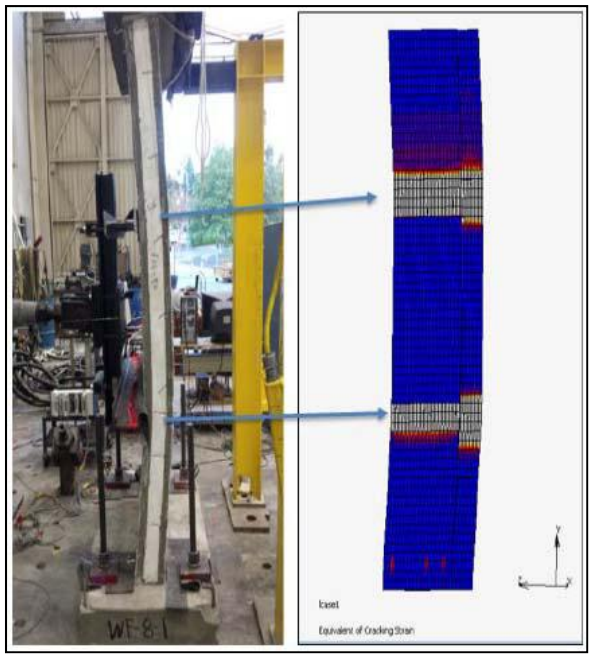
Eccentric

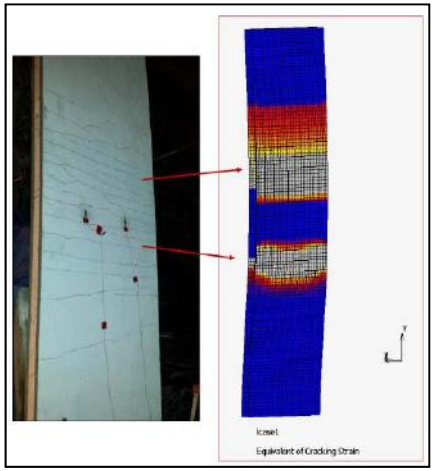
Average load= 107 KN, h=2,43m

Average load= 93 KN, h=4,26m

Wall flexural test h=2,43m and h=4,26m







Video test

	Maximum Load P (kips)
SH-WF-08-01	3.00
SH-WF-08-02	3.08
SH-WF-08-03	3.45
Average	3.18

Average load= 14 KN
h=8'=2,43m

SH-WF-14-01	1.80
SH-WF-14-02	2.14
SH-WF-14-03	1.91
Average	1.95

Average load= 8,6 KN
h=14'=4,26m

Joint test: monotonic and cyclic load

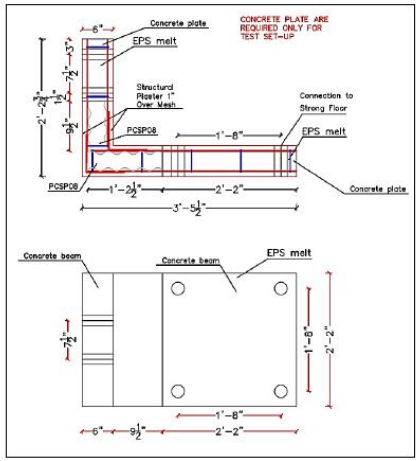


Figure (3): L-Shape Joint Specimen Details

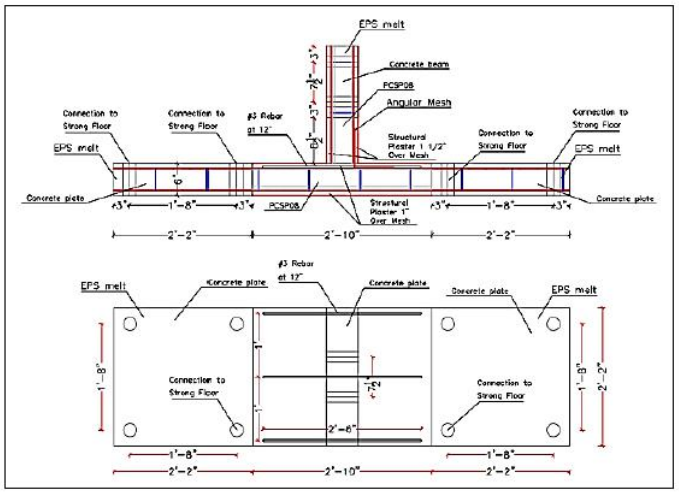
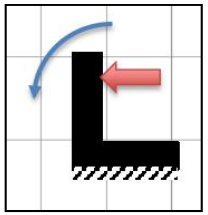
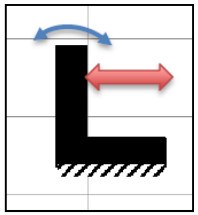


Figure (4): T-Shape Joint Specimen Details

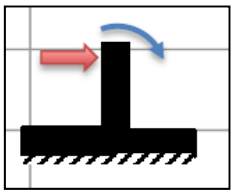


WW-A-2

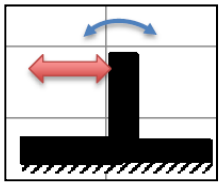


WW-A-3

Specimen Identification	*Ultimate Moment (kip-in)*	*Ultimate Rotation Degrees [Rad.]*
WW-A-2	29.49	2.77 [0.048]
WW-A-3	43.96	2.01[0.035]
WW-B-1	51.70	2.35 [0.041]
WW-B-2	37.62	2.25 [0.039]



WW-B-1



WW-B-2

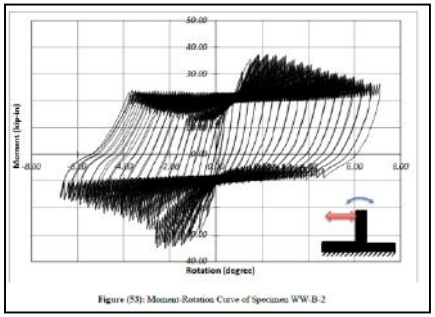
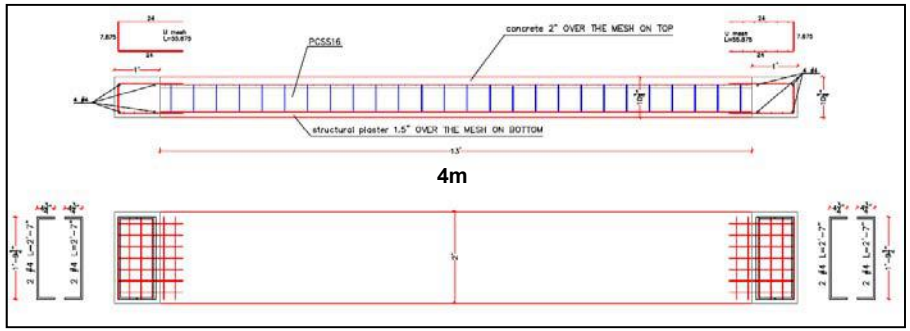
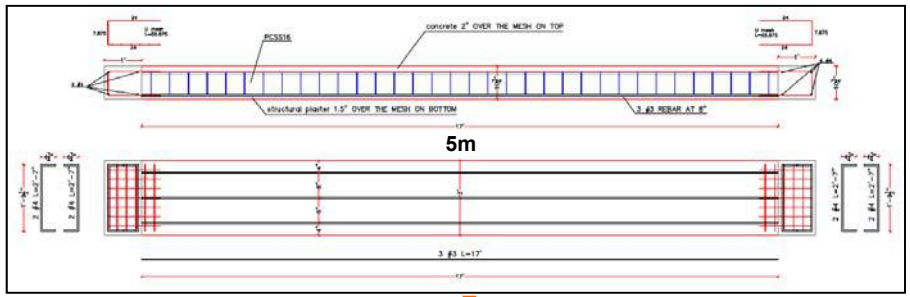


Figure (53): Moment-Rotation Curve of Specimen WW-B-2

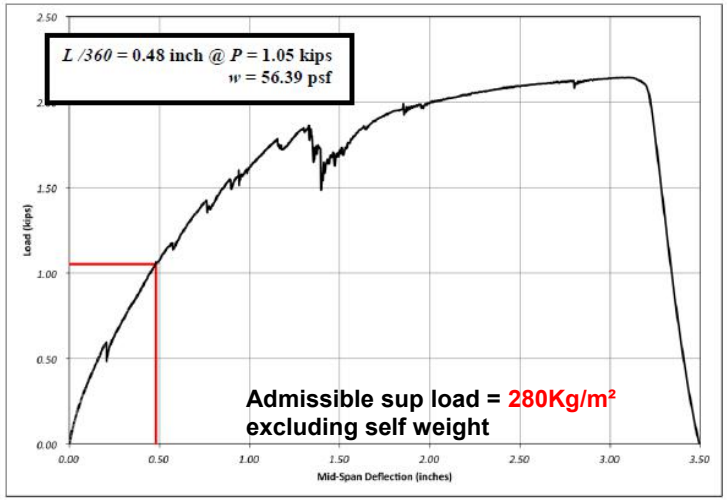
Unidirectional floor tests

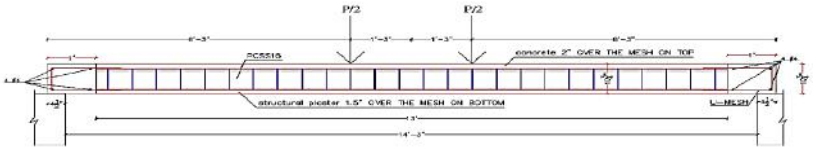


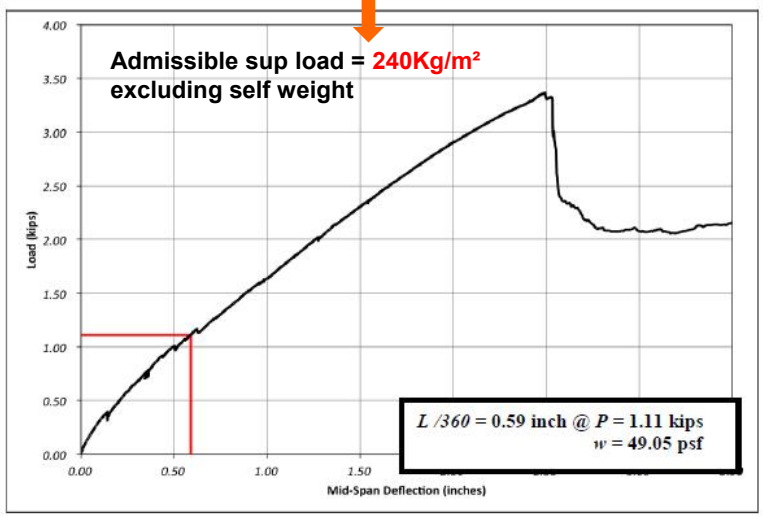
4m



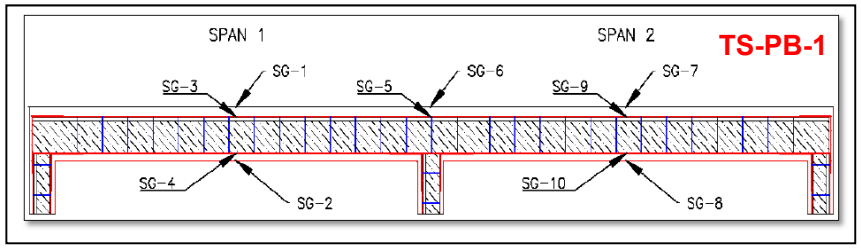
5m

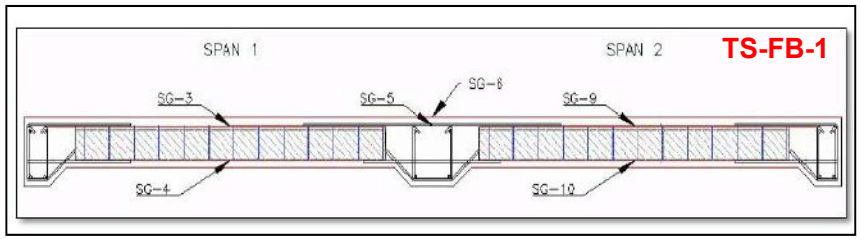






Floor tests, one and two span, different boundary conditions





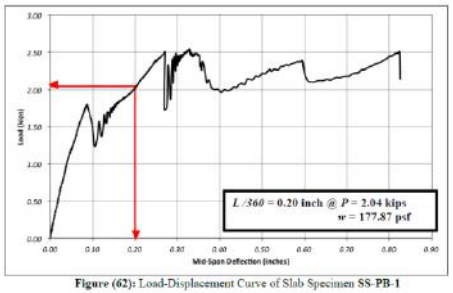


Figure (62): Load-Displacement Curve of Slab Specimen SS-PB-1

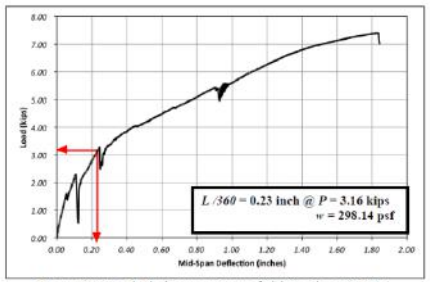


Figure (67): Load-Displacement Curve of Slab Specimen SS-FB-2

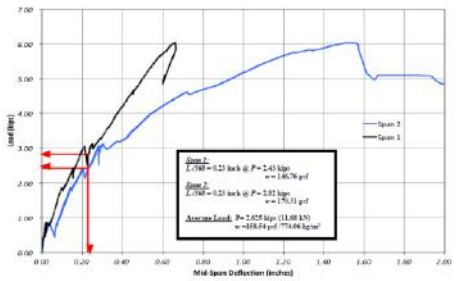


Figure (75): Load-Displacement Curves of 2-Span Slab Specimen TS-PB-1

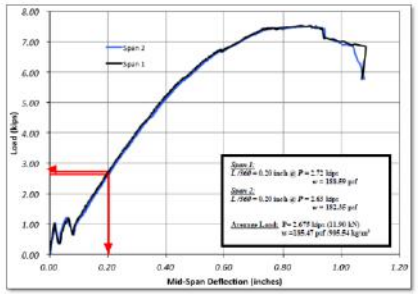
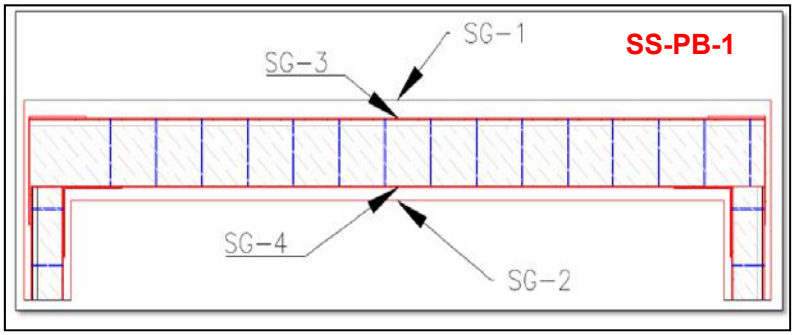
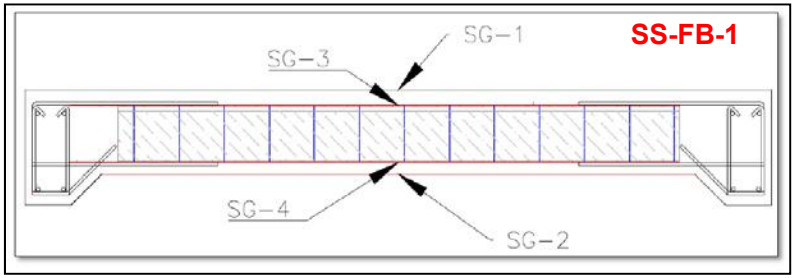


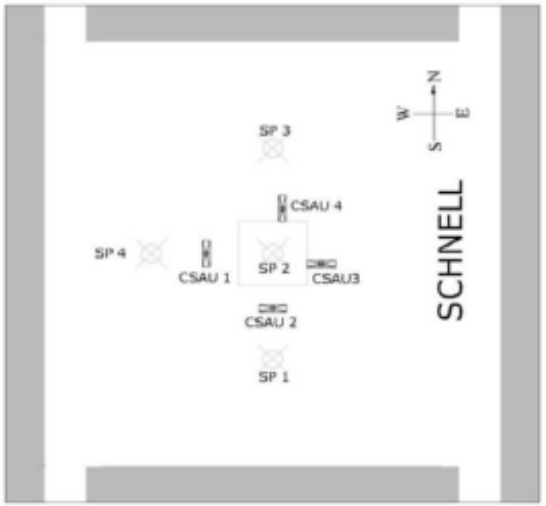
Figure (82): Load-Displacement Curves of Slab Specimen TS-FB-2

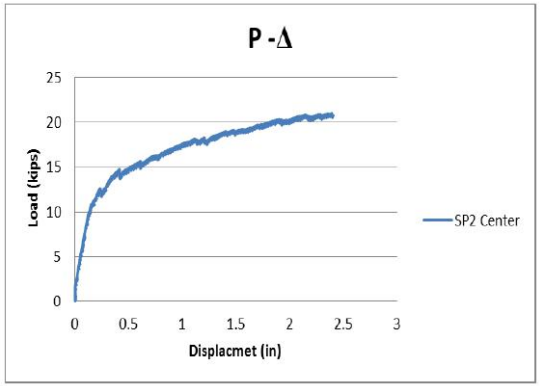
Spans =8’ (2,43m) each

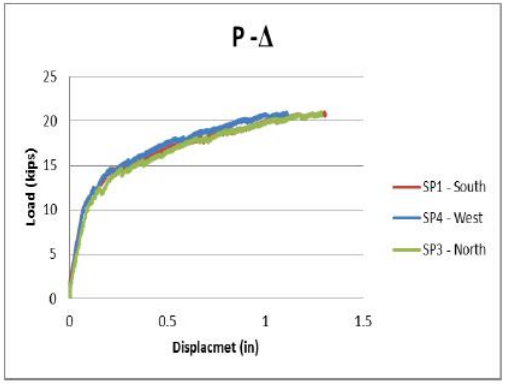


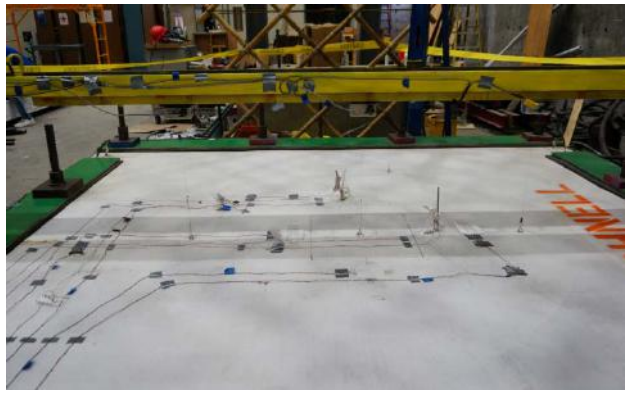


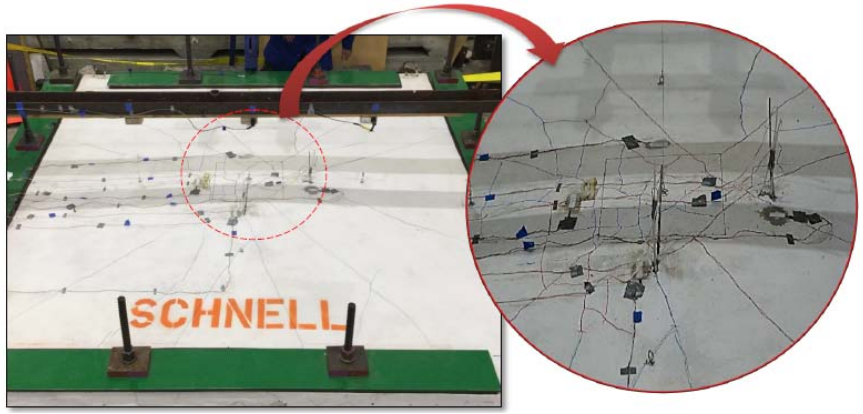
Bidirectional floor tests, still on progress







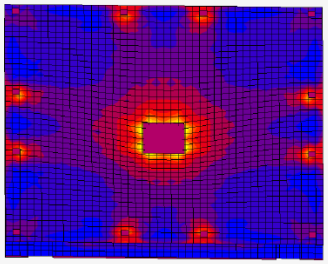


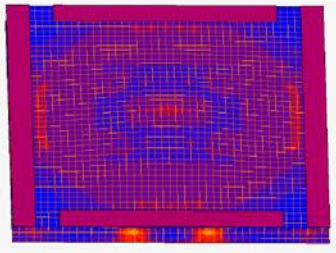


Compression stress

Tensile stress

Displacement-load graphics, cracking configuration and analytic results confirm that the single floor panel can be reasonably used a bidirectional floor/roof.





MISSILE TEST
Wind Science & Engineering Research Center_Texas Tech University

Wind Science & Engineering Research Center
Debris Impact Test Facility
P.O. Box 41023
Lubbock, Texas 79409-1023

Report No. _2009-0729-A
Specimen No. ____1 & 2____
Test Date: _August 7 & 12, 2009_

4.0 TEST RESULTS

4.1 SCOPE: Conduct Missile Test on Panel Assemblies
4.2 SUMMARY OF RESULTS:

Test Method	Test Conditions	Test Conclusion
Missile Impact Test FEMA 320/361 & ICC-500 Threshold testing for panel resistance to impacts produced by different speeds of hurricanes.	4 kg x 50.8 mm x 101.6 mm (9-lb. 2" x 4")	Series 1 panel is resistant to the Florida building Code & Dade County 54.7 km/h (34 mph) impact & 122 km/h (76 mph); Series 2 panel is resistant up to 145 km/h (90 mph) impacts

4.3 OUTDOOR WEATHER CONDITIONS:

Temperature	32.2 degrees C (90 degrees F)
Wind	30.6 km/h (19 mph)
Relative Humidity	31 %

4.4 MISSILE IMPACT TEST RESULTS:
Missile Type: 50.8 mm x 101.6 mm (2" x 4")
Missile Weight: 4 kg (9-lb.)
Missile Impact Speed: various speeds

Impact Tests

Impact No.	Velocity km/h (mph)	Location	Results
SP 1 Panel 1 Impact 1	56 (35)	Panel center	Slight indentation; no cracking observed; see Specimen 1, Panel 1, Impact 1 photos, pages 6 & 7.
Impact 2	113 (70)	Upper right corner	40 mm penetration; 80 mm x 105 mm affected area; 170 mm crack above impact area; 220 mm right side crack; 270 mm right top crack; backside unremarkable; see Specimen 1, Panel 1 Impact 2 photos, pages 8 & 9.

•130 mm and 150 mm panels - are resistant to the Florida Building Code & Dade County Hurricane Envelope resistance = 55 km/h missile & 225 km/h hurricane (34 mph & 140 mph hurricane).
•130 mm panel - threshold of perforation = 129 km/h missile & 322 km/h hurricane (80 mph & 200 mph hurricane) impact resistance, however since panel cracking becomes an issue with each impact, the panel resistance therefore considered as 122 km/h missile & 306 km/h hurricane (76 mph impact/190 mph). These are ICC-500 Storm Shelter standards.
•150 mm panel - threshold of perforation = 142 km/h missile & 354 km/h hurricane (88+ mph & 220 mph hurricane) impact resistance. Since two of the panels were tested to the highest standard for hurricanes 177 km/hr & 354 km/h hurricane (110 mph & 220 hurricane - FEMA 361 Standard) and were reasonably resistant, the 150 mm panel can be rated to146 km/h & 362 km/h hurricane (90 mph & 225 mph hurricane) impact resistance, which is the highest rating per the ICC-500 standard.