TEST REPORT

REPORT NUMBER: 3083303SAT – 006 REV1
ORIGINAL ISSUE DATE: February 22, 2008
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EVALUATION CENTER
Intertek Testing Services NA, Inc.
16015 Shady Falls Road
Elmendorf, TX 78112

RENDERED TO

Emmedue S.P.A.
Via Toniolo, 39/b
Z.I. Bellocchi
61032 Fano (PU), Italy

PRODUCT EVALUATED: 8' x 8' and 8' x 14' Single Panel PSM80 Wall Systems
EVALUATION PROPERTY: ICC – AC 15, Section 4.2.2.5, ASTM E 72 - 05, Section 14 (**Racking Shear Load**)

Report of Testing 8' x 8' and 8' x 14' Single Polystyrene PSM80 wall panels for compliance with the applicable requirements of the following criteria: *ICC – AC 15, Acceptance Criteria for Concrete Floor, Roof and Wall Systems and Concrete Masonry Wall Systems, under the general guidelines of ASTM E 72 - 05, Standard Test Methods of Conducting Strength Tests of Panels for Building Construction*

1 Table of Contents

2 Introduction

Intertek Testing Services NA, Inc. (Intertek) has conducted testing for Emmedue S.P.A on 8' x 8' and 8' x 14' Single Polystyrene PSM80 structural wall panels. The test method consisted of the racking in-plane shear load. Emmedue wall systems are based on a series of foam polystyrene panels and electro-welded steel wire meshes, whose shapes have been specially designed to apply structural plaster during panel installation (Ref, 1, p. 3). These systems are capable of multiple applications, such as quick installation and high thermal and sound capabilities (Ref 1, p. 3). The purpose of these tests was to evaluate racking in-plane shear load structural applications according to Section 4.2.2.5 of ICC – AC 15, under the general guidelines of *ASTM E 72 - 05, Conducting Strength Tests of Panels for Building Construction*. The results of each test are presented in tabular and graphical form. In total, six specimens were tested under the above loading configuration to measure the deflection and failure characteristics of each of the wall systems. This evaluation began January 4, 2008 and was completed January 17, 2008.

NOTE: This test report is only for the racking shear tests performed. Refer to report numbers **3083303SAT - 001, - 002, - 003, - 004, - 005, - 007, and - 008** (designated **REV1, except 008**) for the rest of the testing completed for this project.

3 Test Samples

3.1. SAMPLE SELECTION

Samples were randomly selected on July 1, 2007 by Intertek representative Matt Lansdowne, EIT, at the Emmedue S.P.A manufacturing facility, located at Via Toniolo 39/b, Z.I. Bellocchi, 61032 Fano (PU), Italy. Samples were received at Intertek – San Antonio on August 28, 2007.

The subject test specimens are traceable samples selected from the manufacturer's facility. Intertek selected the specimens and has verified the composition, manufacturing techniques and quality assurance procedures.

Refer to the Pre-Test Inspection Report, dated July 1 – 2, 2007, located in the Appendix.

3.2. SAMPLE AND ASSEMBLY DESCRIPTION

The Emmedue Single Panel PSM80 consists of a foam polystyrene core reinforced with a galvanized steel wire mesh connected on both sides of the foam using corrugated steel bars. The steel bars and mesh are electro-welded together for strength. There are approximately 82 connectors per square meter of foam surface. Below is a list of specifications of the PSM80 panels (Ref 1, p. 7). The numbers below were converted from metric to inch-pounds from the Emmedue Operator's Handbook.

Galvanized Steel Wire Mesh

1) Longitudinal wires with diameter of 0.121 inches spaced every 2.56 inches
2) Transversal wires with diameter of 0.099 inches spaced every 2.56 inches

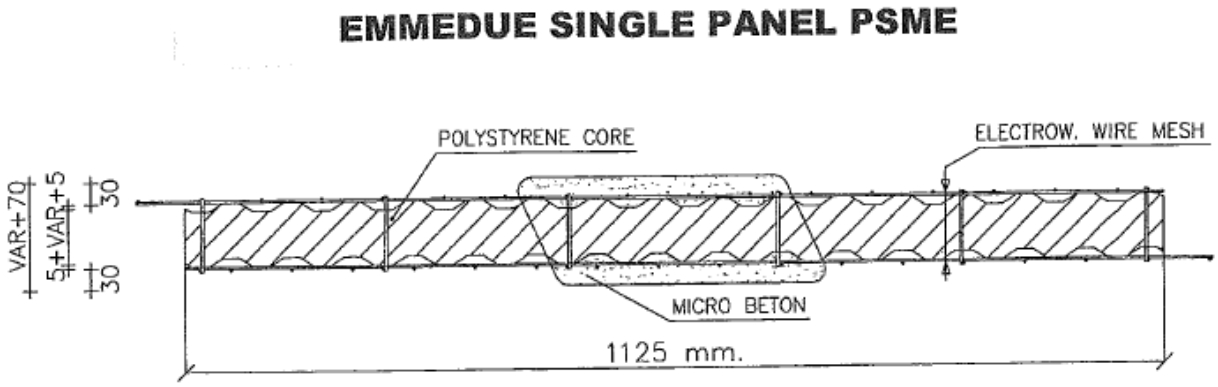


Figure 1: Emmedue Single Panel PSM80 Details (Ref. 1, p.7)

Polystyrene Slab Density: 15 Kg/m^3 (0.936 lb/ft^3)
Polystyrene Slab Thickness: 4”

The Emmedue building system comprises of different wall, floor, and roof arrangements that are finished on-site using sprayed mortar. Although different techniques exist for spray mortar, the mortar mix used for this project consisted of Portland® Cement, sand, and water. The client recommends an average quantity of plaster (or mortar) of about 1 inch sprayed per side. These panels are generally used for buildings of no more than 4 stories high, in seismic areas, for floor slabs and covering slabs whose spans are 4 m (13.12 ft) at maximum (Ref. 1, p. 7).

For these tests, a mortar mix design was provided in order to meet the required wall structural plaster specifications. The mortar mixing ratio (by weight) was provided as followed:

Portland® Cement:	100 lbs
Sand:	280 lbs
Water:	5.0 gallons

The above numbers were provided by the client during sample construction. As indicated by the Emmedue Operator’s Handbook (Ref. 1, p 27), the quantity of water should vary as humidity and temperature changes are observed. Accordingly, modifications to the mixing ratio were made as indicated by the weather conditions during mortar spraying. In all cases, the minimum compressive mortar strength (f’c) was 2500 psi at 28 days curing time. These results were verified by performing mortar cylinder core tests at 7 and 28 days as per ACI 506.2, for each batch made. Additional mortar cylinder core tests were also performed within 48 hours of the completion of each set of three full-scale tests, as per AC 15, Section 4.2.2.5.

From the mortar cylinder core testing results obtained, it was found that no mortar core was lower than 2500 psi at 28 days. Refer to report number **3083303SAT – 008** for a complete listing of all mortar core tests performed.

4 Testing and Evaluation Methods

4.1. Construction of Wall Assemblies

Six racking in-plane shear walls were tested and all were constructed in the same manner. Construction of the 8' x 8' and 8' x 14' walls consisted the following:

1) Single Panel PSM80
2) #3 Rebar for wall-to-footer connection
3) #5 Rebar for concrete footer reinforcement
4) 1/8" Rebar tie wire
5) 1x10 #1 yellow pine lumber cut down to 6" wide
6) 2x10 #2 yellow pine lumber for concrete footer molds
7) 2x4 #2 yellow pine lumber for concrete footer molds
8) #8 x 2" wood deck screws
9) Mortar mixture (Portland® Cement, sand, and water)

All of the samples had to be constructed at the Intertek-San Antonio facility. Panel assembly first consisted of constructing **8" wide x 120" long x 11 ¼" high** reinforced concrete footings. These dimensions represent the inside dimensions of the wooden form. The footings served as the representative on-site foundation installation of the Emmedue wall systems. One footing was made for each wall using a combination of the 1x10, 2x4, and 2x10 lumbers. Once the wooden mold was constructed, 4 ea. 120 inch long #5 rebar rods were inserted horizontally along the footer length. The four rebar rods were tied together in a square shape using the 1/8" rebar tie wire as the reinforcement of the footer. The "square" bundle of #5 rebars had dimensions of 6 ½" x 6 ½", and was installed approximately 4" above the bottom of the mold. Refer to Figures 2 through 5 for details.

Figures 2 and 3: Wooden molds prior to rebar installation

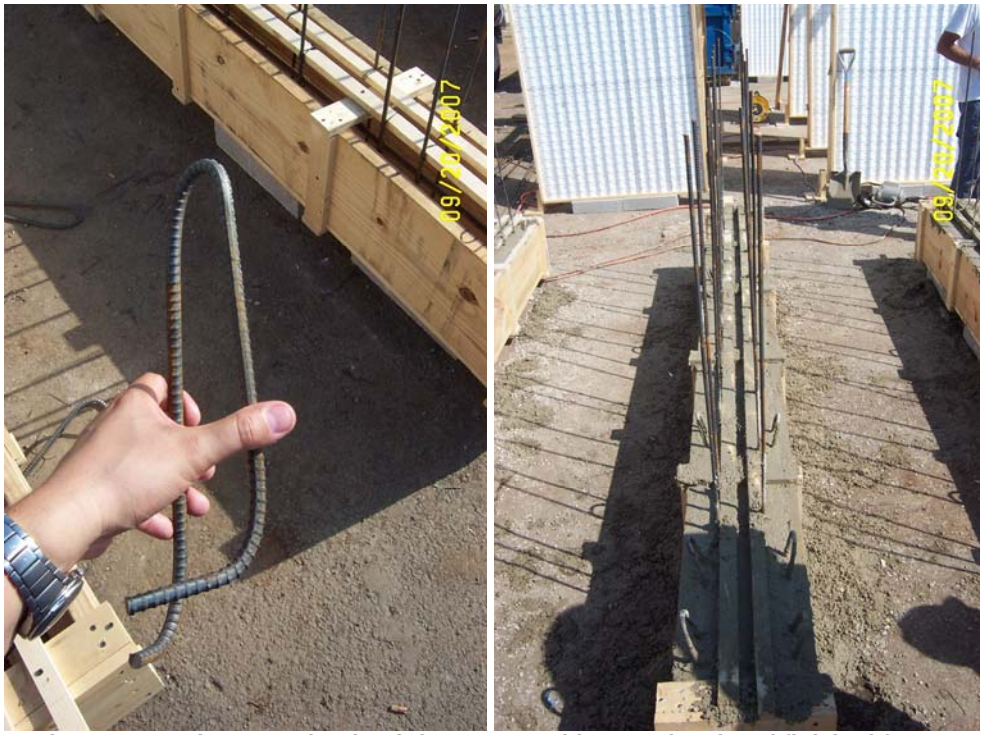
Figures 4 and 5: Installation of #5 rebar into wooden footer mold using 1/8" rebar tie wire

Once the set of #5 reinforcing rebar was installed, the #3 vertical rebars were positioned perpendicular to the #5 rebars all along the footer length. Each footer contained 18 ea. 4 foot tall vertical rebars, spaced out every 10 inches in two rows of 9 rebar columns. These rebars were double-tied vertically at the outer dimension of the reinforcing #5 rebar "square". The rods were 48" high, protruding 36" above the top of the footer. The entire set of #3 rebars served as the panel-to-footer connections simulating real-world field installations. Refer to Figures 6 through 9 for details.

Figures 6 and 7: Installation of vertical #3 rebars into footer

Figures 8 and 9: Finished installation of rebar

The footers were now ready for concrete pouring. The concrete mixture used was typical for foundation design, having a compressive strength (f'c) of 3500 psi at 28 days and a slump of 5 inches. During pouring, a concrete vibrator was used in order to assure even distribution of concrete and to minimize the amount of air. Before the concrete was smoothed out, 10 ea. #5 rebar hooks were inserted into the wet concrete (5 hooks per side). As requested by the Test Engineer, these hooks were installed in order to hold down the entire wall assembly to the test frame during shear testing. The footings were allowed to cure for 1 day before the tops of the wooden molds were removed and the panels were installed. Refer to Figures 10 through 12 for details.



Figures 10 and 11: #5 rebar hook (approx 3" wide x 13" long) and finished footer

Figure 12: Finished shear wall footers

Hook locations on the footer were as followed (dimensions are nominal and taken from the far left end of the footer):

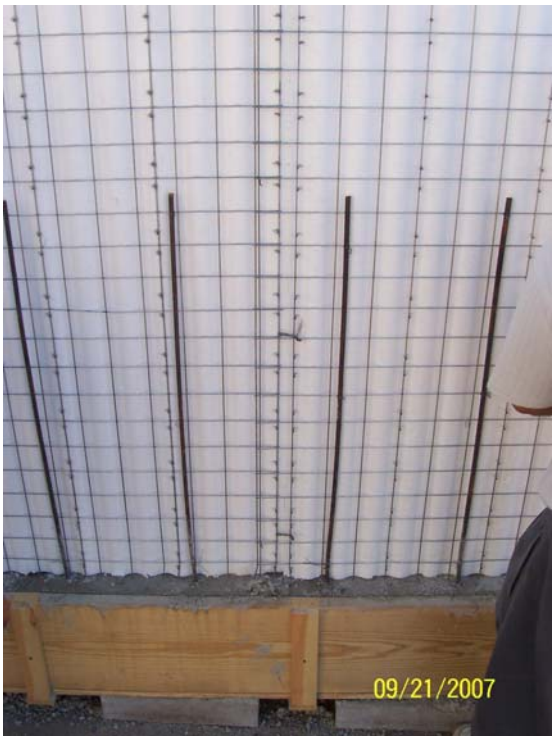
Hook #1: Located approximately at 6 inches
Hook #2: Located approximately at 18 inches
Hook #3: Located approximately at 40 inches
Hook #4: Located approximately at 90 inches
Hook #5: Located approximately at 112 inches

Five hooks were inserted per side (total of 10 hooks). Refer to Figures 13 and 14 for details.

Figures 13 and 14: Locations of footer hooks

After the footers were cured, the top wooden frames were removed, exposing the space where the panels would be inserted. Two PSM80 panels were connected together in order to obtain the 8 foot wide dimension. The two panels were attached at the joint using 1/8" rebar tie wire every 8" – 10", extending the entire panel height. The panels were then inserted in between the protruding #3 rebars. The #3 rebars extended 36" up unto the panels and where connected to the panel wire mesh every 8" (refer to Figure 15). The wooden frames around the perimeter of the panels were now constructed using #8 x 2" wood deck screws and 1x10 #1 yellow pine lumber joists cut down to 6" wide. The perimeter frame served two purposes: 1) as a support to assure that each wall was even and plumb before mortar spraying, and 2) as a guide for applied proper mortar thickness. For the 8 foot walls, the 1/8" rebar tire wire was installed 32" from the top and bottom around the panel and frame in order to hold the two pieces together. For the 14 foot walls, the rebar tie wire was installed at 36", 84", and 120" from bottom to top. Refer to Figures 15 through 18 for more details.

Figure 15: #3 rebar connection to wire mesh using 1/8" rebar tie wire



Figures 16 and 17: Finished rebar connections into panel wire mesh prior to perimeter frame installation

Figure 18: Finished 8x8 shear wall with perimeter frame and stabilizers

The walls were then sprayed with a mortar mixture of sand, water, and Portland® Cement on both sides using a plaster sprayer for walls provided by the client. Mortar specifications included sand particles with less than 0.20" size and a slump of 2", at the appropriate ratio (refer to Section 3.2, Sample and Assembly Description, for mixing ratio). The three ingredients were mixed using a concrete mixer. A compressor capable of adjustment was used in order to assure the client recommended 90 psi application pressure. Two layers of sprayed mortar were applied to each side until the desired mortar thickness of 1" (+/- ¼") was achieved. The walls were then smoothed out as much as possible using mortar trowels or any other straight smooth device. Refer to Figures 19 through 22 for details.

Figures 19 and 20: Mortar mixing and spraying application on wall assemblies, respectively

Figure 21: Smoothing out mortar after spraying

Figure 22: Finished 8’ x 8’ shear panel

The walls were allowed to cure for at least 28 days prior to testing. Both racking shear wall configurations (8’ x 8’ and 8’ x 14’) tested were equal in construction techniques.

4.2. ICC-AC 15 and ASTM E 72 - 05 Testing Procedures

Racking Load (In-Plane Shear)

All testing was performed according to ICC – AC 15, Section 4.2.2.5, under the general guidelines of ASTM E72 - 05, Section 14 loading procedure. In order to accommodate the size of the walls, the axial test frame was retrofitted to perform uniform racking loads. One horizontally positioned hydraulic cylinder (with a stroke capacity of 12") was installed with a pin connection at the top. This configuration allowed for simple height adjustments at different sample dimensions. The cylinder is supported by a rigid I-beam which is bolted down to the laboratory floor. The head of the cylinder is equipped with a high strength steel nut capable of adjustment. A 7" x 7" x ½" thick steel plate was welded to the nut for proper loading of the walls. The plate was fitted with a 7" x 7" x ¼" piece of EPDM rubber (used also for compression and compression-flexural tests) in order to distribute the racking load evenly on the two faces of the wall. Refer to Figure 23 and 27 for details.

Figure 23: Hydraulic cylinder connection to racking frame

The walls were transported to the test frame using chains and boomers. The footer hooks were used as lifting points in order to evenly distribute the load as the walls were moved. Care was taken in order to try to avoid any potential damage to the walls due to sudden movements

After the wall was positioned in the frame, the footers were secured down to the bottom beam using the same chains and boomers. Keeping the footer of the panel secure to the frame is crucial in obtaining accurate results. The boomers provided tight adjustment of the footer to the test frame. Once the footer was secured, three lateral guides were installed at the top of the wall in order to allow in-plane deflection in the direction of load. Bearing-supported rollers were attached to each guide to keep friction at a minimum. Three 7" wide x 8" long plates with two ½" diameter rollers were positioned at each guide location. Finally, a stop plate was welded at the lower-right end of the wall to prevent slippage during loading. Refer to Figures 24 through 27 for details.

Figures 24 and 25: Boomers holding down footer (left) and lateral guides on wall (right)

Figures 26 and 27: Stop plate (left) and loading point with rollers (right)

Loading was applied using a hydraulic pump capable of pressures up to 3000 psi. Due to space limitations, a calibrated pressure gauge was used instead of a load cell to measure the applied force. Three low voltage linear transducers (LVDT) capable of 0.001 inch resolution were used as per required in ASTM E 72, Section 14. Data from each transducer was monitored and recorded using data acquisition software. Each specimen was loaded to three targeted loads (790, 1570, and 2360 lbs) at equal loading rates, taking the specimen back to zero load after each target load. Deflection and load readings were taken at every load/set rate. Once the three load targets were obtained, the specimen was loaded until failure occurred or when the total horizontal deflection of the panel reached 4.00 inches. Refer to Figures 28 and 29 for 8' x 8' and 8' x 14' shear wall setups. Refer to Appendix C for racking shear test photos.

NOTE: AC 15, Section 4.2.2.5 indicates to test these types of shear walls under the guidelines of Annex A. This section states that "…the loading procedure described in ASTM E 72 shall be modified to apply the lateral racking and vertical loads through a continuous, reinforced concrete or steel member. Its attachment to the specimen shall be designed so that applied loads are uniformly distributed along the specimen length…"

All shear tests were performed without a top horizontal member. The client did not install such members into the walls during construction. Before testing, it was found that the walls could not be modified with a horizontal load member without sustaining permanent damage. The Client agreed to go along with the testing as is.

Figure 28: Setup for 8’ x 8’ shear wall

Figure 29: Setup for 8’ x 14’shear wall

4.2.1. ICC – AC 15 and ASTM E 72 - 05 Notes

These tests were performed in accordance to ICC- AC 15 and under the general guidelines of ASTM E72 – 05. As per ICC – AC 15, six specimens were tested, using two different configurations and/or heights. The tested specimens consisted of equal widths (8 feet), equal thicknesses (6 inches), and two different height configurations (8 feet and 14 feet).

According to AC 15, Section 4.2.2.5, three mortar cylinder cores shall be tested within 48 hours of the completion of each set of full-scale tests. This procedure was performed for each set of constructed walls, in addition to 7 and 28 day mortar cores for each batch of mortar mixed. For example, if a set of walls required two applications of sprayed mortar on each side, then six mortar cylinder cores were made for each batch of sprayed mortar (tested at 7 and 28 days for each batch). The mortar cores were made under the general guidelines of *ACI 506.2 – 95, Specification for Shotcrete*. Under the ACI 506.2 code, Section 1.6.1.1, the preparation of the shotcrete mortar cylinder core panels was to be made according to *ASTM C 1140, Preparing and Testing Specimens from Shotcrete Test Panels*. According to ASTM C 1140, Section 5, "…the forms for making shotcrete mortar cores shall be made of wood or steel construction and sufficiently rigid to prevent dislodging of the shotcrete through vibration or deformation." The forms were constructed of 1x6 #1 yellow pine lumber, 2x4 #2 yellow pine lumber, ¾" plywood, and #8 x 1 ½" wood deck screws. The interior dimensions of the forms constructed were **24" wide x 24" long x 3 ½" deep**, as indicated in Section 5 of ASTM C 1140. One form was constructed for each time a new batch of mortar was made. From each form, a total of approximately 25 cores could be made at one time. Refer to Figure 30 for details.

Figure 30: Wooden form for mortar core sampling

Once the wooden form was made, the mortar was sprayed into the form until it covered the entire 3 ½" depth. The mortar was allowed to settle naturally with no help of any mechanical means (concrete vibrator, mixing rod, etc.). The top of the form was then smoothed out with a trowel (or any other suitable straight smoothing device) and was then moved indoors and allowed to cure for a minimum of 24 hours. Each sprayed form was properly labeled and sealed

using plastic sheathing and shrink wrap to maintain the proper moisture. Refer to Figures 31 through 36 for details.

Figures 31 and 32: Application of sprayed mortar into wooden forms

Figures 33 and 34: Smoothing of mortar in wooden form

Figures 35 and 36: Mortar form labeling and sealing with plastic sheathing

After a minimum curing time of 24 hours, the forms were transported to an outside core testing facility and cored for the number of samples indicated. Coring was made using a specialized coring drill with a diamond bit. Once the samples were cored, they were properly labeled, measured, weighed, sulfur capped, and stored in a 100% humidity moisture room until tested. Refer to Figures 37 through 42 for more details.

Figure 37: Drilling of mortar cores

Figure 38: Mortar cores after drilling

Figures 39 and 40: Labeling, weighing, and sulfur capping of mortar cores


Figures 41 and 42: Cylinder core testing machine and placement of cores into apparatus

5 Testing and Evaluation Results

5.1. RESULTS AND OBSERVATIONS

Racking (In-Plane Shear) Test Results

In total, six racking shear tests were performed. Below is a list of the test parameters:

Wall heights:	96.0 inches and 168 inches
Wall width:	96.0 inches
Nominal wall thickness:	6.0 inches (+/- 0.25 inches)
Initial pre-load:	330 lbs
Load Rate:	Approximately 40 lbs every 30 seconds (80 lbs/min)
Ultimate Load Rate:	Approximately 400 lbs/min

The results obtained for the racking shear tests are tabulated as followed:

Specimen ID	Date Tested	Age of Wall (days)	Ultimate Load (lbs)	Average (lbs)	Average within 15%?	Allowable Load (lbs)
8X8S1	1/4/08	98	16592	18528	YES	18527
8X8S2	1/8/08	102	*18251			
8X8S3	1/9/08	103	*20740			
8X14S1	1/10/08	100	*24473	23505	YES	23505
8X14S2	1/16/08	106	*24473			
8X14S3	1/17/08	107	21570			

Sample ID	Horiz. Deflect. @ F=790 lbs (in)	Set Deflect. @ F=790 lbs (in)	Horiz. Deflect. @ F=1570 lbs (in)	Set Deflect. @ F=1570 lbs (in)	Horiz. Deflect. @ F=2360 lbs (in)	Set Deflect. @ F=2360 lbs (in)
8X8S1	0.010	0.001	0.025	0.010	0.028	0.008
8X8S2	0.008	0.002	0.019	0.002	0.024	0.014
8X8S3	0.012	0.002	0.038	0.013	0.049	0.020
8X14S1	0.022	0.012	0.017	0.050	0.058	0.079
8X14S2	0.015	0.007	0.042	0.004	0.072	0.005
8X14S3	0.010	0.014	0.036	0.013	0.067	0.010

***NOTE: For these set of walls, the test was terminated due to one of the following two reasons: 1) the test was stopped due to possible permanent damage to the test frame, or 2) the test was stopped due to achieving the maximum operating pressure of the hydraulic cylinder used.**

Only walls **8X8S1** and **8X14S3** experienced a specific failure mode before the hydraulic cylinder was taken to the limit.

The Allowable Load for each set of three walls was calculated under the guidelines of AC 15, Section 4.3, Paragraph 2, which states the following:

"The average maximum strength from each set of tests may be the average ultimate value, provided the ultimate value for each test is within 15 percent of the average. Otherwise, the lowest ultimate value shall be used."

Refer to Appendix A for Load vs. Deflection curves for all racking shear tests. Refer to Appendix B for the test data sheets.

All calculations were made in accordance to the general guidelines of ASTM E 72. For racking tests, the Horizontal Deflection at any load is calculated by subtracting the reading of the LVDT at the upper right less the sum of the readings of the other two LVDTs. For these six walls;

Horizontal Deflection = LVDT 1 - (LVDT 2 + LVDT 3)

Where;

LVDT 1 = Upper right (measures total of the other two LVDTs plus panel deformation)
LVDT 2 = Lower left (measures rotation of panel)
LVDT 3 = Lower right (measures slippage of panel)

Statistical analysis calculations were computed using the linear regression analysis method included in Microsoft Excel® (command "LINEST").

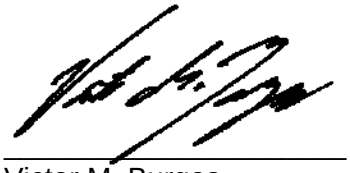
A CD copy of all the assembly, setup, and test photos will be provided to the client.

6 Conclusion

Intertek Testing Services NA, Inc. (Intertek) has conducted testing for Emmedue S.P.A on 8' x 8' and 8' x 14' Single Polystyrene PSM80 structural wall panels. The test method consisted of the racking in-plane shear load. The purpose of these tests was to evaluate racking in-plane shear load structural applications according to Section 4.2.2.5 of ICC – AC 15, under the general guidelines of *ASTM E 72 - 05, Conducting Strength Tests of Panels for Building Construction*. The results of each test were presented in tabular and graphical form. In total, six specimens were tested under the above loading configuration to measure the deflection and failure characteristics of each of the wall systems. This evaluation began January 4, 2008 and was completed January 17, 2008.

The conclusions of this test report may be used as part of the requirements for Intertek product certification. Authority to Mark must be issued for a product to become certified.

INTERTEK TESTING SERVICES NA, INC

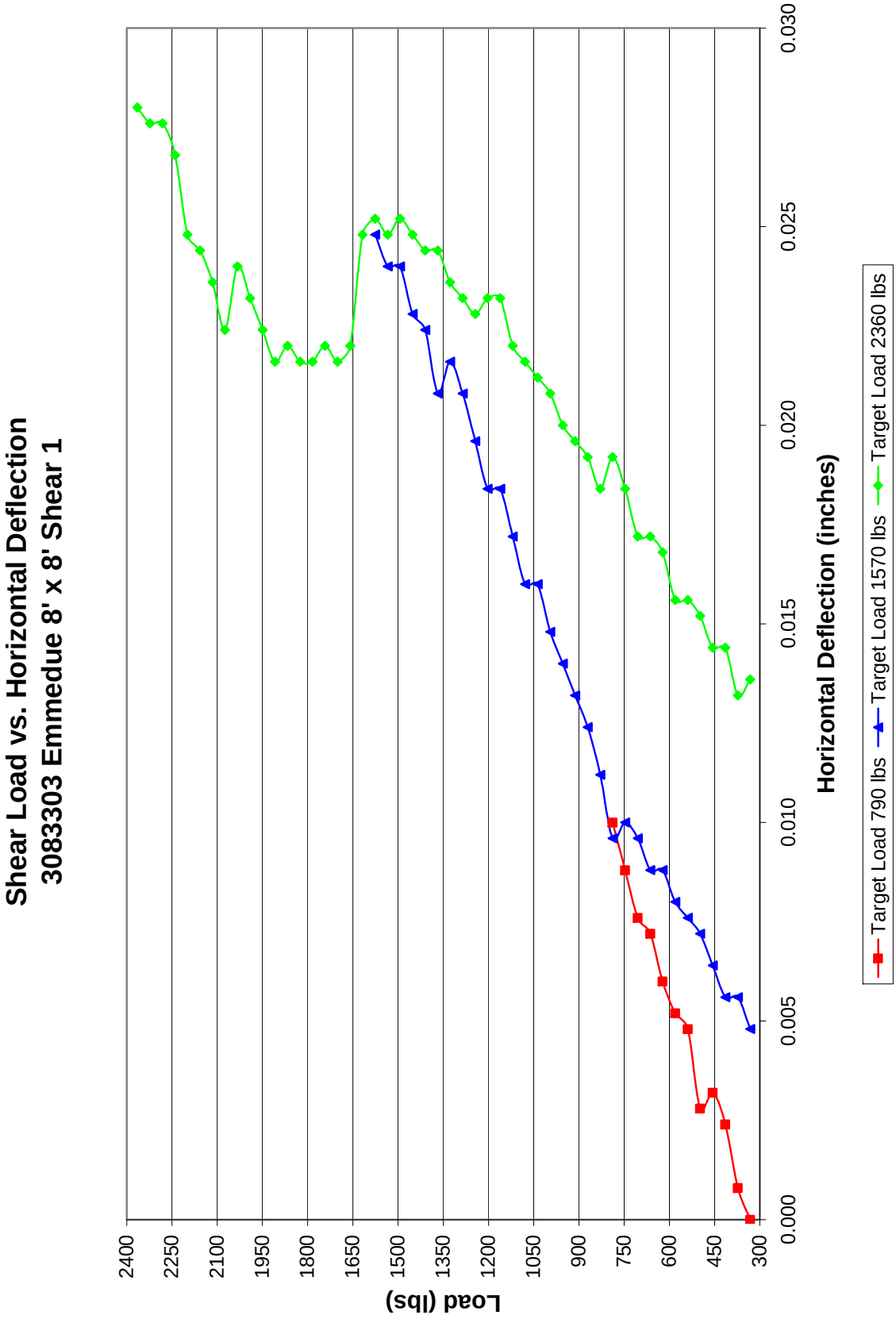
Reported by: 

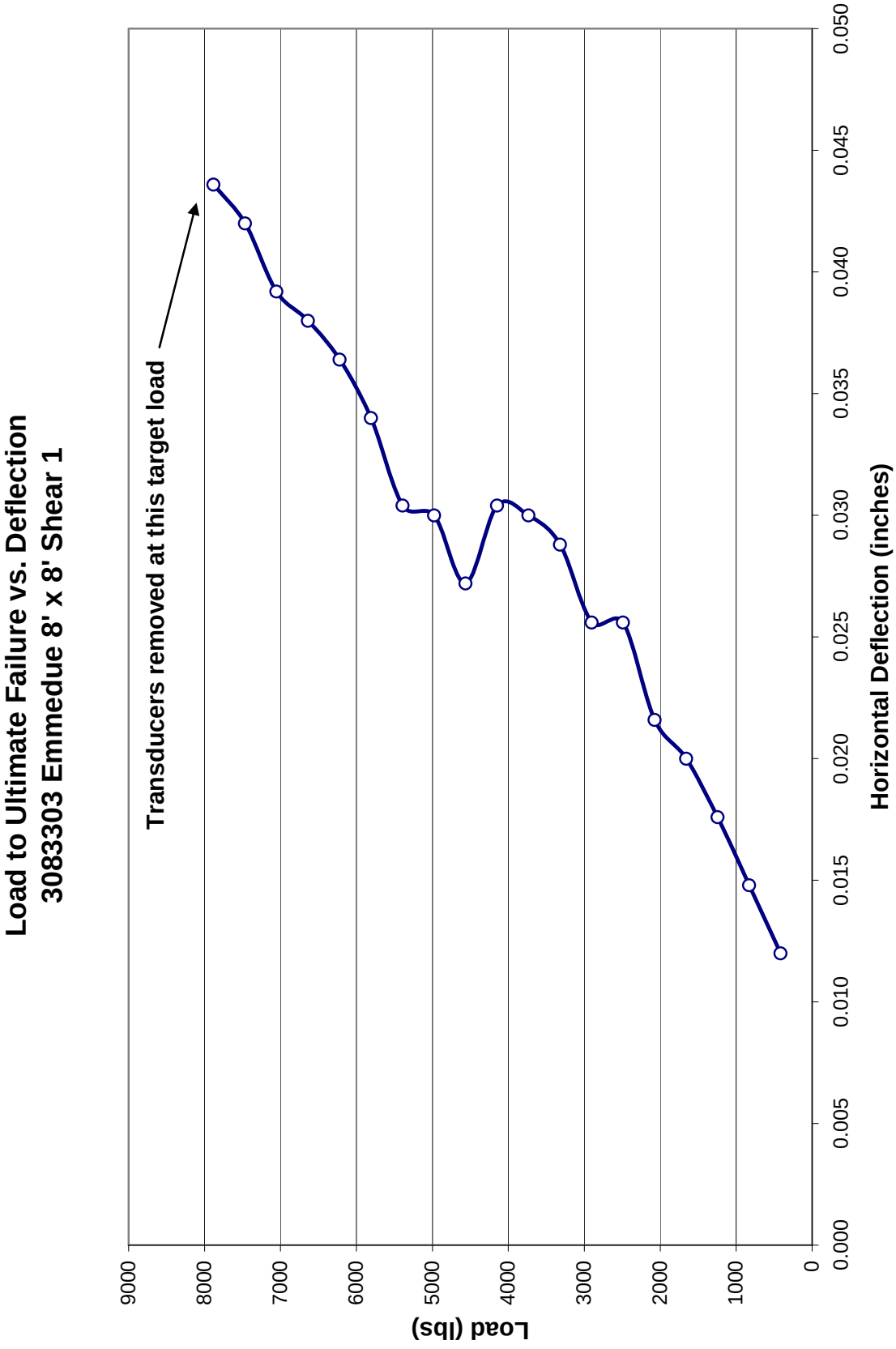
Victor M. Burgos
Test Engineer

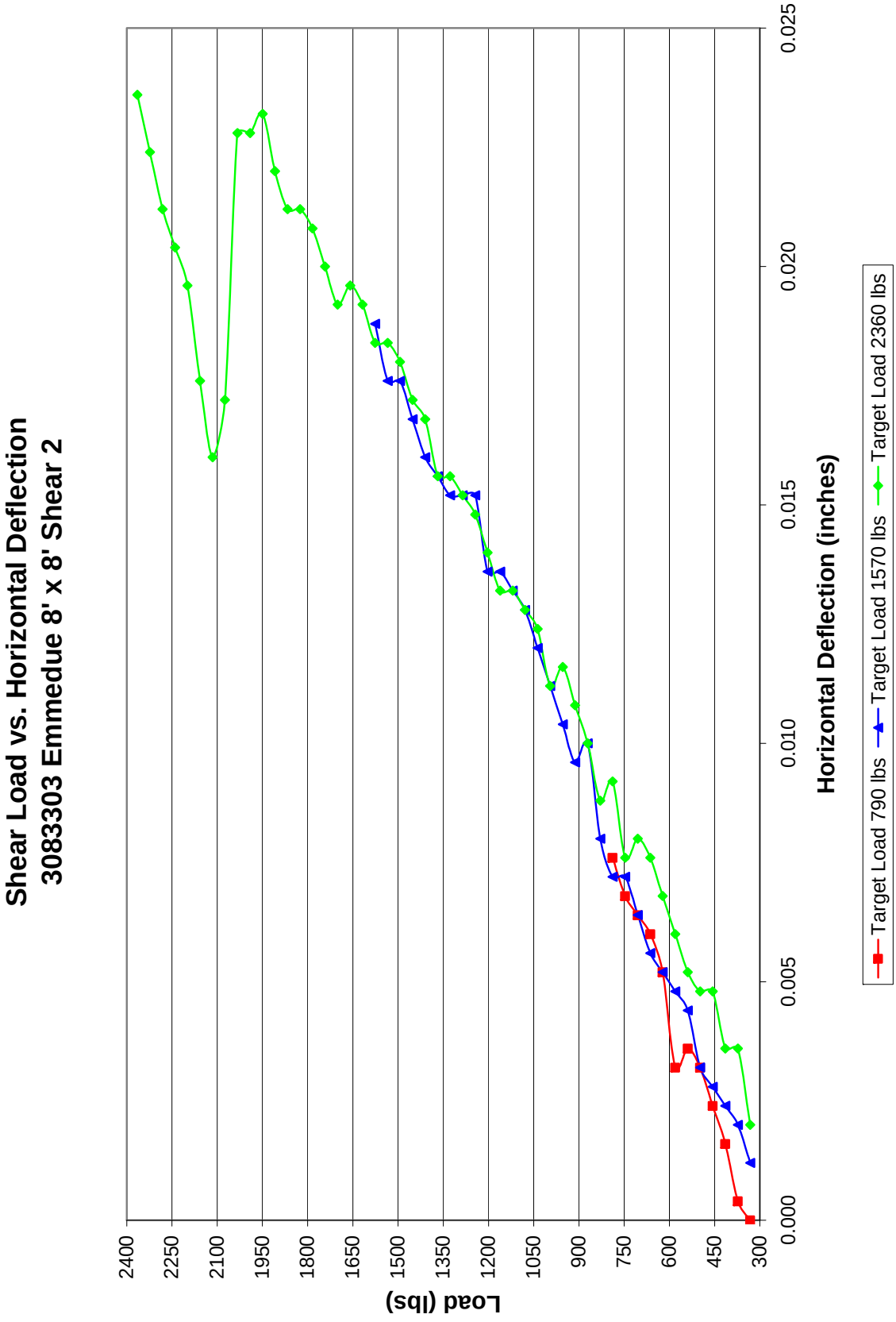
Reviewed by: 

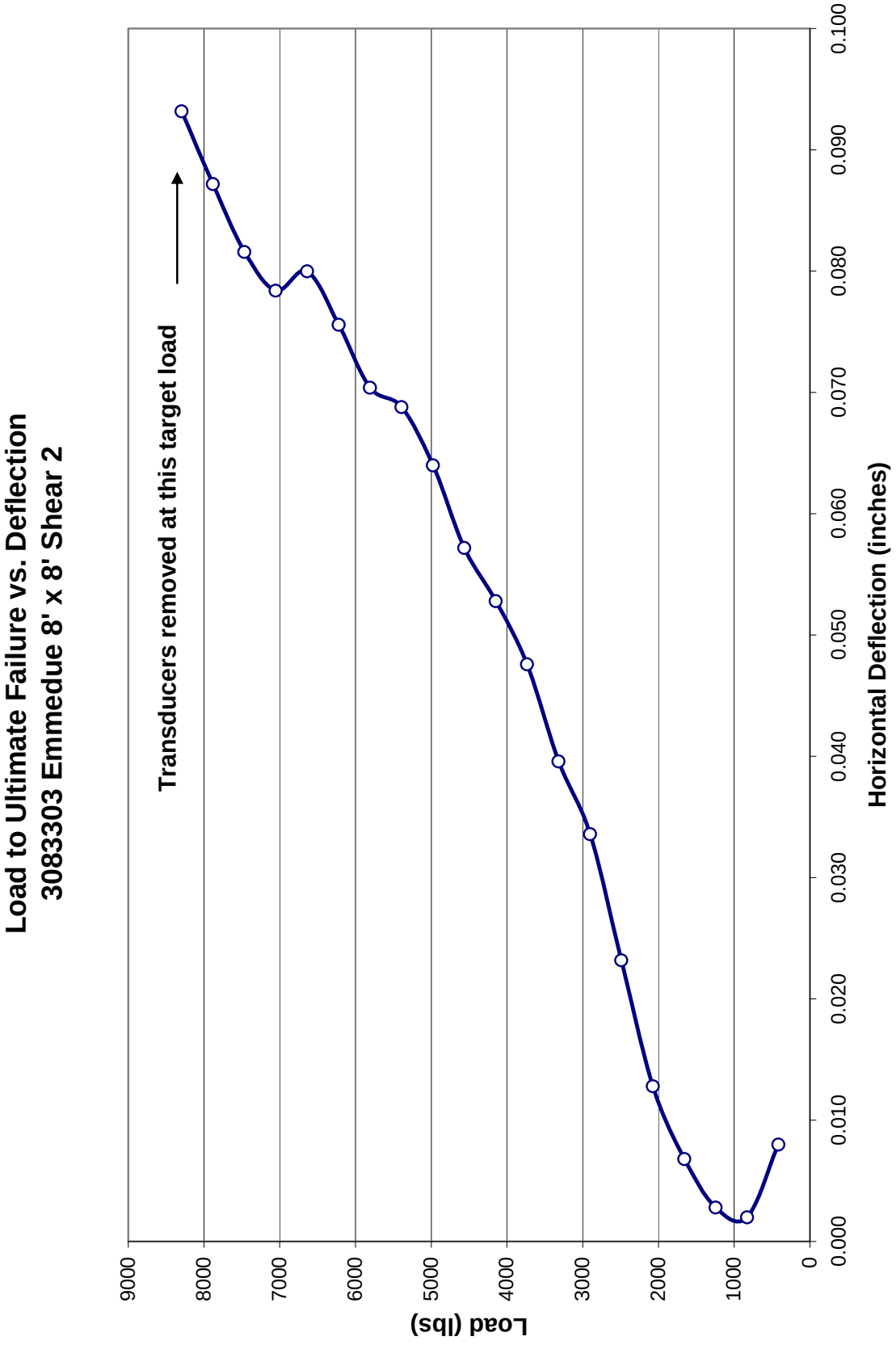
Michael E. Luna, M.S.
General Manager

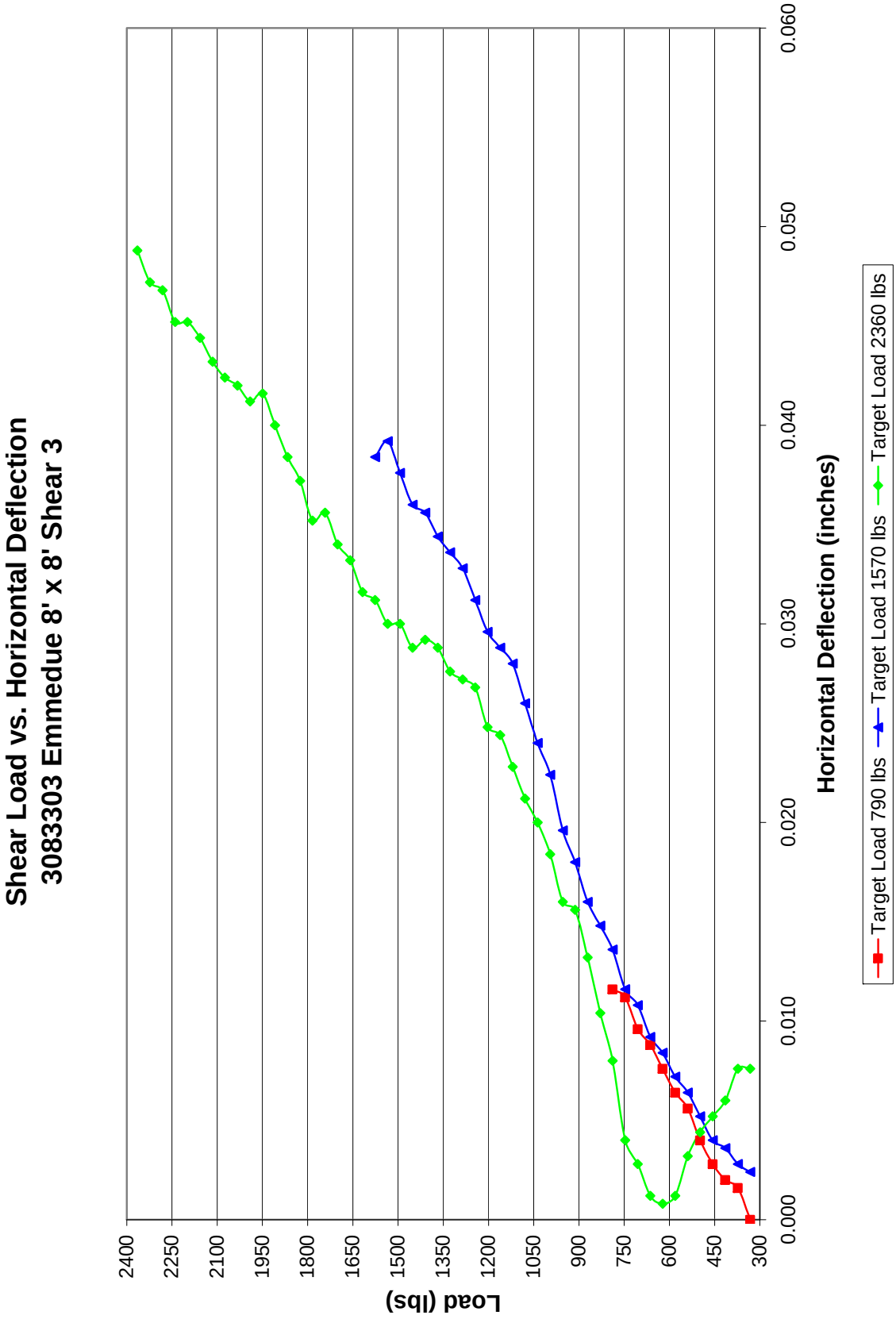
APPENDIX A
Graphs

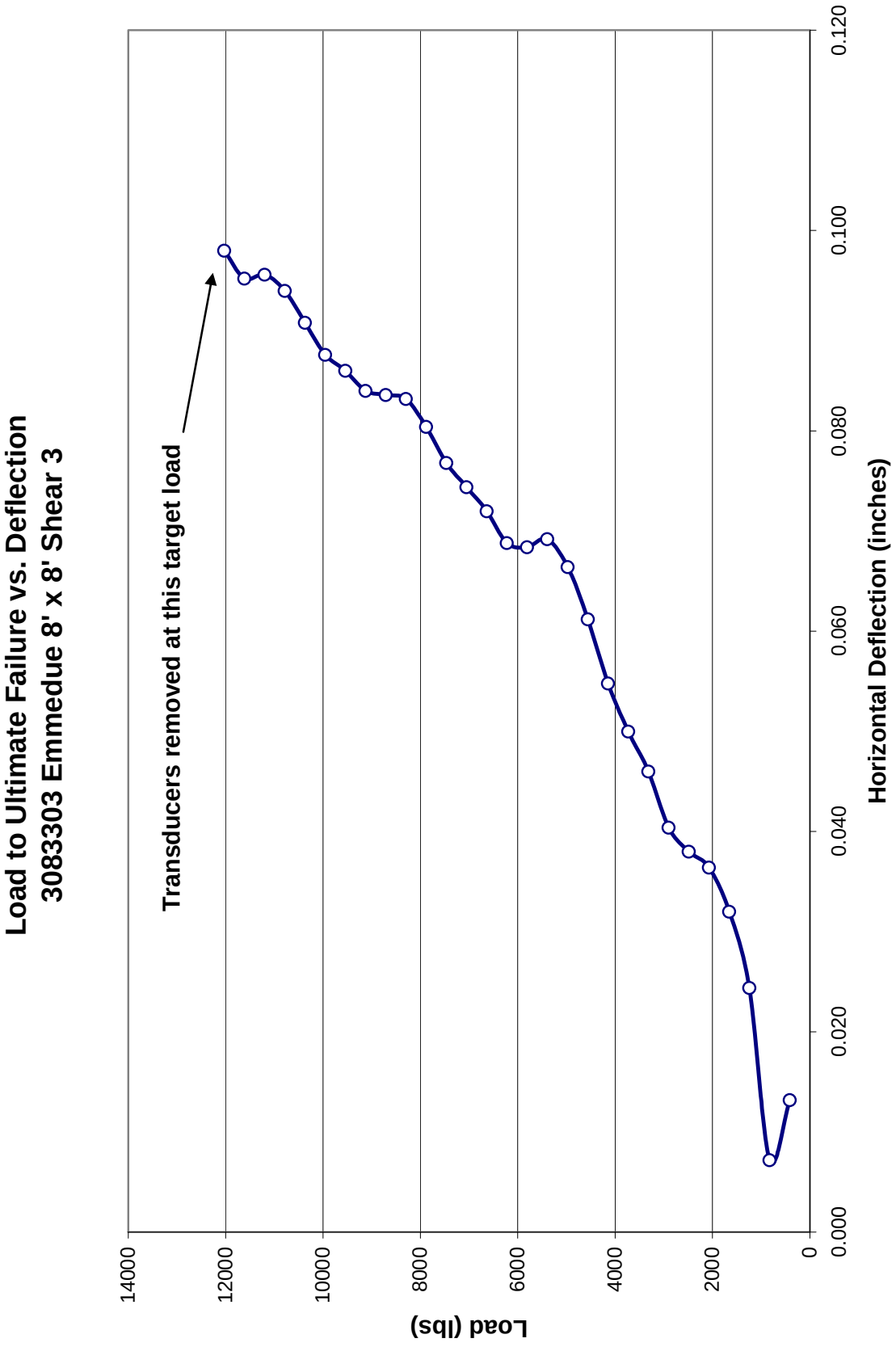

Shear Load vs. Horizontal Deflection
3083303 Emmedue 8' x 8' Shear 1
Load (lbs)
2400
2250
2100
1950
1800
1650
1500
1350
1200
1050
900
750
600
450
300
Horizontal Deflection (inches)
0.000
0.005
0.010
0.015
0.020
0.025
0.030
Target Load 790 lbs
Target Load 1570 lbs
Target Load 2360 lbs

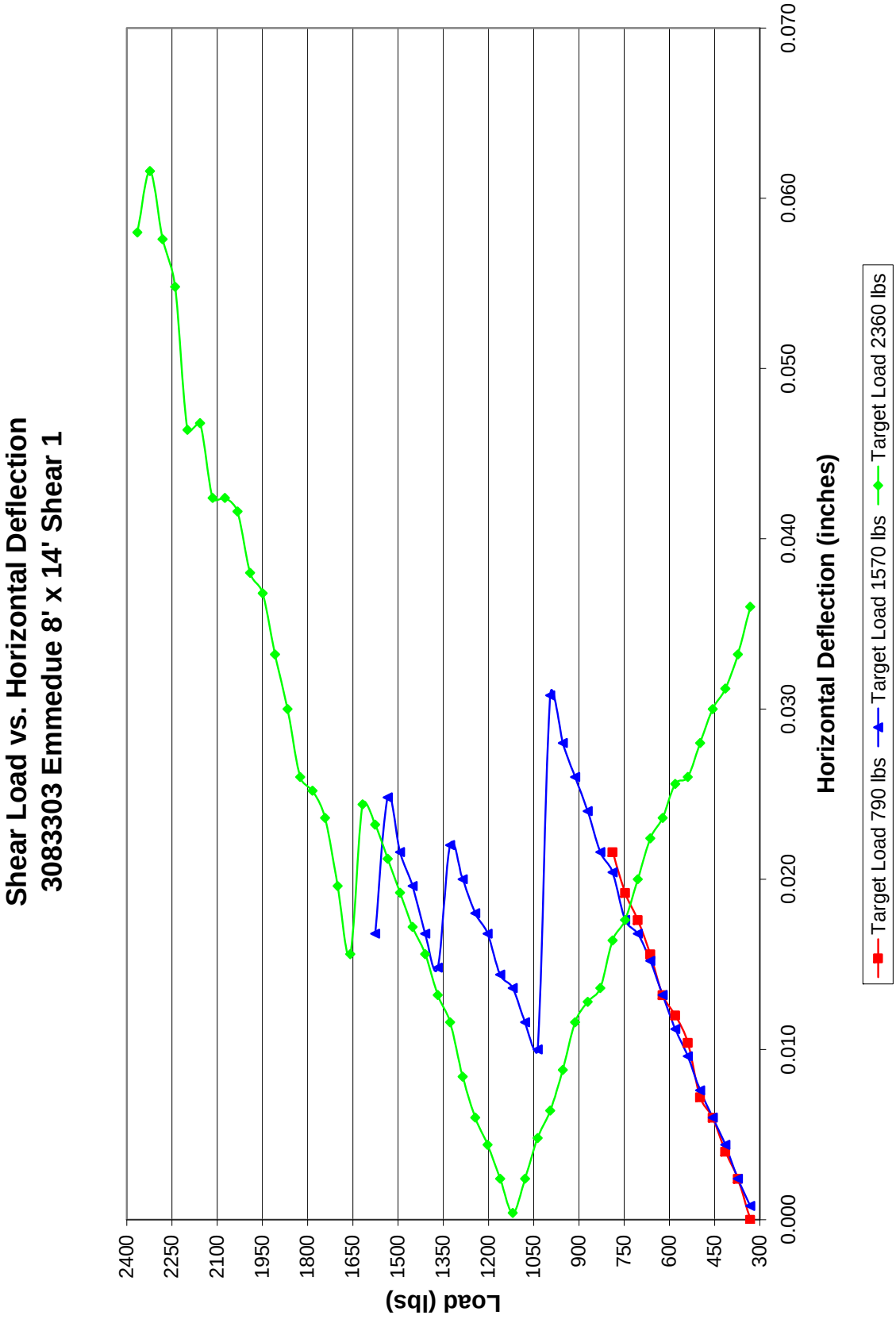

Load to Ultimate Failure vs. Deflection
3083303 Emmedue 8' x 8' Shear 1
Transducers removed at this target load
Load (lbs)
9000
8000
7000
6000
5000
4000
3000
2000
1000
0
Horizontal Deflection (inches)
0.000
0.005
0.010
0.015
0.020
0.025
0.030
0.035
0.040
0.045
0.050

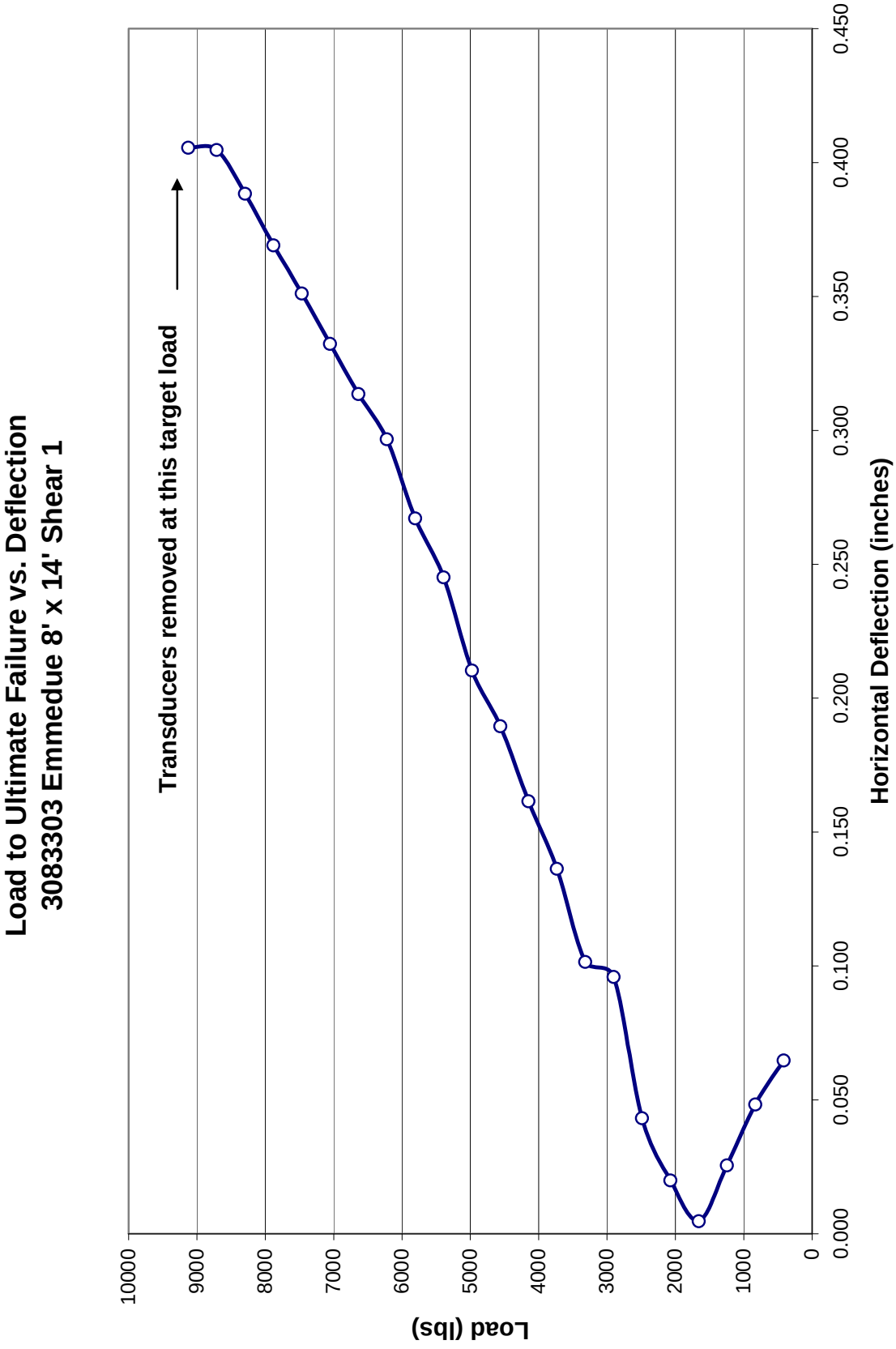

Shear Load vs. Horizontal Deflection
3083303 Emmedue 8' x 8' Shear 2
Load (lbs)
2400
2250
2100
1950
1800
1650
1500
1350
1200
1050
900
750
600
450
300
Horizontal Deflection (inches)
0.000
0.005
0.010
0.015
0.020
0.025
Target Load 790 lbs
Target Load 1570 lbs
Target Load 2360 lbs

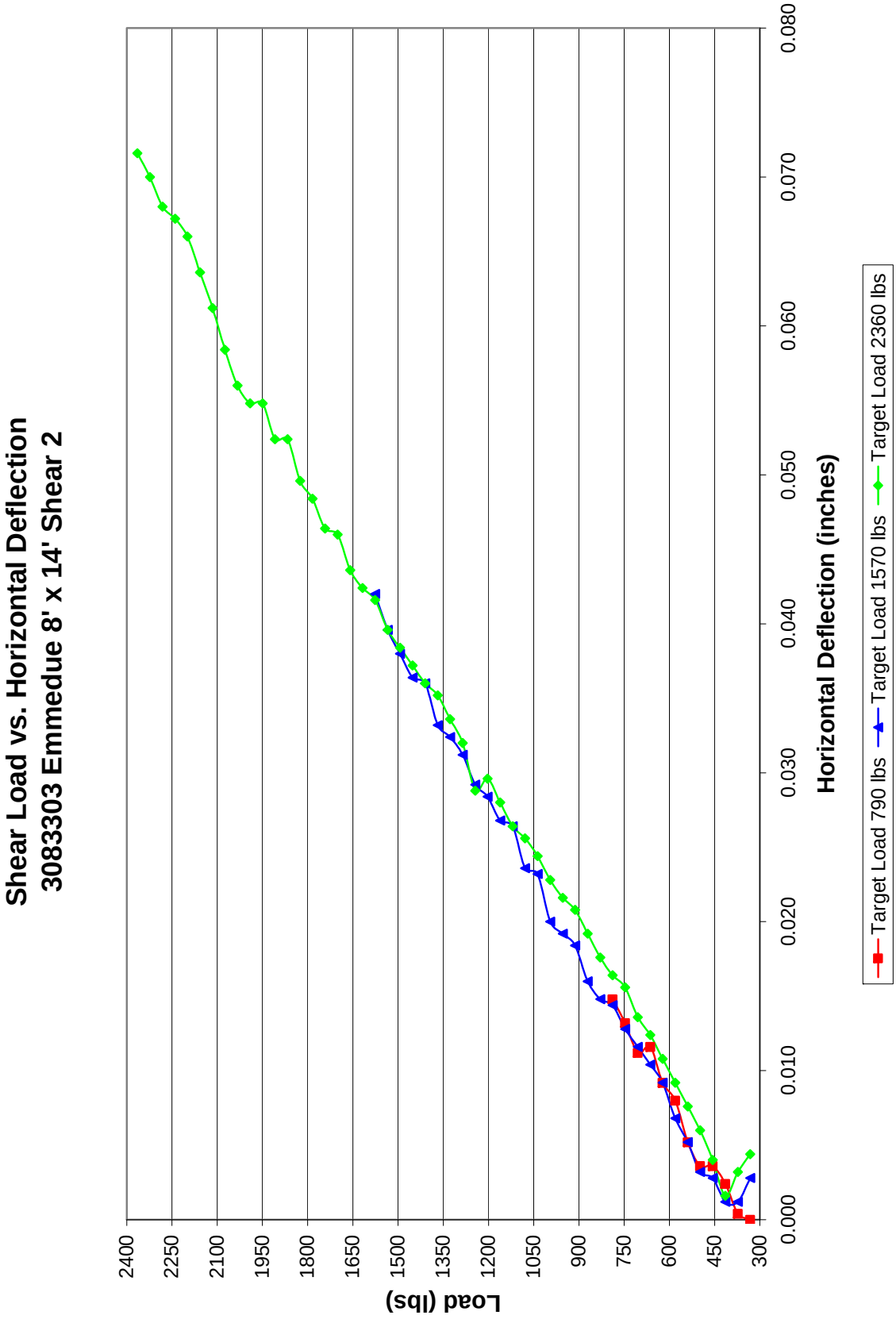

Load to Ultimate Failure vs. Deflection
3083303 Emmedue 8' x 8' Shear 2
Transducers removed at this target load
Load (lbs)
9000
8000
7000
6000
5000
4000
3000
2000
1000
0
Horizontal Deflection (inches)
0.000
0.010
0.020
0.030
0.040
0.050
0.060
0.070
0.080
0.090
0.100

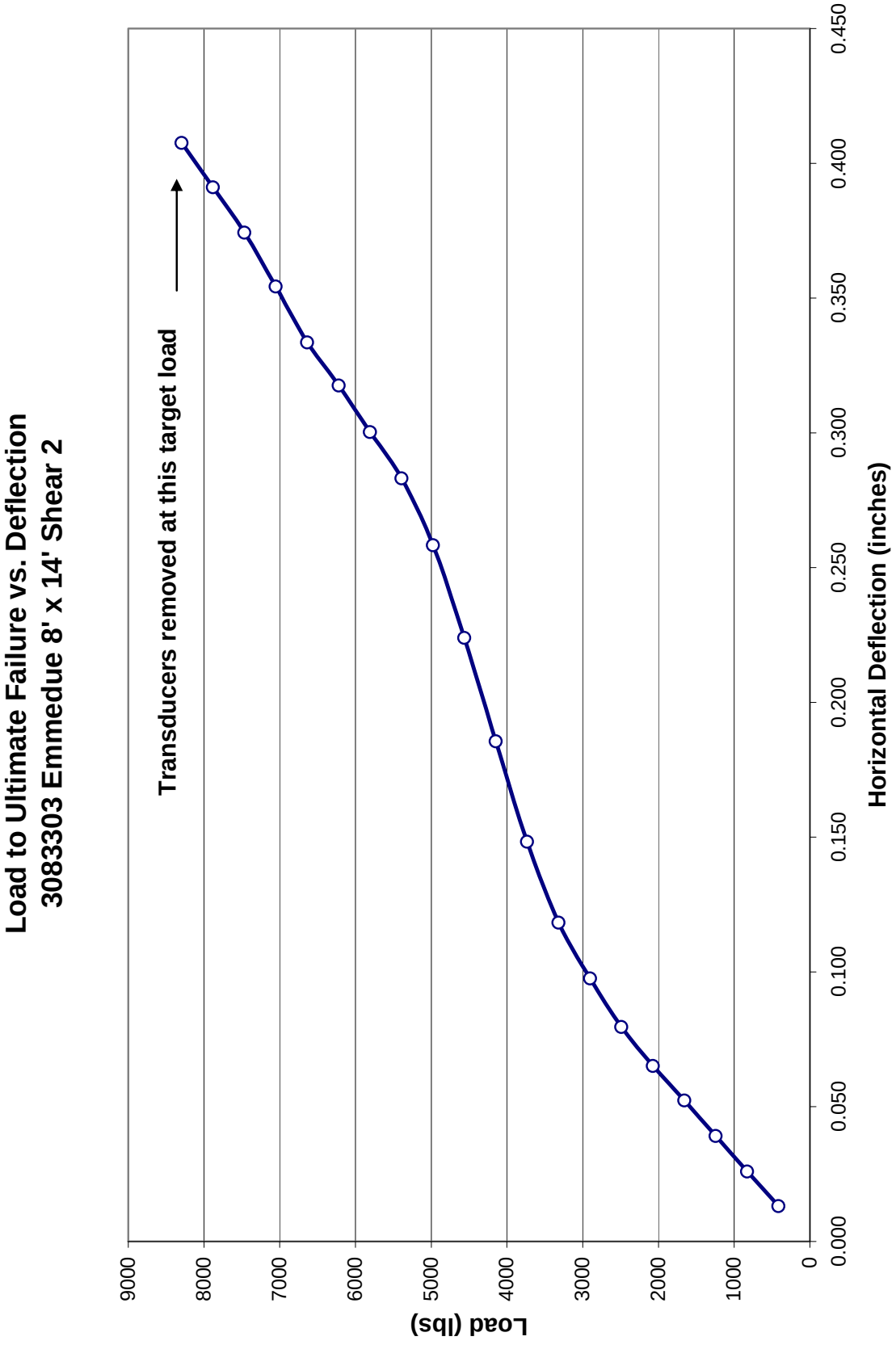

Shear Load vs. Horizontal Deflection
3083303 Emmedue 8' x 8' Shear 3
Load (lbs)
2400
2250
2100
1950
1800
1650
1500
1350
1200
1050
900
750
600
450
300
Horizontal Deflection (inches)
0.000
0.010
0.020
0.030
0.040
0.050
0.060
Target Load 790 lbs
Target Load 1570 lbs
Target Load 2360 lbs

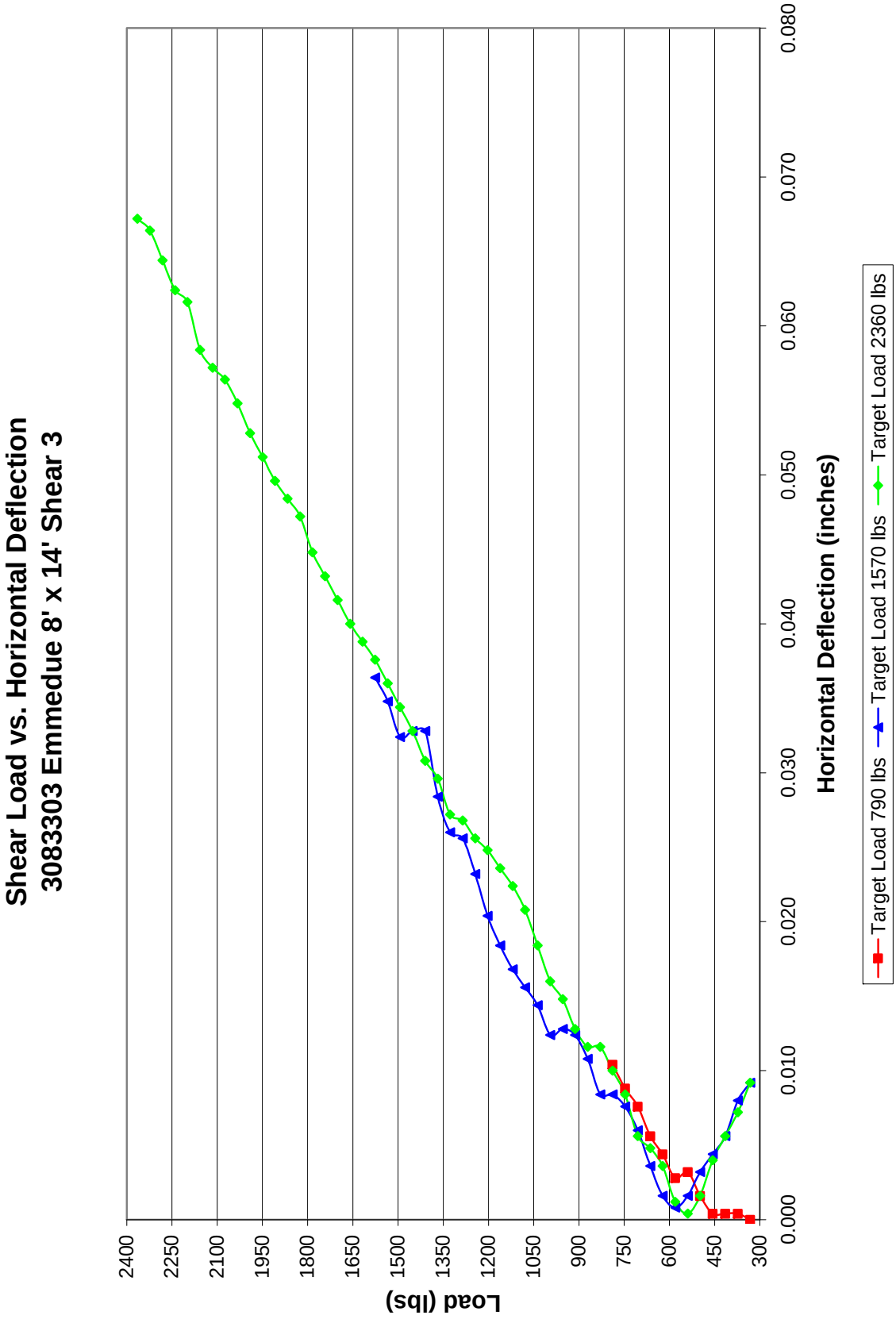

Load to Ultimate Failure vs. Deflection
3083303 Emmedue 8' x 8' Shear 3
Transducers removed at this target load
Load (lbs)
14000
12000
10000
8000
6000
4000
2000
0
Horizontal Deflection (inches)
0.000
0.020
0.040
0.060
0.080
0.100
0.120

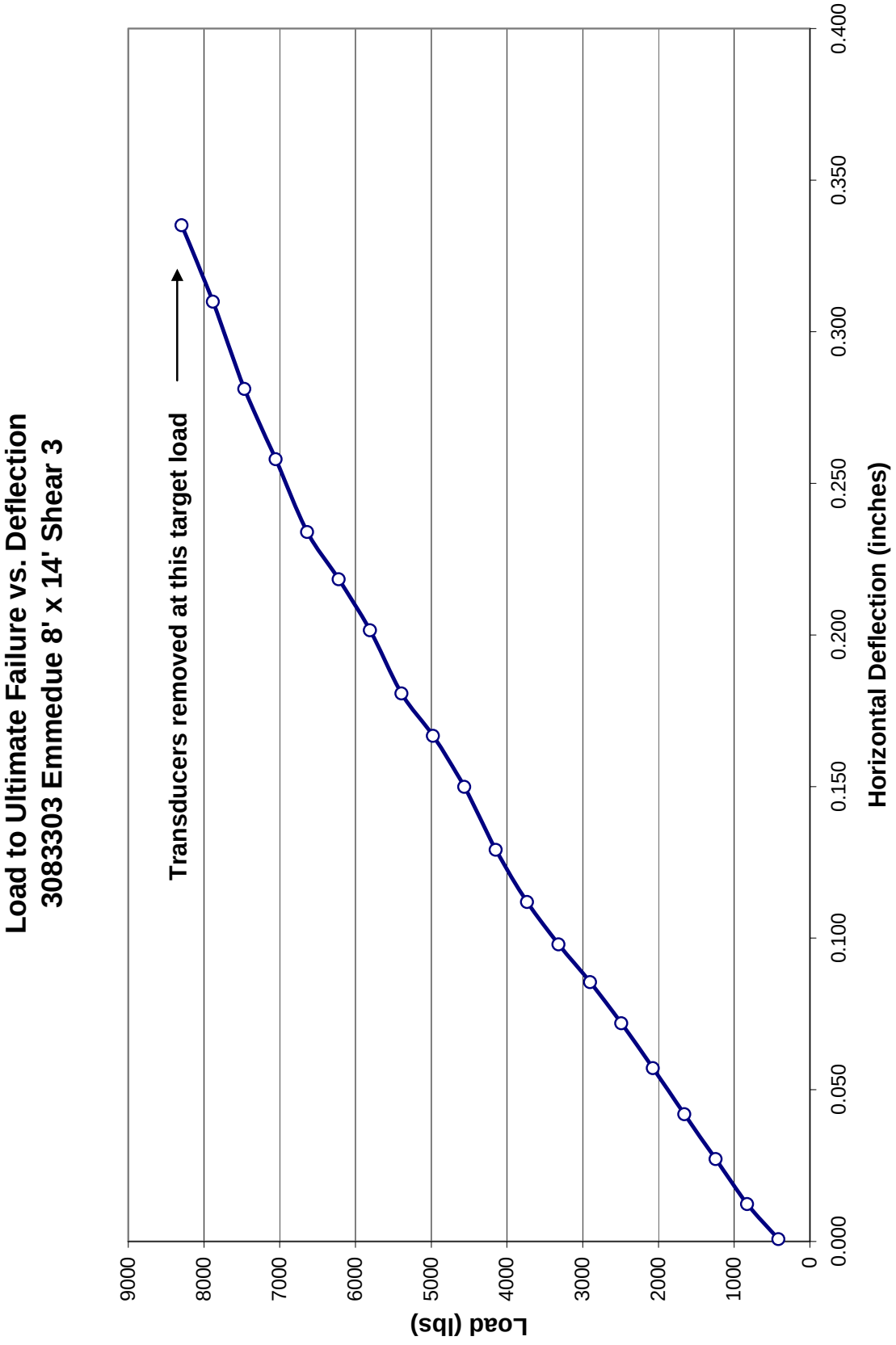

Shear Load vs. Horizontal Deflection
3083303 Emmedue 8' x 14' Shear 1
Load (lbs)
2400
2250
2100
1950
1800
1650
1500
1350
1200
1050
900
750
600
450
300
Horizontal Deflection (inches)
0.000
0.010
0.020
0.030
0.040
0.050
0.060
0.070
Target Load 790 lbs
Target Load 1570 lbs
Target Load 2360 lbs


Load to Ultimate Failure vs. Deflection
3083303 Emmedue 8' x 14' Shear 1
Transducers removed at this target load
Load (lbs)
10000
9000
8000
7000
6000
5000
4000
3000
2000
1000
0
Horizontal Deflection (inches)
0.000
0.050
0.100
0.150
0.200
0.250
0.300
0.350
0.400
0.450


Shear Load vs. Horizontal Deflection
3083303 Emmedue 8' x 14' Shear 2
Load (lbs)
2400
2250
2100
1950
1800
1650
1500
1350
1200
1050
900
750
600
450
300
Horizontal Deflection (inches)
0.000
0.010
0.020
0.030
0.040
0.050
0.060
0.070
0.080
Target Load 790 lbs
Target Load 1570 lbs
Target Load 2360 lbs


Load to Ultimate Failure vs. Deflection
3083303 Emmedue 8' x 14' Shear 2
Transducers removed at this target load
Load (lbs)
9000
8000
7000
6000
5000
4000
3000
2000
1000
0
Horizontal Deflection (inches)
0.000
0.050
0.100
0.150
0.200
0.250
0.300
0.350
0.400
0.450


Shear Load vs. Horizontal Deflection
3083303 Emmedue 8' x 14' Shear 3
Load (lbs)
2400
2250
2100
1950
1800
1650
1500
1350
1200
1050
900
750
600
450
300
Horizontal Deflection (inches)
0.000
0.010
0.020
0.030
0.040
0.050
0.060
0.070
0.080
Target Load 790 lbs
Target Load 1570 lbs
Target Load 2360 lbs


Load to Ultimate Failure vs. Deflection
3083303 Emmedue 8' x 14' Shear 3
Transducers removed at this target load
Load (lbs)
9000
8000
7000
6000
5000
4000
3000
2000
1000
0
Horizontal Deflection (inches)
0.000
0.050
0.100
0.150
0.200
0.250
0.300
0.350
0.400

APPENDIX B
Test Data

Intertek

Test:	**In-Plane Shear (Racking Load)**	Project No:	**3083303**
Date:	1/4/2008	Engineer Initials:	
Client:	**Emmedue S.P.A**		
Product ID:	**M2_8X8S1**		
Product:	Single Polystyrene PSM80 8' x 8' x 6" Shear 1 Wall Panel with Concrete Footer (Nominal 1" mortar on both sides)		
Eng/Tech(s):	V. Burgos, Intertek - San Antonio		
Test Method(s):	ICC-AC 15 - Acceptance Criteria for Concrete Floor, Roof and Wall Systems and Concrete Masonry Wall Systems Section 4.2.2.5: Wall Shear Tests (In-Plane Shear) in accordance with the general guidelines of ASTM E 72-05		
Load Rate:	**Approximately 40 lbs every 30 seconds (80 lbs/min)**		
Preload (lbs):	330		
Hydraulic Bore Area (in^2):	8.296		
Age of Wall:	98 days (at test date)		

Panel		
Width (ft)	Length (ft)	Thickness (in)
8.0	8.00	6.000

			Panel Deformation	Panel Rotation	Panel Slippage	
Load (lbs)	Load (plf)	Measurement Time	Trans 1 (in.)	Trans 2 (in.)	Trans 3 (in.)	Horizontal Deflection (in.)
FIRST LOAD TARGET (F = 790 lbs)						
332	**41**	**immediate**	**0.000**	**0.000**	**0.000**	**0.000**
373	47	after 30 seconds	-0.003	0.000	-0.002	0.001
415	52	after 30 seconds	-0.006	0.000	-0.004	0.002
456	57	after 30 seconds	-0.008	0.000	-0.005	0.003
498	62	after 30 seconds	-0.011	0.000	-0.008	0.003
539	67	after 30 seconds	-0.015	0.000	-0.010	0.005
581	73	after 30 seconds	-0.018	0.000	-0.012	0.005
622	78	after 30 seconds	-0.022	0.000	-0.015	0.006
664	83	after 30 seconds	-0.025	0.000	-0.018	0.007
705	88	after 30 seconds	-0.029	0.000	-0.021	0.008
747	93	after 30 seconds	-0.033	0.000	-0.024	0.009
788	**99**	**after 30 seconds**	**-0.038**	**0.000**	**-0.028**	**0.010**
0	**0**	**Set after 1 min**	**-0.008**	**0.000**	**-0.008**	**0.001**
SECOND LOAD TARGET (F = 1570 lbs)						
332	41	after 30 seconds	-0.016	0.000	-0.011	0.005
373	47	after 30 seconds	-0.018	0.000	-0.012	0.006
415	52	after 30 seconds	-0.019	0.000	-0.014	0.006
456	57	after 30 seconds	-0.022	0.000	-0.016	0.006
498	62	after 30 seconds	-0.025	0.000	-0.018	0.007
539	67	after 30 seconds	-0.026	0.000	-0.018	0.008
581	73	after 30 seconds	-0.028	0.000	-0.020	0.008
622	78	after 30 seconds	-0.030	0.000	-0.021	0.009
664	83	after 30 seconds	-0.032	0.000	-0.024	0.009
705	88	after 30 seconds	-0.035	0.000	-0.025	0.010
747	93	after 30 seconds	-0.037	0.000	-0.027	0.010
788	99	after 30 seconds	-0.040	0.000	-0.030	0.010
830	104	after 30 seconds	-0.043	0.000	-0.032	0.011
871	109	after 30 seconds	-0.047	0.000	-0.035	0.012
913	114	after 30 seconds	-0.052	0.000	-0.039	0.013
954	119	after 30 seconds	-0.058	0.000	-0.043	0.014
996	124	after 30 seconds	-0.063	0.000	-0.048	0.015
1037	130	after 30 seconds	-0.069	0.000	-0.052	0.016
1078	135	after 30 seconds	-0.076	-0.001	-0.059	0.016
1120	140	after 30 seconds	-0.083	-0.001	-0.065	0.017
1161	145	after 30 seconds	-0.090	-0.001	-0.071	0.018
1203	150	after 30 seconds	-0.097	-0.001	-0.077	0.018
1244	156	after 30 seconds	-0.106	-0.001	-0.086	0.020
1286	161	after 30 seconds	-0.118	-0.001	-0.096	0.021
1327	166	after 30 seconds	-0.129	-0.001	-0.106	0.022
1369	171	after 30 seconds	-0.146	-0.002	-0.122	0.021
1410	176	after 30 seconds	-0.160	-0.002	-0.135	0.022
1452	181	after 30 seconds	-0.175	-0.002	-0.150	0.023
1493	187	after 30 seconds	-0.189	-0.002	-0.163	0.024
1535	192	after 30 seconds	-0.203	-0.003	-0.176	0.024
1576	**197**	**after 30 seconds**	**-0.217**	**-0.004**	**-0.189**	**0.025**
0	**0**	**Set after 1 min**	**-0.102**	**0.000**	**-0.092**	**0.010**
THIRD LOAD TARGET (F = 2360 lbs)						
332	41	after 30 seconds	-0.113	0.001	-0.100	0.014
373	47	after 30 seconds	-0.116	0.000	-0.103	0.013
415	52	after 30 seconds	-0.119	0.001	-0.105	0.014
456	57	after 30 seconds	-0.121	0.001	-0.107	0.014
498	62	after 30 seconds	-0.124	0.001	-0.110	0.015
539	67	after 30 seconds	-0.127	0.001	-0.112	0.016
581	73	after 30 seconds	-0.129	0.000	-0.114	0.016
622	78	after 30 seconds	-0.134	0.001	-0.118	0.017
664	83	after 30 seconds	-0.137	0.000	-0.120	0.017
705	88	after 30 seconds	-0.139	0.001	-0.123	0.017
747	93	after 30 seconds	-0.142	0.001	-0.125	0.018
788	99	after 30 seconds	-0.146	0.001	-0.128	0.019
830	104	after 30 seconds	-0.150	0.000	-0.132	0.018
871	109	after 30 seconds	-0.153	0.000	-0.134	0.019
913	114	after 30 seconds	-0.157	0.000	-0.138	0.020
954	119	after 30 seconds	-0.161	0.000	-0.141	0.020
996	124	after 30 seconds	-0.165	0.000	-0.145	0.021

1037	130	after 30 seconds	-0.170	0.000	-0.149	0.021	
1078	135	after 30 seconds	-0.175	0.000	-0.154	0.022	
1120	140	after 30 seconds	-0.178	0.000	-0.157	0.022	
1161	145	after 30 seconds	-0.182	0.000	-0.159	0.023	
1203	150	after 30 seconds	-0.187	0.000	-0.164	0.023	
1244	156	after 30 seconds	-0.191	-0.001	-0.168	0.023	
1286	161	after 30 seconds	-0.197	-0.001	-0.172	0.023	
1327	166	after 30 seconds	-0.201	-0.002	-0.176	0.024	
1369	171	after 30 seconds	-0.208	-0.002	-0.182	0.024	
1410	176	after 30 seconds	-0.212	-0.002	-0.186	0.024	
1452	181	after 30 seconds	-0.218	-0.002	-0.191	0.025	
1493	187	after 30 seconds	-0.225	-0.002	-0.197	0.025	
1535	192	after 30 seconds	-0.232	-0.003	-0.204	0.025	
1576	197	after 30 seconds	-0.243	-0.003	-0.214	0.025	
1618	202	after 30 seconds	-0.272	-0.004	-0.244	0.025	
1659	207	after 30 seconds	-0.299	-0.006	-0.271	0.022	
1701	213	after 30 seconds	-0.318	-0.006	-0.290	0.022	
1742	218	after 30 seconds	-0.334	-0.006	-0.306	0.022	
1784	223	after 30 seconds	-0.350	-0.006	-0.322	0.022	
1825	228	after 30 seconds	-0.367	-0.007	-0.338	0.022	
1867	233	after 30 seconds	-0.385	-0.007	-0.356	0.022	
1908	239	after 30 seconds	-0.400	-0.008	-0.370	0.022	
1950	244	after 30 seconds	-0.413	-0.008	-0.383	0.022	
1991	249	after 30 seconds	-0.427	-0.008	-0.396	0.023	
2033	254	after 30 seconds	-0.442	-0.008	-0.410	0.024	
2074	259	after 30 seconds	-0.457	-0.010	-0.424	0.022	
2115	264	after 30 seconds	-0.472	-0.010	-0.439	0.024	
2157	270	after 30 seconds	-0.488	-0.010	-0.454	0.024	
2198	275	after 30 seconds	-0.506	-0.010	-0.471	0.025	
2240	280	after 30 seconds	-0.526	-0.010	-0.489	0.027	
2281	285	after 30 seconds	-0.543	-0.010	-0.506	0.028	
2323	290	after 30 seconds	-0.570	-0.011	-0.531	0.028	
2364	**296**	**after 30 seconds**	**-0.610**	**-0.011**	**-0.571**	**0.028**	
0	**0**	**Set after 1 min**	**-0.452**	**0.000**	**-0.443**	**0.008**	
LOADING TO ULTIMATE FAILURE. RATE APPROX. 400 lbs/min							
415	52	after 1 minute	-0.459	0.000	-0.447	0.012	No change, no visible damage
830	104	after 1 minute	-0.473	0.000	-0.458	0.015	No change, no visible damage
1244	156	after 1 minute	-0.488	0.000	-0.471	0.018	No change, no visible damage
1659	207	after 1 minute	-0.504	0.000	-0.484	0.020	No change, no visible damage
2074	259	after 1 minute	-0.522	-0.001	-0.500	0.022	No change, no visible damage
2489	311	after 1 minute	-0.543	0.000	-0.517	0.026	No change, no visible damage
2904	363	after 1 minute	-0.562	-0.003	-0.533	0.026	No change, no visible damage
3318	415	after 1 minute	-0.584	-0.004	-0.552	0.029	No change, no visible damage
3733	467	after 1 minute	-0.608	-0.005	-0.573	0.030	No change, no visible damage
4148	519	after 1 minute	-0.634	-0.007	-0.596	0.030	No change, no visible damage
4563	570	after 1 minute	-0.720	-0.011	-0.681	0.027	No change, no visible damage
4978	622	after 1 minute	-0.749	-0.012	-0.707	0.030	No change, no visible damage
5392	674	after 1 minute	-0.779	-0.012	-0.737	0.030	No change, no visible damage
5807	726	after 1 minute	-0.808	-0.012	-0.762	0.034	No change, no visible damage
6222	778	after 1 minute	-0.815	-0.012	-0.766	0.036	No change, no visible damage
6637	830	after 1 minute	-0.822	-0.012	-0.772	0.038	No change, no visible damage
7052	881	after 1 minute	-0.843	-0.012	-0.792	0.039	No change, no visible damage
7466	933	after 1 minute	-0.849	-0.012	-0.794	0.042	No change, no visible damage
7881	**985**	**after 1 minute**	**-0.853**	**-0.012**	**-0.797**	**0.044**	**Test Paused. Transducers removed**
8296	1037	after 1 minute	0.000	0.000	0.000	0.000	Test resumed. No change, no visual damage present
8711	1089	after 1 minute	0.000	0.000	0.000	0.000	No change, no visible damage
9126	1141	after 1 minute	0.000	0.000	0.000	0.000	No change, no visible damage
9540	1193	after 1 minute	0.000	0.000	0.000	0.000	No change, no visible damage
9955	1244	after 1 minute	0.000	0.000	0.000	0.000	No change, no visible damage
10370	1296	after 1 minute	0.000	0.000	0.000	0.000	No change, no visible damage
10785	1348	after 1 minute	0.000	0.000	0.000	0.000	No change, no visible damage
11200	1400	after 1 minute	0.000	0.000	0.000	0.000	No change, no visible damage
11614	1452	after 1 minute	0.000	0.000	0.000	0.000	No change, no visible damage
12029	1504	after 1 minute	0.000	0.000	0.000	0.000	No change, no visible damage
12444	1556	after 1 minute	0.000	0.000	0.000	0.000	No change, no visible damage
12859	1607	after 1 minute	0.000	0.000	0.000	0.000	No change, no visible damage
13274	1659	after 1 minute	0.000	0.000	0.000	0.000	No change, no visible damage
13688	1711	after 1 minute	0.000	0.000	0.000	0.000	No change, no visible damage
14103	1763	after 1 minute	0.000	0.000	0.000	0.000	Pops and cracks heard, wall and footer inspected, no visual damage
14518	1815	after 1 minute	0.000	0.000	0.000	0.000	No change, no visible damage
14933	1867	after 1 minute	0.000	0.000	0.000	0.000	No change, no visible damage
15348	1918	after 1 minute	0.000	0.000	0.000	0.000	No change, no visible damage
15762	1970	after 1 minute	0.000	0.000	0.000	0.000	No change, no visible damage
16177	2022	after 1 minute	0.000	0.000	0.000	0.000	No change, no visible damage

16592	**2074**	**Ultimate**	**Panel Failure** Test stopped. Mortar and wire mesh crushing at location of applied load, approx 9" into wall and 5" down A crack formed at this location approximately 1 to 2 seconds before failure This was the only 8 foot shear wall specimen that failed before the hydraulic cylinder was maxed out. No additional visible damage present on wall and concrete footer

Additional Notes: The Horizontal Deflection of the panel at any load is calculated by subtracting the reading of the dial at the upper right less the sum of the readings of the other two dials **[i.e. Horizontal Deflection = Transducer 1 - (Transducer 2 + Transducer 3)]**

*During third load target cycle (F = 2360 lbs), loud pop was heard at 1659 lbs. Transducers showed movement at this load. Wall inspected, no visible damage present. Transducers stabalized at 2198 lbs and continued to deflect.
*All shear tests were performed without a top horizontal member for uniform load distribution along the specimen length. The client did not install such members into the wall during construction The constructed walls could not be modified with a horizontal load member without sustaining permanent damage.
*The base (or footers) of the walls were attached to the test frame using chains and boomers to resist the overturning moment as the walls were loaded.
*Positive numbers indicate transducers extending **outward**; Negative numbers indicate transducers extending **inward**
*Statistical calculations below computed using Linear Regression Analysis

First Target Load Statistical Analysis (F = 790 lbs)

47057.143	329.400
1817.054	10.459
0.985	19.012
670.68	10
242429.7415	3614.685714

Second Target Load Statistical Analysis (F = 1570 lbs)

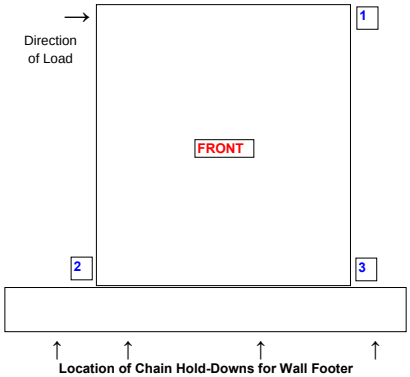
58664.48169	113.056269
1119.89648	17.5321527
0.989542265	39.2269375
2744.067037	29
4222440.366	44623.8262

Third Target Load Statistical Analysis (F = 2360 lbs)

137634.7572	-1598.38488
11504.34692	250.0620584
0.748862738	306.1619492
143.1305376	48
13416360.86	4499286.679

Ultimate Failure Loading Statistical Analysis

7175.902627	4591.71573
46076.33203	1288.12512
0.00121127	2758.38479
0.024254776	20
184546.9934	152173733



Transducer Locations and Designations
Transducer 1: Measures Specimen Deformation (Top-Right)
Transducer 2: Measures Specimen Rotation (Bottom-Left)
Transducer 3: Measures Specimen Slippage (Bottom-Right)

Intertek

Test:	**In-Plane Shear (Racking Load)**	Project No:	**3083303**
Date:	1/8/2008	Engineer Initials:	
Client:	**Emmedue S.P.A**		
Product ID:	**M2_8X8S2**		
Product:	Single Polystyrene PSM80 8' x 8' x 6" Shear 2 Wall Panel with Concrete Footer (Nominal 1" mortar on both sides)		
Eng/Tech(s):	V. Burgos, Intertek - San Antonio		
Test Method(s):	ICC-AC 15 - Acceptance Criteria for Concrete Floor, Roof and Wall Systems and Concrete Masonry Wall Systems Section 4.2.2.5: Wall Shear Tests (In-Plane Shear) in accordance with the general guidelines of ASTM E 72-05		
Load Rate:	**Approximately 40 lbs every 30 seconds (80 lbs/min)**		
Preload (lbs):	330		
Hydraulic Bore Area (in^2):	8.296		
Age of Wall:	102 days (at test date)		

Panel		
Width (ft)	Length (ft)	Thickness (in)
8.0	8.00	6.000

			Panel Deformation	Panel Rotation	Panel Slippage	
Load (lbs)	Load (plf)	Measurement Time	Trans 1 (in.)	Trans 2 (in.)	Trans 3 (in.)	Horizontal Deflection (in.)
FIRST LOAD TARGET (F = 790 lbs)						
332	**41**	**immediate**	**0.000**	**0.000**	**0.000**	**0.000**
373	47	after 30 seconds	0.000	0.000	0.000	0.000
415	52	after 30 seconds	-0.002	0.000	0.000	0.002
456	57	after 30 seconds	-0.003	0.000	-0.001	0.002
498	62	after 30 seconds	-0.004	0.001	-0.001	0.003
539	67	after 30 seconds	-0.005	0.000	-0.002	0.004
581	73	after 30 seconds	-0.005	0.000	-0.002	0.003
622	78	after 30 seconds	-0.007	0.001	-0.002	0.005
664	83	after 30 seconds	-0.008	0.000	-0.002	0.006
705	88	after 30 seconds	-0.008	0.001	-0.003	0.006
747	93	after 30 seconds	-0.009	0.001	-0.003	0.007
788	**99**	**after 30 seconds**	**-0.010**	**0.001**	**-0.003**	**0.008**
0	**0**	**Set after 1 min**	**0.003**	**0.001**	**0.000**	**0.002**
SECOND LOAD TARGET (F = 1570 lbs)						
332	41	after 30 seconds	-0.002	0.000	-0.001	0.001
373	47	after 30 seconds	-0.004	0.000	-0.002	0.002
415	52	after 30 seconds	-0.004	0.000	-0.002	0.002
456	57	after 30 seconds	-0.005	0.000	-0.002	0.003
498	62	after 30 seconds	-0.005	0.000	-0.002	0.003
539	67	after 30 seconds	-0.006	0.000	-0.002	0.004
581	73	after 30 seconds	-0.007	0.000	-0.003	0.005
622	78	after 30 seconds	-0.008	0.000	-0.003	0.005
664	83	after 30 seconds	-0.008	0.001	-0.004	0.006
705	88	after 30 seconds	-0.009	0.001	-0.004	0.006
747	93	after 30 seconds	-0.010	0.001	-0.004	0.007
788	99	after 30 seconds	-0.010	0.001	-0.004	0.007
830	104	after 30 seconds	-0.011	0.001	-0.004	0.008
871	109	after 30 seconds	-0.013	0.001	-0.004	0.010
913	114	after 30 seconds	-0.014	0.001	-0.005	0.010
954	119	after 30 seconds	-0.015	0.001	-0.005	0.010
996	124	after 30 seconds	-0.016	0.001	-0.005	0.011
1037	130	after 30 seconds	-0.017	0.001	-0.006	0.012
1078	135	after 30 seconds	-0.017	0.001	-0.006	0.013
1120	140	after 30 seconds	-0.018	0.001	-0.006	0.013
1161	145	after 30 seconds	-0.018	0.001	-0.006	0.014
1203	150	after 30 seconds	-0.019	0.001	-0.006	0.014
1244	156	after 30 seconds	-0.020	0.001	-0.006	0.015
1286	161	after 30 seconds	-0.021	0.001	-0.006	0.015
1327	166	after 30 seconds	-0.022	0.001	-0.007	0.015
1369	171	after 30 seconds	-0.022	0.000	-0.007	0.016
1410	176	after 30 seconds	-0.023	0.000	-0.008	0.016
1452	181	after 30 seconds	-0.024	0.000	-0.007	0.017
1493	187	after 30 seconds	-0.024	0.000	-0.007	0.018
1535	192	after 30 seconds	-0.025	0.000	-0.008	0.018
1576	**197**	**after 30 seconds**	**-0.026**	**0.000**	**-0.008**	**0.019**
0	**0**	**Set after 1 min**	**-0.002**	**-0.001**	**-0.003**	**0.002**
THIRD LOAD TARGET (F = 2360 lbs)						
332	41	after 30 seconds	-0.007	-0.001	-0.004	0.002
373	47	after 30 seconds	-0.008	-0.001	-0.004	0.004
415	52	after 30 seconds	-0.009	-0.001	-0.004	0.004
456	57	after 30 seconds	-0.009	0.000	-0.004	0.005
498	62	after 30 seconds	-0.010	-0.001	-0.004	0.005
539	67	after 30 seconds	-0.010	0.000	-0.005	0.005
581	73	after 30 seconds	-0.011	0.000	-0.005	0.006
622	78	after 30 seconds	-0.012	0.000	-0.005	0.007
664	83	after 30 seconds	-0.012	0.000	-0.005	0.008
705	88	after 30 seconds	-0.013	0.000	-0.005	0.008
747	93	after 30 seconds	-0.014	0.000	-0.006	0.008
788	99	after 30 seconds	-0.014	0.000	-0.005	0.009
830	104	after 30 seconds	-0.015	0.000	-0.006	0.009
871	109	after 30 seconds	-0.016	0.000	-0.006	0.010
913	114	after 30 seconds	-0.016	0.000	-0.006	0.011
954	119	after 30 seconds	-0.017	0.000	-0.006	0.012
996	124	after 30 seconds	-0.018	0.000	-0.007	0.011

1037	130	after 30 seconds	-0.018	0.000	-0.006	0.012	
1078	135	after 30 seconds	-0.019	0.000	-0.006	0.013	
1120	140	after 30 seconds	-0.019	0.000	-0.006	0.013	
1161	145	after 30 seconds	-0.020	0.000	-0.007	0.013	
1203	150	after 30 seconds	-0.021	0.000	-0.007	0.014	
1244	156	after 30 seconds	-0.022	0.000	-0.007	0.015	
1286	161	after 30 seconds	-0.023	0.000	-0.008	0.015	
1327	166	after 30 seconds	-0.023	0.000	-0.008	0.016	
1369	171	after 30 seconds	-0.024	0.000	-0.008	0.016	
1410	176	after 30 seconds	-0.024	0.000	-0.008	0.017	
1452	181	after 30 seconds	-0.025	0.000	-0.008	0.017	
1493	187	after 30 seconds	-0.026	0.000	-0.008	0.018	
1535	192	after 30 seconds	-0.026	0.000	-0.008	0.018	
1576	197	after 30 seconds	-0.027	0.000	-0.009	0.018	
1618	202	after 30 seconds	-0.028	0.000	-0.008	0.019	
1659	207	after 30 seconds	-0.028	0.000	-0.009	0.020	
1701	213	after 30 seconds	-0.029	0.000	-0.010	0.019	
1742	218	after 30 seconds	-0.030	0.000	-0.010	0.020	
1784	223	after 30 seconds	-0.031	0.000	-0.010	0.021	
1825	228	after 30 seconds	-0.032	-0.001	-0.010	0.021	
1867	233	after 30 seconds	-0.032	-0.001	-0.010	0.021	
1908	239	after 30 seconds	-0.033	-0.001	-0.010	0.022	
1950	244	after 30 seconds	-0.034	-0.001	-0.010	0.023	
1991	249	after 30 seconds	-0.036	-0.002	-0.011	0.023	
2033	254	after 30 seconds	-0.036	-0.002	-0.011	0.023	
2074	259	after 30 seconds	-0.039	-0.010	-0.012	0.017	
2115	264	after 30 seconds	-0.042	-0.014	-0.012	0.016	
2157	270	after 30 seconds	-0.046	-0.016	-0.012	0.018	
2198	275	after 30 seconds	-0.048	-0.016	-0.013	0.020	
2240	280	after 30 seconds	-0.052	-0.018	-0.014	0.020	
2281	285	after 30 seconds	-0.054	-0.018	-0.014	0.021	
2323	290	after 30 seconds	-0.056	-0.019	-0.014	0.022	
2364	**296**	**after 30 seconds**	**-0.059**	**-0.021**	**-0.015**	**0.024**	
0	**0**	**Set after 1 min**	**-0.012**	**-0.016**	**-0.010**	**0.014**	
LOADING TO ULTIMATE FAILURE. RATE APPROX. 400 lbs/min							
415	52	after 1 minute	-0.018	-0.015	-0.011	0.008	No change, no visible damage
830	104	after 1 minute	-0.023	-0.014	-0.011	0.002	No change, no visible damage
1244	156	after 1 minute	-0.030	-0.014	-0.013	0.003	No change, no visible damage
1659	207	after 1 minute	-0.036	-0.015	-0.015	0.007	No change, no visible damage
2074	259	after 1 minute	-0.044	-0.015	-0.016	0.013	No change, no visible damage
2489	311	after 1 minute	-0.068	-0.025	-0.020	0.023	No change, no visible damage
2904	363	after 1 minute	-0.092	-0.034	-0.025	0.034	No change, no visible damage
3318	415	after 1 minute	-0.110	-0.041	-0.029	0.040	No change, no visible damage
3733	467	after 1 minute	-0.126	-0.046	-0.032	0.048	No change, no visible damage
4148	519	after 1 minute	-0.142	-0.055	-0.035	0.053	No change, no visible damage
4563	570	after 1 minute	-0.158	-0.064	-0.038	0.057	No change, no visible damage
4978	622	after 1 minute	-0.174	-0.070	-0.040	0.064	No change, no visible damage
5392	674	after 1 minute	-0.187	-0.076	-0.042	0.069	No change, no visible damage
5807	726	after 1 minute	-0.198	-0.082	-0.046	0.070	No change, no visible damage
6222	778	after 1 minute	-0.210	-0.086	-0.048	0.076	No change, no visible damage
6637	830	after 1 minute	-0.220	-0.091	-0.049	0.080	No change, no visible damage
7052	881	after 1 minute	-0.232	-0.102	-0.052	0.078	No change, no visible damage
7466	933	after 1 minute	-0.242	-0.108	-0.053	0.082	No change, no visible damage
7881	985	after 1 minute	-0.253	-0.111	-0.055	0.087	No change, no visible damage
8296	**1037**	**after 1 minute**	**-0.266**	**-0.116**	**-0.057**	**0.093**	**Test Paused. Transducers removed**
8711	1089	after 1 minute	0.000	0.000	0.000	0.000	Test resumed. No change, no visual damage present
9126	1141	after 1 minute	0.000	0.000	0.000	0.000	No change, no visible damage
9540	1193	after 1 minute	0.000	0.000	0.000	0.000	No change, no visible damage
9955	1244	after 1 minute	0.000	0.000	0.000	0.000	No change, no visible damage
10370	1296	after 1 minute	0.000	0.000	0.000	0.000	No change, no visible damage
10785	1348	after 1 minute	0.000	0.000	0.000	0.000	No change, no visible damage
11200	1400	after 1 minute	0.000	0.000	0.000	0.000	No change, no visible damage
11614	1452	after 1 minute	0.000	0.000	0.000	0.000	No change, no visible damage
12029	1504	after 1 minute	0.000	0.000	0.000	0.000	No change, no visible damage
12444	1556	after 1 minute	0.000	0.000	0.000	0.000	No change, no visible damage
12859	1607	after 1 minute	0.000	0.000	0.000	0.000	No change, no visible damage
13274	1659	after 1 minute	0.000	0.000	0.000	0.000	No change, no visible damage
13688	1711	after 1 minute	0.000	0.000	0.000	0.000	No change, no visible damage
14103	1763	after 1 minute	0.000	0.000	0.000	0.000	No change, no visible damage
14518	1815	after 1 minute	0.000	0.000	0.000	0.000	No change, no visible damage
14933	1867	after 1 minute	0.000	0.000	0.000	0.000	No change, no visible damage
15348	1918	after 1 minute	0.000	0.000	0.000	0.000	No change, no visible damage
15762	1970	after 1 minute	0.000	0.000	0.000	0.000	No change, no visible damage
16177	2022	after 1 minute	0.000	0.000	0.000	0.000	No change, no visible damage
16592	2074	after 1 minute	0.000	0.000	0.000	0.000	No change, no visible damage
17007	2126	after 1 minute	0.000	0.000	0.000	0.000	No change, no visible damage
17422	2178	after 1 minute	0.000	0.000	0.000	0.000	No change, no visible damage
17836	2230	after 1 minute	0.000	0.000	0.000	0.000	No change, no visible damage

			Test Terminated
18251	**2281**	**Stop**	Test stopped due to possible damage to test frame No apparent damage visible anywhere on wall and concrete foundation Client approved of test results 0

Additional Notes: The Horizontal Deflection of the panel at any load is calculated by subtracting the reading of the dial at the upper right less the sum of the readings of the other two dials **[i.e. Horizontal Deflection = Transducer 1 - (Transducer 2 + Transducer 3)]**

*During third load target cycle (F = 2360 lbs), loud pop was heard at 2074 lbs. Transducers showed movement at this load. Wall inspected, no visible damage present. Transducers stabalized at 2364 lbs (end of target load cycle).
*All shear tests were performed without a top horizontal member for uniform load distribution along the specimen length. The client did not install such members into the wall during construction The constructed walls could not be modified with a horizontal load member without sustaining permanent damage.
*The base (or footers) of the walls were attached to the test frame using chains and boomers to resist the overturning moment as the walls were loaded.
*Positive numbers indicate transducers extending **outward**; Negative numbers indicate transducers extending **inward**
*Statistical calculations below computed using Linear Regression Analysis

First Target Load Statistical Analysis (F = 790 lbs)

58360.666	334.319
2893.002	13.203
0.976	24.292
406.9519188	10
240143.4008	5901.026379

Second Target Load Statistical Analysis (F = 1570 lbs)

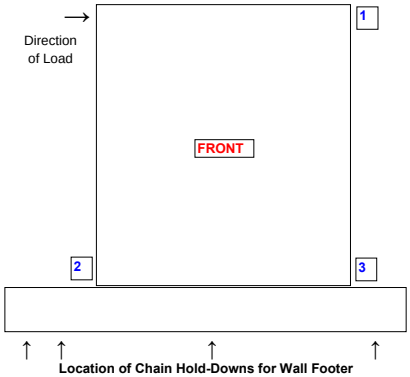
69855.67469	244.666891
1166.525075	13.3566834
0.991977961	34.3564266
3586.040795	29
4232833.635	34230.5574

Third Target Load Statistical Analysis (F = 2360 lbs)

92178.59707	7.454484286
4521.859838	71.40118346
0.896451879	196.5924108
415.5525913	48
16060515.89	1855131.646

Ultimate Failure Loading Statistical Analysis

44580.76164	2772.98188
15375.18157	847.493722
0.295954618	2315.89231
8.407259671	20
45091136.46	107267143



Transducer Locations and Designations
Transducer 1: Measures Specimen Deformation (Top-Right)
Transducer 2: Measures Specimen Rotation (Bottom-Left)
Transducer 3: Measures Specimen Slippage (Bottom-Right)

Intertek

Test:	**In-Plane Shear (Racking Load)**	Project No:	**3083303**
Date:	1/9/2008	Engineer Initials:	
Client:	**Emmedue S.P.A**		
Product ID:	**M2_8X8S3**		
Product:	Single Polystyrene PSM80 8' x 8' x 6" Shear 3 Wall Panel with Concrete Footer (Nominal 1" mortar on both sides)		
Eng/Tech(s):	V. Burgos, Intertek - San Antonio		
Test Method(s):	ICC-AC 15 - Acceptance Criteria for Concrete Floor, Roof and Wall Systems and Concrete Masonry Wall Systems Section 4.2.2.5: Wall Shear Tests (In-Plane Shear) in accordance with the general guidelines of ASTM E 72-05		
Load Rate:	**Approximately 40 lbs every 30 seconds (80 lbs/min)**		
Preload (lbs):	330		
Hydraulic Bore Area (in^2):	8.296		
Age of Wall:	103 days (at test date)		

Panel		
Width (ft)	Length (ft)	Thickness (in)
8.0	8.00	6.000

			Panel Deformation	Panel Rotation	Panel Slippage	
Load (lbs)	Load (plf)	Measurement Time	Trans 1 (in.)	Trans 2 (in.)	Trans 3 (in.)	Horizontal Deflection (in.)
FIRST LOAD TARGET (F = 790 lbs)						
332	**41**	**immediate**	**0.000**	**0.000**	**0.000**	**0.000**
373	47	after 30 seconds	-0.003	0.000	-0.001	0.002
415	52	after 30 seconds	-0.004	0.000	-0.002	0.002
456	57	after 30 seconds	-0.006	0.000	-0.002	0.003
498	62	after 30 seconds	-0.006	0.000	-0.002	0.004
539	67	after 30 seconds	-0.008	0.000	-0.002	0.006
581	73	after 30 seconds	-0.009	0.000	-0.003	0.006
622	78	after 30 seconds	-0.012	0.000	-0.004	0.008
664	83	after 30 seconds	-0.013	0.000	-0.004	0.009
705	88	after 30 seconds	-0.015	0.000	-0.005	0.010
747	93	after 30 seconds	-0.018	0.000	-0.006	0.011
788	**99**	**after 30 seconds**	**-0.019**	**-0.001**	**-0.006**	**0.012**
0	**0**	**Set after 1 min**	**0.002**	**0.000**	**-0.001**	**0.002**
SECOND LOAD TARGET (F = 1570 lbs)						
332	41	after 30 seconds	-0.004	0.000	-0.002	0.002
373	47	after 30 seconds	-0.006	0.000	-0.003	0.003
415	52	after 30 seconds	-0.007	0.000	-0.003	0.004
456	57	after 30 seconds	-0.008	0.000	-0.004	0.004
498	62	after 30 seconds	-0.009	0.000	-0.004	0.005
539	67	after 30 seconds	-0.010	0.000	-0.004	0.006
581	73	after 30 seconds	-0.012	0.000	-0.004	0.007
622	78	after 30 seconds	-0.013	0.000	-0.005	0.008
664	83	after 30 seconds	-0.015	0.000	-0.006	0.009
705	88	after 30 seconds	-0.018	0.000	-0.006	0.011
747	93	after 30 seconds	-0.018	0.000	-0.006	0.012
788	99	after 30 seconds	-0.020	0.000	-0.007	0.014
830	104	after 30 seconds	-0.022	0.000	-0.008	0.015
871	109	after 30 seconds	-0.024	-0.001	-0.008	0.016
913	114	after 30 seconds	-0.028	-0.001	-0.009	0.018
954	119	after 30 seconds	-0.031	-0.002	-0.010	0.020
996	124	after 30 seconds	-0.036	-0.003	-0.011	0.022
1037	130	after 30 seconds	-0.040	-0.004	-0.012	0.024
1078	135	after 30 seconds	-0.044	-0.006	-0.013	0.026
1120	140	after 30 seconds	-0.048	-0.006	-0.014	0.028
1161	145	after 30 seconds	-0.051	-0.008	-0.014	0.029
1203	150	after 30 seconds	-0.055	-0.010	-0.016	0.030
1244	156	after 30 seconds	-0.058	-0.011	-0.016	0.031
1286	161	after 30 seconds	-0.061	-0.012	-0.016	0.033
1327	166	after 30 seconds	-0.066	-0.015	-0.018	0.034
1369	171	after 30 seconds	-0.068	-0.016	-0.018	0.034
1410	176	after 30 seconds	-0.072	-0.017	-0.019	0.036
1452	181	after 30 seconds	-0.075	-0.019	-0.020	0.036
1493	187	after 30 seconds	-0.077	-0.019	-0.020	0.038
1535	192	after 30 seconds	-0.081	-0.021	-0.021	0.039
1576	**197**	**after 30 seconds**	**-0.083**	**-0.023**	**-0.022**	**0.038**
0	**0**	**Set after 1 min**	**-0.004**	**-0.012**	**-0.005**	**0.013**
THIRD LOAD TARGET (F = 2360 lbs)						
332	41	after 30 seconds	-0.010	-0.012	-0.006	0.008
373	47	after 30 seconds	-0.012	-0.012	-0.007	0.008
415	52	after 30 seconds	-0.013	-0.012	-0.007	0.006
456	57	after 30 seconds	-0.014	-0.012	-0.007	0.005
498	62	after 30 seconds	-0.016	-0.012	-0.008	0.004
539	67	after 30 seconds	-0.018	-0.012	-0.008	0.003
581	73	after 30 seconds	-0.019	-0.012	-0.008	0.001
622	78	after 30 seconds	-0.020	-0.012	-0.009	0.001
664	83	after 30 seconds	-0.023	-0.012	-0.010	0.001
705	88	after 30 seconds	-0.025	-0.012	-0.010	0.003
747	93	after 30 seconds	-0.027	-0.012	-0.011	0.004
788	99	after 30 seconds	-0.031	-0.012	-0.011	0.008
830	104	after 30 seconds	-0.037	-0.014	-0.013	0.010
871	109	after 30 seconds	-0.042	-0.015	-0.014	0.013
913	114	after 30 seconds	-0.046	-0.016	-0.014	0.016
954	119	after 30 seconds	-0.050	-0.018	-0.016	0.016
996	124	after 30 seconds	-0.053	-0.019	-0.016	0.018

1037	130	after 30 seconds	-0.056	-0.020	-0.017	0.020	
1078	135	after 30 seconds	-0.060	-0.021	-0.017	0.021	
1120	140	after 30 seconds	-0.063	-0.022	-0.018	0.023	
1161	145	after 30 seconds	-0.066	-0.023	-0.018	0.024	
1203	150	after 30 seconds	-0.068	-0.024	-0.020	0.025	
1244	156	after 30 seconds	-0.071	-0.024	-0.020	0.027	
1286	161	after 30 seconds	-0.074	-0.026	-0.020	0.027	
1327	166	after 30 seconds	-0.075	-0.027	-0.021	0.028	
1369	171	after 30 seconds	-0.077	-0.028	-0.021	0.029	
1410	176	after 30 seconds	-0.080	-0.029	-0.022	0.029	
1452	181	after 30 seconds	-0.082	-0.031	-0.022	0.029	
1493	187	after 30 seconds	-0.084	-0.031	-0.022	0.030	
1535	192	after 30 seconds	-0.086	-0.032	-0.023	0.030	
1576	197	after 30 seconds	-0.088	-0.033	-0.023	0.031	
1618	202	after 30 seconds	-0.090	-0.034	-0.024	0.032	
1659	207	after 30 seconds	-0.093	-0.035	-0.024	0.033	
1701	213	after 30 seconds	-0.096	-0.036	-0.025	0.034	
1742	218	after 30 seconds	-0.098	-0.037	-0.025	0.036	
1784	223	after 30 seconds	-0.099	-0.038	-0.026	0.035	
1825	228	after 30 seconds	-0.102	-0.038	-0.026	0.037	
1867	233	after 30 seconds	-0.105	-0.040	-0.027	0.038	
1908	239	after 30 seconds	-0.110	-0.041	-0.028	0.040	
1950	244	after 30 seconds	-0.112	-0.041	-0.029	0.042	
1991	249	after 30 seconds	-0.113	-0.042	-0.030	0.041	
2033	254	after 30 seconds	-0.115	-0.043	-0.030	0.042	
2074	259	after 30 seconds	-0.117	-0.044	-0.031	0.042	
2115	264	after 30 seconds	-0.118	-0.044	-0.031	0.043	
2157	270	after 30 seconds	-0.120	-0.044	-0.031	0.044	
2198	275	after 30 seconds	-0.122	-0.045	-0.032	0.045	
2240	280	after 30 seconds	-0.124	-0.046	-0.033	0.045	
2281	285	after 30 seconds	-0.126	-0.046	-0.033	0.047	
2323	290	after 30 seconds	-0.127	-0.046	-0.034	0.047	
2364	**296**	**after 30 seconds**	**-0.130**	**-0.047**	**-0.034**	**0.049**	
0	**0**	**Set after 1 min**	**-0.014**	**-0.024**	**-0.010**	**0.020**	
LOADING TO ULTIMATE FAILURE. RATE APPROX. 400 lbs/min							
415	52	after 1 minute	-0.023	-0.024	-0.012	0.013	No change, no visible damage
830	104	after 1 minute	-0.054	-0.028	-0.019	0.007	No change, no visible damage
1244	156	after 1 minute	-0.090	-0.041	-0.024	0.024	No change, no visible damage
1659	207	after 1 minute	-0.115	-0.054	-0.029	0.032	No change, no visible damage
2074	259	after 1 minute	-0.127	-0.059	-0.032	0.036	No change, no visible damage
2489	311	after 1 minute	-0.140	-0.066	-0.035	0.038	No change, no visible damage
2904	363	after 1 minute	-0.152	-0.073	-0.039	0.040	No change, no visible damage
3318	415	after 1 minute	-0.167	-0.078	-0.044	0.046	No change, no visible damage
3733	467	after 1 minute	-0.177	-0.081	-0.046	0.050	No change, no visible damage
4148	519	after 1 minute	-0.189	-0.085	-0.049	0.055	No change, no visible damage
4563	570	after 1 minute	-0.204	-0.091	-0.052	0.061	No change, no visible damage
4978	622	after 1 minute	-0.220	-0.099	-0.054	0.066	No change, no visible damage
5392	674	after 1 minute	-0.233	-0.107	-0.057	0.069	No change, no visible damage
5807	726	after 1 minute	-0.246	-0.118	-0.059	0.068	No change, no visible damage
6222	778	after 1 minute	-0.257	-0.126	-0.062	0.069	No change, no visible damage
6637	830	after 1 minute	-0.271	-0.135	-0.064	0.072	No change, no visible damage
7052	881	after 1 minute	-0.285	-0.144	-0.066	0.074	No change, no visible damage
7466	933	after 1 minute	-0.297	-0.151	-0.069	0.077	No change, no visible damage
7881	985	after 1 minute	-0.309	-0.158	-0.071	0.080	No change, no visible damage
8296	**1037**	**after 1 minute**	**-0.321**	**-0.165**	**-0.073**	**0.083**	**Test Paused. Pump switched to high side**
8711	1089	after 1 minute	-0.362	-0.196	-0.082	0.084	No change, no visible damage
9126	1141	after 1 minute	-0.371	-0.202	-0.084	0.084	No change, no visible damage
9540	1193	after 1 minute	-0.381	-0.209	-0.086	0.086	No change, no visible damage
9955	1244	after 1 minute	-0.390	-0.214	-0.088	0.088	No change, no visible damage
10370	1296	after 1 minute	-0.400	-0.219	-0.090	0.091	No change, no visible damage
10785	1348	after 1 minute	-0.407	-0.222	-0.091	0.094	No change, no visible damage
11200	1400	after 1 minute	-0.416	-0.228	-0.093	0.096	No change, no visible damage
11614	1452	after 1 minute	-0.424	-0.234	-0.094	0.095	No change, no visible damage
12029	**1504**	**after 1 minute**	**-0.433**	**-0.239**	**-0.096**	**0.098**	**Test Paused. Transducers removed**
12444	1556	after 1 minute	0.000	0.000	0.000	0.000	Test resumed. No change, no visual damage
12859	1607	after 1 minute	0.000	0.000	0.000	0.000	No change, no visible damage
13274	1659	after 1 minute	0.000	0.000	0.000	0.000	No change, no visible damage
13688	1711	after 1 minute	0.000	0.000	0.000	0.000	No change, no visible damage
14103	1763	after 1 minute	0.000	0.000	0.000	0.000	No change, no visible damage
14518	1815	after 1 minute	0.000	0.000	0.000	0.000	No change, no visible damage
14933	1867	after 1 minute	0.000	0.000	0.000	0.000	No change, no visible damage
15348	1918	after 1 minute	0.000	0.000	0.000	0.000	No change, no visible damage
15762	1970	after 1 minute	0.000	0.000	0.000	0.000	No change, no visible damage
16177	2022	after 1 minute	0.000	0.000	0.000	0.000	No change, no visible damage
16592	2074	after 1 minute	0.000	0.000	0.000	0.000	No change, no visible damage
17007	2126	after 1 minute	0.000	0.000	0.000	0.000	No change, no visible damage
17422	2178	after 1 minute	0.000	0.000	0.000	0.000	No change, no visible damage
17836	2230	after 1 minute	0.000	0.000	0.000	0.000	No change, no visible damage
18251	2281	after 1 minute	0.000	0.000	0.000	0.000	No change, no visible damage
18666	2333	after 1 minute	0.000	0.000	0.000	0.000	No change, no visible damage
19081	2385	after 1 minute	0.000	0.000	0.000	0.000	No change, no visible damage
19496	2437	after 1 minute	0.000	0.000	0.000	0.000	No change, no visible damage
19910	2489	after 1 minute	0.000	0.000	0.000	0.000	No change, no visible damage
20325	2541	after 1 minute	0.000	0.000	0.000	0.000	No change, no visible damage
20740	**2593**	**Stop**	**Test Terminated** Test stopped due to possible damage to test frame No apparent damage visible anywhere on wall and concrete foundation 0 0				

Additional Notes: The Horizontal Deflection of the panel at any load is calculated by subtracting the reading of the dial at the upper right less the sum of the readings of the other two dials **[i.e. Horizontal Deflection = Transducer 1 - (Transducer 2 + Transducer 3)]**

*During third load target cycle (F = 2360 lbs), the wall deflections zeroed out at approximately 580 lbs.
*All shear tests were performed without a top horizontal member for uniform load distribution along the specimen length. The client did not install such members into the wall during construction The constructed walls could not be modified with a horizontal load member without sustaining permanent damage.
*The base (or footers) of the walls were attached to the test frame using chains and boomers to resist the overturning moment as the walls were loaded.
*Positive numbers indicate transducers extending **outward**; Negative numbers indicate transducers extending **inward**
*Statistical calculations below computed using Linear Regression Analysis

First Target Load Statistical Analysis (F = 790 lbs)

38207.000	333.285
896.501	6.287
0.995	11.607
1816.286063	10
244697.1879	1347.239254

Second Target Load Statistical Analysis (F = 1570 lbs)

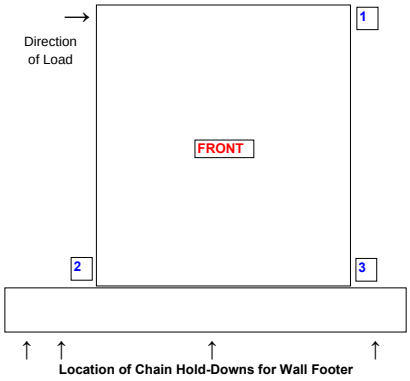
30033.18579	342.525585
590.898681	14.0516106
0.98889872	40.4158869
2583.311423	29
4219694.319	47369.8735

Third Target Load Statistical Analysis (F = 2360 lbs)

39328.37558	347.9007522
1184.683374	34.91858214
0.958263249	124.8116016
1102.065559	48
17167906.62	747740.9226

Ultimate Failure Loading Statistical Analysis

105741.6603	-1265.82666
5814.310545	334.574648
0.94838664	572.788622
330.7469155	18
108513699.1	5905562.51



Transducer Locations and Designations
Transducer 1: Measures Specimen Deformation (Top-Right)
Transducer 2: Measures Specimen Rotation (Bottom-Left)
Transducer 3: Measures Specimen Slippage (Bottom-Right)

Intertek

Test:	**In-Plane Shear (Racking Load)**	Project No:	**3083303**
Date:	1/10/2008	Engineer Initials:	
Client:	**Emmedue S.P.A**		
Product ID:	**M2_8X14S1**		
Product:	Single Polystyrene PSM80 8' x 14' x 6" Shear 1 Wall Panel with Concrete Footer (Nominal 1" mortar on both sides)		
Eng/Tech(s):	V. Burgos, Intertek - San Antonio		
Test Method(s):	ICC-AC 15 - Acceptance Criteria for Concrete Floor, Roof and Wall Systems and Concrete Masonry Wall Systems Section 4.2.2.5: Wall Shear Tests (In-Plane Shear) in accordance with the general guidelines of ASTM E 72-05		
Load Rate:	**Approximately 40 lbs every 30 seconds (80 lbs/min)**		
Preload (lbs):	330		
Hydraulic Bore Area (in^2):	8.296		
Age of Wall:	100 days (at test date)		

Panel		
Width (ft)	Length (ft)	Thickness (in)
8.0	14.00	6.000

			Panel Deformation	Panel Rotation	Panel Slippage	
Load (lbs)	Load (plf)	Measurement Time	Trans 1 (in.)	Trans 2 (in.)	Trans 3 (in.)	Horizontal Deflection (in.)
FIRST LOAD TARGET (F = 790 lbs)						
332	**41**	**immediate**	**0.000**	**0.000**	**0.000**	**0.000**
373	47	after 30 seconds	-0.003	0.000	0.000	0.002
415	52	after 30 seconds	-0.006	0.000	-0.002	0.004
456	57	after 30 seconds	-0.009	0.000	-0.003	0.006
498	62	after 30 seconds	-0.011	0.000	-0.004	0.007
539	67	after 30 seconds	-0.015	0.000	-0.005	0.010
581	73	after 30 seconds	-0.018	0.000	-0.006	0.012
622	78	after 30 seconds	-0.021	0.000	-0.008	0.013
664	83	after 30 seconds	-0.026	0.000	-0.010	0.016
705	88	after 30 seconds	-0.030	0.000	-0.013	0.018
747	93	after 30 seconds	-0.034	0.000	-0.015	0.019
788	**99**	**after 30 seconds**	**-0.040**	**0.000**	**-0.018**	**0.022**
0	**0**	**Set after 1 min**	**-0.001**	**0.000**	**-0.012**	**0.012**
SECOND LOAD TARGET (F = 1570 lbs)						
332	41	after 30 seconds	-0.015	0.000	-0.014	0.001
373	47	after 30 seconds	-0.018	0.000	-0.015	0.002
415	52	after 30 seconds	-0.020	0.000	-0.015	0.004
456	57	after 30 seconds	-0.022	0.000	-0.016	0.006
498	62	after 30 seconds	-0.024	0.000	-0.016	0.008
539	67	after 30 seconds	-0.027	0.000	-0.017	0.010
581	73	after 30 seconds	-0.029	0.000	-0.018	0.011
622	78	after 30 seconds	-0.032	0.000	-0.018	0.013
664	83	after 30 seconds	-0.034	0.000	-0.019	0.015
705	88	after 30 seconds	-0.038	-0.001	-0.020	0.017
747	93	after 30 seconds	-0.041	-0.001	-0.022	0.018
788	99	after 30 seconds	-0.046	-0.001	-0.024	0.020
830	104	after 30 seconds	-0.050	-0.001	-0.028	0.022
871	109	after 30 seconds	-0.056	-0.001	-0.031	0.024
913	114	after 30 seconds	-0.064	-0.001	-0.037	0.026
954	119	after 30 seconds	-0.073	-0.001	-0.044	0.028
996	124	after 30 seconds	-0.084	-0.001	-0.052	0.031
1037	130	after 30 seconds	-0.095	-0.023	-0.062	0.010
1078	135	after 30 seconds	-0.104	-0.023	-0.070	0.012
1120	140	after 30 seconds	-0.113	-0.023	-0.077	0.014
1161	145	after 30 seconds	-0.122	-0.024	-0.084	0.014
1203	150	after 30 seconds	-0.127	-0.024	-0.087	0.017
1244	156	after 30 seconds	-0.132	-0.025	-0.090	0.018
1286	161	after 30 seconds	-0.138	-0.025	-0.093	0.020
1327	166	after 30 seconds	-0.142	-0.025	-0.095	0.022
1369	171	after 30 seconds	-0.148	-0.035	-0.098	0.015
1410	176	after 30 seconds	-0.152	-0.035	-0.100	0.017
1452	181	after 30 seconds	-0.157	-0.035	-0.103	0.020
1493	187	after 30 seconds	-0.162	-0.035	-0.106	0.022
1535	192	after 30 seconds	-0.167	-0.035	-0.107	0.025
1576	**197**	**after 30 seconds**	**-0.171**	**-0.045**	**-0.110**	**0.017**
0	**0**	**Set after 1 min**	**-0.077**	**-0.035**	**-0.092**	**0.050**
THIRD LOAD TARGET (F = 2360 lbs)						
332	41	after 30 seconds	-0.091	-0.035	-0.092	0.036
373	47	after 30 seconds	-0.095	-0.035	-0.093	0.033
415	52	after 30 seconds	-0.097	-0.035	-0.093	0.031
456	57	after 30 seconds	-0.099	-0.035	-0.094	0.030
498	62	after 30 seconds	-0.101	-0.035	-0.094	0.028
539	67	after 30 seconds	-0.103	-0.035	-0.094	0.026
581	73	after 30 seconds	-0.104	-0.036	-0.094	0.026
622	78	after 30 seconds	-0.107	-0.035	-0.095	0.024
664	83	after 30 seconds	-0.109	-0.036	-0.096	0.022
705	88	after 30 seconds	-0.112	-0.036	-0.096	0.020
747	93	after 30 seconds	-0.114	-0.036	-0.096	0.018
788	99	after 30 seconds	-0.116	-0.036	-0.096	0.016
830	104	after 30 seconds	-0.119	-0.036	-0.097	0.014
871	109	after 30 seconds	-0.120	-0.036	-0.097	0.013
913	114	after 30 seconds	-0.122	-0.036	-0.098	0.012
954	119	after 30 seconds	-0.125	-0.036	-0.098	0.009
996	124	after 30 seconds	-0.128	-0.036	-0.098	0.006

1037	130	after 30 seconds	-0.130	-0.036	-0.099	0.005	
1078	135	after 30 seconds	-0.133	-0.036	-0.100	0.002	
1120	140	after 30 seconds	-0.136	-0.036	-0.100	0.000	
1161	145	after 30 seconds	-0.139	-0.036	-0.101	0.002	
1203	150	after 30 seconds	-0.142	-0.036	-0.101	0.004	
1244	156	after 30 seconds	-0.144	-0.036	-0.102	0.006	
1286	161	after 30 seconds	-0.147	-0.036	-0.103	0.008	
1327	166	after 30 seconds	-0.151	-0.036	-0.103	0.012	
1369	171	after 30 seconds	-0.155	-0.037	-0.105	0.013	
1410	176	after 30 seconds	-0.158	-0.037	-0.106	0.016	
1452	181	after 30 seconds	-0.161	-0.037	-0.107	0.017	
1493	187	after 30 seconds	-0.164	-0.038	-0.108	0.019	
1535	192	after 30 seconds	-0.168	-0.038	-0.109	0.021	
1576	197	after 30 seconds	-0.172	-0.038	-0.110	0.023	
1618	202	after 30 seconds	-0.176	-0.040	-0.112	0.024	
1659	207	after 30 seconds	-0.181	-0.052	-0.113	0.016	
1701	213	after 30 seconds	-0.187	-0.052	-0.116	0.020	
1742	218	after 30 seconds	-0.193	-0.052	-0.117	0.024	
1784	223	after 30 seconds	-0.199	-0.055	-0.119	0.025	
1825	228	after 30 seconds	-0.205	-0.058	-0.122	0.026	
1867	233	after 30 seconds	-0.212	-0.059	-0.123	0.030	
1908	239	after 30 seconds	-0.220	-0.061	-0.125	0.033	
1950	244	after 30 seconds	-0.226	-0.062	-0.127	0.037	
1991	249	after 30 seconds	-0.234	-0.067	-0.130	0.038	
2033	254	after 30 seconds	-0.243	-0.068	-0.133	0.042	
2074	259	after 30 seconds	-0.250	-0.071	-0.137	0.042	
2115	264	after 30 seconds	-0.258	-0.076	-0.140	0.042	
2157	270	after 30 seconds	-0.264	-0.076	-0.142	0.047	
2198	275	after 30 seconds	-0.271	-0.081	-0.144	0.046	
2240	280	after 30 seconds	-0.288	-0.084	-0.149	0.055	
2281	285	after 30 seconds	-0.296	-0.086	-0.152	0.058	
2323	290	after 30 seconds	-0.304	-0.087	-0.155	0.062	
2364	**296**	**after 30 seconds**	**-0.310**	**-0.092**	**-0.160**	**0.058**	
0	**0**	**Set after 1 min**	**-0.118**	**-0.070**	**-0.128**	**0.079**	
LOADING TO ULTIMATE FAILURE. RATE APPROX. 400 lbs/min							
415	52	after 1 minute	-0.133	-0.069	-0.129	0.065	No change, no visible damage
830	104	after 1 minute	-0.154	-0.070	-0.133	0.048	No change, no visible damage
1244	156	after 1 minute	-0.183	-0.070	-0.139	0.026	No change, no visible damage
1659	207	after 1 minute	-0.226	-0.075	-0.147	0.005	No change, no visible damage
2074	259	after 1 minute	-0.279	-0.102	-0.157	0.020	No change, no visible damage
2489	311	after 1 minute	-0.325	-0.113	-0.169	0.043	No change, no visible damage
2904	363	after 1 minute	-0.506	-0.208	-0.202	0.096	Loud noise heard. Wall showed some movement. No change, no visual damage
3318	415	after 1 minute	-0.520	-0.213	-0.206	0.102	No change, no visible damage
3733	467	after 1 minute	-0.598	-0.245	-0.216	0.136	No change, no visible damage
4148	519	after 1 minute	-0.666	-0.280	-0.224	0.162	No change, no visible damage
4563	570	after 1 minute	-0.725	-0.304	-0.231	0.190	No change, no visible damage
4978	622	after 1 minute	-0.775	-0.328	-0.237	0.210	No change, no visible damage
5392	674	after 1 minute	-0.846	-0.357	-0.244	0.245	No change, no visible damage
5807	726	after 1 minute	-0.891	-0.376	-0.247	0.267	No change, no visible damage
6222	778	after 1 minute	-0.950	-0.400	-0.253	0.297	No change, no visible damage
6637	830	after 1 minute	-0.985	-0.416	-0.256	0.314	No change, no visible damage
7052	881	after 1 minute	-1.022	-0.431	-0.259	0.332	No change, no visible damage
7466	933	after 1 minute	-1.060	-0.444	-0.265	0.351	No change, no visible damage
7881	985	after 1 minute	-1.098	-0.462	-0.268	0.369	No change, no visible damage
8296	1037	after 1 minute	-1.130	-0.472	-0.270	0.388	No change, no visible damage
8711	1089	after 1 minute	-1.158	-0.482	-0.272	0.405	No change, no visible damage
9126	**1141**	**after 1 minute**	**-1.162**	**-0.484**	**-0.273**	**0.406**	**Test paused. All Transducers removed**
9540	1193	after 1 minute	0.000	0.000	0.000	0.000	Test resumed. Pop heard. No visual damage
9955	1244	after 1 minute	0.000	0.000	0.000	0.000	No change, no visible damage
10370	1296	after 1 minute	0.000	0.000	0.000	0.000	No change, no visible damage
10785	1348	after 1 minute	0.000	0.000	0.000	0.000	No change, no visible damage
11200	1400	after 1 minute	0.000	0.000	0.000	0.000	No change, no visible damage
11614	1452	after 1 minute	0.000	0.000	0.000	0.000	No change, no visible damage
12029	1504	after 1 minute	0.000	0.000	0.000	0.000	No change, no visible damage
12444	1556	after 1 minute	0.000	0.000	0.000	0.000	No change, no visible damage
12859	1607	after 1 minute	0.000	0.000	0.000	0.000	No change, no visible damage
13274	1659	after 1 minute	0.000	0.000	0.000	0.000	No change, no visible damage
13688	1711	after 1 minute	0.000	0.000	0.000	0.000	No change, no visible damage
14103	1763	after 1 minute	0.000	0.000	0.000	0.000	No change, no visible damage
14518	1815	after 1 minute	0.000	0.000	0.000	0.000	No change, no visible damage
14933	1867	after 1 minute	0.000	0.000	0.000	0.000	No change, no visible damage
15348	1918	after 1 minute	0.000	0.000	0.000	0.000	No change, no visible damage
15762	1970	after 1 minute	0.000	0.000	0.000	0.000	No change, no visible damage
16177	2022	after 1 minute	0.000	0.000	0.000	0.000	No change, no visible damage
16592	2074	after 1 minute	0.000	0.000	0.000	0.000	No change, no visible damage
17007	2126	after 1 minute	0.000	0.000	0.000	0.000	No change, no visible damage
17422	2178	after 1 minute	0.000	0.000	0.000	0.000	No change, no visible damage
17836	2230	after 1 minute	0.000	0.000	0.000	0.000	No change, no visible damage
18251	2281	after 1 minute	0.000	0.000	0.000	0.000	No change, no visible damage
18666	2333	after 1 minute	0.000	0.000	0.000	0.000	No change, no visible damage
19081	2385	after 1 minute	0.000	0.000	0.000	0.000	Loud pops heard, no visual damage
19496	2437	after 1 minute	0.000	0.000	0.000	0.000	Additional pops heard, no visual damage
19910	2489	after 1 minute	0.000	0.000	0.000	0.000	Additional popping and cracking. Wall inspected. Several surface cracks present on fron side of wall
20325	2541	after 1 minute	0.000	0.000	0.000	0.000	No change, no visible damage
20740	2593	after 1 minute	0.000	0.000	0.000	0.000	No change, no visible damage
21155	2644	after 1 minute	0.000	0.000	0.000	0.000	No change, no visible damage
21570	2696	after 1 minute	0.000	0.000	0.000	0.000	No change, no visible damage
21984	2748	after 1 minute	0.000	0.000	0.000	0.000	No change, no visible damage
22399	2800	after 1 minute	0.000	0.000	0.000	0.000	Popping heard due to test frame moving, all OK. Wall inspected, all OK
22814	2852	after 1 minute	0.000	0.000	0.000	0.000	No change, no visible damage
23229	2904	after 1 minute	0.000	0.000	0.000	0.000	No change, no visible damage
23644	2955	after 1 minute	0.000	0.000	0.000	0.000	No change, no visible damage
24058	3007	after 1 minute	0.000	0.000	0.000	0.000	No change, no visible damage
24473	**3059**	**Stop**	**Test Terminated** Test stopped. Hydraulic cylinder pressure maxed out Foundation shearing present at rear of foundation, approx 6" from the end. Shearing appears to have formed where wall tie-downs for the footer are located Additional shearing 13" from the end, in the shape of "gills", approx 8" long, between 4 and 5 of them. Additional two shear cracks found between 10" -14" from the front end of the footer. The wall had one visual crack located at the top-left (location of applied load). Crack was 24" wide X 36" long (dimensioned from the top). No additional visible damage present 0				

Additional Notes: The Horizontal Deflection of the panel at any load is calculated by subtracting the reading of the dial at the upper right less the sum of the readings of the other two dials **[i.e. Horizontal Deflection = Transducer 1 - (Transducer 2 + Transducer 3)]**

*All shear tests were performed without a top horizontal member for uniform load distribution along the specimen length. The client did not install such members into the wall during construction
The constructed walls could not be modified with a horizontal load member without sustaining permanent damage.
The base (or footers) of the walls were attached to the test frame using chains and boomers to resist the overturning moment as the walls were loaded.
*Positive numbers indicate transducers extending **outward**; Negative numbers indicate transducers extending **inward**
*Statistical calculations below computed using Linear Regression Analysis

First Target Load Statistical Analysis (F = 790 lbs)

21453.027	329.002
340.386	4.310
0.997	7.860
3972.234368	10
245426.572	617.855215

Second Target Load Statistical Analysis (F = 1570 lbs)

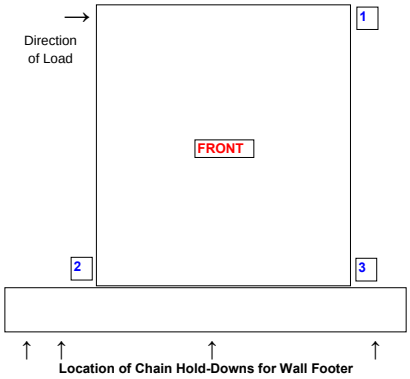
29928.72892	474.79416
7744.43254	136.057651
0.33992992	311.645322
14.93472889	29
1450502.791	2816561.4

Third Target Load Statistical Analysis (F = 2360 lbs)

21533.37737	815.2781103
4682.160827	136.3967374
0.305867234	508.9989762
21.1510362	48
5479809.567	12435837.97

Ultimate Failure Loading Statistical Analysis

18854.35161	933.51085
890.2647087	218.175423
0.957312677	570.252885
448.5231758	20
145854512.9	6503767.06



Transducer Locations and Designations
Transducer 1: Measures Specimen Deformation (Top-Right)
Transducer 2: Measures Specimen Rotation (Bottom-Left)
Transducer 3: Measures Specimen Slippage (Bottom-Right)

Intertek

Test:	**In-Plane Shear (Racking Load)**	Project No:	**3083303**
Date:	1/16/2008	Engineer Initials:	
Client:	**Emmedue S.P.A**		
Product ID:	**M2_8X14S2**		
Product:	Single Polystyrene PSM80 8' x 14' x 6" Shear 2 Wall Panel with Concrete Footer (Nominal 1" mortar on both sides)		
Eng/Tech(s):	V. Burgos, Intertek - San Antonio		
Test Method(s):	ICC-AC 15 - Acceptance Criteria for Concrete Floor, Roof and Wall Systems and Concrete Masonry Wall Systems Section 4.2.2.5: Wall Shear Tests (In-Plane Shear) in accordance with the general guidelines of ASTM E 72-05		
Load Rate:	**Approximately 40 lbs every 30 seconds (80 lbs/min)**		
Preload (lbs):	330		
Hydraulic Bore Area (in^2):	8.296		
Age of Wall:	106 days (at test date)		

Panel		
Width (ft)	Length (ft)	Thickness (in)
8.0	14.00	6.000

			Panel Deformation	Panel Rotation	Panel Slippage	
Load (lbs)	Load (plf)	Measurement Time	Trans 1 (in.)	Trans 2 (in.)	Trans 3 (in.)	Horizontal Deflection (in.)
FIRST LOAD TARGET (F = 790 lbs)						
332	**41**	**immediate**	**0.000**	**0.000**	**0.000**	**0.000**
373	47	after 30 seconds	-0.001	0.000	-0.001	0.000
415	52	after 30 seconds	-0.004	0.000	-0.002	0.002
456	57	after 30 seconds	-0.005	0.000	-0.002	0.004
498	62	after 30 seconds	-0.006	0.000	-0.002	0.004
539	67	after 30 seconds	-0.007	0.000	-0.002	0.005
581	73	after 30 seconds	-0.010	0.000	-0.002	0.008
622	78	after 30 seconds	-0.014	0.000	-0.004	0.009
664	83	after 30 seconds	-0.016	0.000	-0.004	0.012
705	88	after 30 seconds	-0.016	0.000	-0.004	0.011
747	93	after 30 seconds	-0.018	0.000	-0.005	0.013
788	**99**	**after 30 seconds**	**-0.020**	**0.000**	**-0.005**	**0.015**
0	**0**	**Set after 1 min**	**0.007**	**0.000**	**0.000**	**0.007**
SECOND LOAD TARGET (F = 1570 lbs)						
332	41	after 30 seconds	0.002	0.000	0.000	0.003
373	47	after 30 seconds	0.000	0.000	-0.001	0.001
415	52	after 30 seconds	-0.003	0.000	-0.002	0.001
456	57	after 30 seconds	-0.005	0.000	-0.002	0.003
498	62	after 30 seconds	-0.006	0.000	-0.002	0.003
539	67	after 30 seconds	-0.008	0.000	-0.003	0.005
581	73	after 30 seconds	-0.010	0.000	-0.003	0.007
622	78	after 30 seconds	-0.013	0.000	-0.004	0.009
664	83	after 30 seconds	-0.014	0.000	-0.004	0.010
705	88	after 30 seconds	-0.016	0.000	-0.004	0.012
747	93	after 30 seconds	-0.018	0.000	-0.004	0.013
788	99	after 30 seconds	-0.020	0.000	-0.005	0.014
830	104	after 30 seconds	-0.020	0.000	-0.005	0.015
871	109	after 30 seconds	-0.022	0.000	-0.006	0.016
913	114	after 30 seconds	-0.025	0.000	-0.006	0.018
954	119	after 30 seconds	-0.026	0.000	-0.007	0.019
996	124	after 30 seconds	-0.028	0.000	-0.008	0.020
1037	130	after 30 seconds	-0.031	0.000	-0.008	0.023
1078	135	after 30 seconds	-0.032	0.000	-0.008	0.024
1120	140	after 30 seconds	-0.035	0.000	-0.009	0.026
1161	145	after 30 seconds	-0.036	0.000	-0.009	0.027
1203	150	after 30 seconds	-0.038	0.000	-0.010	0.028
1244	156	after 30 seconds	-0.040	0.000	-0.010	0.029
1286	161	after 30 seconds	-0.042	0.000	-0.011	0.031
1327	166	after 30 seconds	-0.045	0.000	-0.012	0.032
1369	171	after 30 seconds	-0.046	0.000	-0.012	0.033
1410	176	after 30 seconds	-0.049	0.000	-0.012	0.036
1452	181	after 30 seconds	-0.050	0.000	-0.013	0.036
1493	187	after 30 seconds	-0.052	0.000	-0.013	0.038
1535	192	after 30 seconds	-0.054	0.000	-0.014	0.040
1576	**197**	**after 30 seconds**	**-0.058**	**0.000**	**-0.015**	**0.042**
0	**0**	**Set after 1 min**	**0.003**	**0.000**	**-0.001**	**0.004**
THIRD LOAD TARGET (F = 2360 lbs)						
332	41	after 30 seconds	0.003	0.000	-0.001	0.004
373	47	after 30 seconds	0.002	0.000	-0.001	0.003
415	52	after 30 seconds	-0.004	0.000	-0.002	0.002
456	57	after 30 seconds	-0.007	0.000	-0.003	0.004
498	62	after 30 seconds	-0.010	0.000	-0.003	0.006
539	67	after 30 seconds	-0.012	0.000	-0.004	0.008
581	73	after 30 seconds	-0.014	0.000	-0.004	0.009
622	78	after 30 seconds	-0.016	0.000	-0.004	0.011
664	83	after 30 seconds	-0.018	0.000	-0.005	0.012
705	88	after 30 seconds	-0.019	0.000	-0.005	0.014
747	93	after 30 seconds	-0.022	0.000	-0.006	0.016
788	99	after 30 seconds	-0.023	0.000	-0.006	0.016
830	104	after 30 seconds	-0.025	0.000	-0.007	0.018
871	109	after 30 seconds	-0.027	0.000	-0.007	0.019
913	114	after 30 seconds	-0.029	0.000	-0.008	0.021
954	119	after 30 seconds	-0.030	0.000	-0.008	0.022
996	124	after 30 seconds	-0.031	0.000	-0.008	0.023

1037	130	after 30 seconds	-0.034	0.000	-0.009	0.024	
1078	135	after 30 seconds	-0.036	0.000	-0.010	0.026	
1120	140	after 30 seconds	-0.036	0.000	-0.010	0.026	
1161	145	after 30 seconds	-0.039	0.000	-0.010	0.028	
1203	150	after 30 seconds	-0.040	0.000	-0.010	0.030	
1244	156	after 30 seconds	-0.040	0.000	-0.011	0.029	
1286	161	after 30 seconds	-0.044	0.000	-0.012	0.032	
1327	166	after 30 seconds	-0.046	0.000	-0.012	0.034	
1369	171	after 30 seconds	-0.048	0.000	-0.012	0.035	
1410	176	after 30 seconds	-0.050	0.000	-0.013	0.036	
1452	181	after 30 seconds	-0.051	0.000	-0.014	0.037	
1493	187	after 30 seconds	-0.053	0.000	-0.014	0.038	
1535	192	after 30 seconds	-0.054	0.000	-0.014	0.040	
1576	197	after 30 seconds	-0.057	0.000	-0.015	0.042	
1618	202	after 30 seconds	-0.058	0.000	-0.016	0.042	
1659	207	after 30 seconds	-0.060	-0.001	-0.016	0.044	
1701	213	after 30 seconds	-0.063	0.000	-0.016	0.046	
1742	218	after 30 seconds	-0.063	0.000	-0.016	0.046	
1784	223	after 30 seconds	-0.067	-0.001	-0.018	0.048	
1825	228	after 30 seconds	-0.068	-0.001	-0.018	0.050	
1867	233	after 30 seconds	-0.072	-0.001	-0.019	0.052	
1908	239	after 30 seconds	-0.072	-0.001	-0.019	0.052	
1950	244	after 30 seconds	-0.075	-0.001	-0.019	0.055	
1991	249	after 30 seconds	-0.075	-0.001	-0.019	0.055	
2033	254	after 30 seconds	-0.078	-0.002	-0.020	0.056	
2074	259	after 30 seconds	-0.080	-0.002	-0.020	0.058	
2115	264	after 30 seconds	-0.083	-0.002	-0.020	0.061	
2157	270	after 30 seconds	-0.086	-0.002	-0.020	0.064	
2198	275	after 30 seconds	-0.089	-0.002	-0.021	0.066	
2240	280	after 30 seconds	-0.090	-0.002	-0.021	0.067	
2281	285	after 30 seconds	-0.092	-0.002	-0.022	0.068	
2323	290	after 30 seconds	-0.094	-0.002	-0.022	0.070	
2364	**296**	**after 30 seconds**	**-0.096**	**-0.002**	**-0.022**	**0.072**	
0	**0**	**Set after 1 min**	**-0.005**	**-0.001**	**0.000**	**0.005**	
LOADING TO ULTIMATE FAILURE. RATE APPROX. 400 lbs/min							
415	52	after 1 minute	-0.015	0.000	-0.001	0.013	No change, no visible damage
830	104	after 1 minute	-0.031	0.000	-0.005	0.026	No change, no visible damage
1244	156	after 1 minute	-0.049	0.000	-0.010	0.039	No change, no visible damage
1659	207	after 1 minute	-0.068	0.000	-0.015	0.052	No change, no visible damage
2074	259	after 1 minute	-0.085	0.000	-0.019	0.065	No change, no visible damage
2489	311	after 1 minute	-0.104	-0.001	-0.023	0.080	No change, no visible damage
2904	363	after 1 minute	-0.126	-0.003	-0.025	0.098	No change, no visible damage
3318	415	after 1 minute	-0.152	-0.007	-0.027	0.118	No change, no visible damage
3733	467	after 1 minute	-0.186	-0.010	-0.028	0.148	No change, no visible damage
4148	519	after 1 minute	-0.242	-0.024	-0.032	0.186	No change, no visible damage
4563	570	after 1 minute	-0.302	-0.039	-0.040	0.224	No change, no visible damage
4978	622	after 1 minute	-0.359	-0.053	-0.048	0.258	No change, no visible damage
5392	674	after 1 minute	-0.399	-0.062	-0.054	0.283	No change, no visible damage
5807	726	after 1 minute	-0.644	-0.094	-0.250	0.300	Loud pop heard. Foundation (footer) damage at approx midpoint of wall. Photos taken
6222	778	after 1 minute	-0.667	-0.095	-0.254	0.318	No change, no visible damage
6637	830	after 1 minute	-0.697	-0.103	-0.260	0.334	No change, no visible damage
7052	881	after 1 minute	-0.728	-0.107	-0.267	0.354	No change, no visible damage
7466	933	after 1 minute	-0.761	-0.111	-0.275	0.374	No change, no visible damage
7881	985	after 1 minute	-0.800	-0.122	-0.287	0.391	No change, no visible damage
8296	**1037**	**after 1 minute**	**-0.850**	**-0.134**	**-0.308**	**0.408**	**Test Paused. All Transducers Removed**
8711	1089	after 1 minute	0.000	0.000	0.000	0.000	Test resumed. Popping of wall continued. No visual damage present
9126	1141	after 1 minute	0.000	0.000	0.000	0.000	No change, no visible damage
9540	1193	after 1 minute	0.000	0.000	0.000	0.000	No change, no visible damage
9955	1244	after 1 minute	0.000	0.000	0.000	0.000	No change, no visible damage
10370	1296	after 1 minute	0.000	0.000	0.000	0.000	No change, no visible damage
10785	1348	after 1 minute	0.000	0.000	0.000	0.000	No change, no visible damage
11200	1400	after 1 minute	0.000	0.000	0.000	0.000	No change, no visible damage
11614	1452	after 1 minute	0.000	0.000	0.000	0.000	No change, no visible damage
12029	1504	after 1 minute	0.000	0.000	0.000	0.000	No change, no visible damage
12444	1556	after 1 minute	0.000	0.000	0.000	0.000	No change, no visible damage
12859	1607	after 1 minute	0.000	0.000	0.000	0.000	No change, no visible damage
13274	1659	after 1 minute	0.000	0.000	0.000	0.000	No change, no visible damage
13688	1711	after 1 minute	0.000	0.000	0.000	0.000	No change, no visible damage
14103	1763	after 1 minute	0.000	0.000	0.000	0.000	No change, no visible damage
14518	1815	after 1 minute	0.000	0.000	0.000	0.000	No change, no visible damage
14933	1867	after 1 minute	0.000	0.000	0.000	0.000	No change, no visible damage
15348	1918	after 1 minute	0.000	0.000	0.000	0.000	No change, no visible damage
15762	1970	after 1 minute	0.000	0.000	0.000	0.000	No change, no visible damage
16177	2022	after 1 minute	0.000	0.000	0.000	0.000	No change, no visible damage
16592	2074	after 1 minute	0.000	0.000	0.000	0.000	No change, no visible damage
17007	2126	after 1 minute	0.000	0.000	0.000	0.000	No change, no visible damage
17422	2178	after 1 minute	0.000	0.000	0.000	0.000	No change, no visible damage
17836	2230	after 1 minute	0.000	0.000	0.000	0.000	No change, no visible damage
18251	2281	after 1 minute	0.000	0.000	0.000	0.000	No change, no visible damage
18666	2333	after 1 minute	0.000	0.000	0.000	0.000	No change, no visible damage
19081	2385	after 1 minute	0.000	0.000	0.000	0.000	No change, no visible damage
19496	2437	after 1 minute	0.000	0.000	0.000	0.000	No change, no visible damage
19910	2489	after 1 minute	0.000	0.000	0.000	0.000	No change, no visible damage
20325	2541	after 1 minute	0.000	0.000	0.000	0.000	No change, no visible damage
20740	2593	after 1 minute	0.000	0.000	0.000	0.000	No change, no visible damage
21155	2644	after 1 minute	0.000	0.000	0.000	0.000	No change, no visible damage
21570	2696	after 1 minute	0.000	0.000	0.000	0.000	No change, no visible damage
21984	2748	after 1 minute	0.000	0.000	0.000	0.000	No change, no visible damage
22399	2800	after 1 minute	0.000	0.000	0.000	0.000	No change, no visible damage
22814	2852	after 1 minute	0.000	0.000	0.000	0.000	No change, no visible damage
23229	2904	after 1 minute	0.000	0.000	0.000	0.000	No change, no visible damage
23644	2955	after 1 minute	0.000	0.000	0.000	0.000	No change, no visible damage
24058	3007	after 1 minute	0.000	0.000	0.000	0.000	No change, no visible damage
24473	**3059**	**Stop**	**Test Terminated** Test stopped. Hydraulic cylinder pressure maxed out No apparent damage on wall. Foundation crack present from the end of the footer, 7" from footer end (away from the point of load) Secondary and tertiary concrete breaks on the footer approx 33" and 65" from end of wall (away from the point of load) All cracks were found on the rear side of the wall footer No additional visible damage present 0				

Additional Notes: The Horizontal Deflection of the panel at any load is calculated by subtracting the reading of the dial at the upper right less the sum of the readings of the other two dials **[i.e. Horizontal Deflection = Transducer 1 - (Transducer 2 + Transducer 3)]**

*All shear tests were performed without a top horizontal member for uniform load distribution along the specimen length. The client did not install such members into the wall during construction
The constructed walls could not be modified with a horizontal load member without sustaining permanent damage.
The base (or footers) of the walls were attached to the test frame using chains and boomers to resist the overturning moment as the walls were loaded.
*Positive numbers indicate transducers extending **outward**; Negative numbers indicate transducers extending **inward**
*Statistical calculations below computed using Linear Regression Analysis

First Target Load Statistical Analysis (F = 790 lbs)

29158.321	357.816
1277.054	10.816
0.981	21.519
521.3224928	10
241413.6346	4630.792607

Second Target Load Statistical Analysis (F = 1570 lbs)

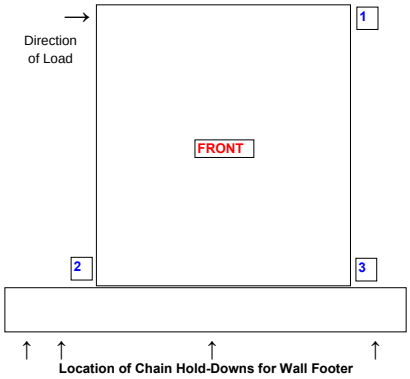
29674.42931	363.997477
413.7487217	9.71039023
0.994393846	28.7209031
5143.887016	29
4243142.374	23921.818

Third Target Load Statistical Analysis (F = 2360 lbs)

29551.64092	322.0670271
278.9637872	11.20736381
0.995740878	39.87086452
11221.92964	48
17839342.62	76304.9202

Ultimate Failure Loading Statistical Analysis

10789.97076	2773.85923
3466.091646	802.80919
0.326391083	2265.28029
9.69081834	20
49728383.92	102629896



Transducer Locations and Designations
Transducer 1: Measures Specimen Deformation (Top-Right)
Transducer 2: Measures Specimen Rotation (Bottom-Left)
Transducer 3: Measures Specimen Slippage (Bottom-Right)

Intertek

Test:	**In-Plane Shear (Racking Load)**	Project No:	**3083303**
Date:	1/17/2008	Engineer Initials:	
Client:	**Emmedue S.P.A**		
Product ID:	**M2_8X14S3**		
Product:	Single Polystyrene PSM80 8' x 14' x 6" Shear 3 Wall Panel with Concrete Footer (Nominal 1" mortar on both sides)		
Eng/Tech(s):	V. Burgos, Intertek - San Antonio		
Test Method(s):	ICC-AC 15 - Acceptance Criteria for Concrete Floor, Roof and Wall Systems and Concrete Masonry Wall Systems Section 4.2.2.5: Wall Shear Tests (In-Plane Shear) in accordance with the general guidelines of ASTM E 72-05		
Load Rate:	**Approximately 40 lbs every 30 seconds (80 lbs/min)**		
Preload (lbs):	330		
Hydraulic Bore Area (in^2):	8.296		
Age of Wall:	107 days (at test date)		

Panel		
Width (ft)	Length (ft)	Thickness (in)
8.0	14.00	6.000

			Panel Deformation	Panel Rotation	Panel Slippage	
Load (lbs)	Load (plf)	Measurement Time	Trans 1 (in.)	Trans 2 (in.)	Trans 3 (in.)	Horizontal Deflection (in.)
FIRST LOAD TARGET (F = 790 lbs)						
332	**41**	**immediate**	**0.000**	**0.000**	**0.000**	**0.000**
373	47	after 30 seconds	0.000	0.000	0.000	0.000
415	52	after 30 seconds	0.000	0.000	0.000	0.000
456	57	after 30 seconds	0.000	0.000	0.000	0.000
498	62	after 30 seconds	-0.001	0.000	0.000	0.002
539	67	after 30 seconds	-0.004	0.000	-0.001	0.003
581	73	after 30 seconds	-0.003	0.000	0.000	0.003
622	78	after 30 seconds	-0.005	0.000	-0.001	0.004
664	83	after 30 seconds	-0.006	0.000	-0.001	0.006
705	88	after 30 seconds	-0.009	0.000	-0.001	0.008
747	93	after 30 seconds	-0.011	0.000	-0.002	0.009
788	**99**	**after 30 seconds**	**-0.014**	**0.000**	**-0.003**	**0.010**
0	**0**	**Set after 1 min**	**0.018**	**0.000**	**0.004**	**0.014**
SECOND LOAD TARGET (F = 1570 lbs)						
332	41	after 30 seconds	0.012	0.000	0.002	0.009
373	47	after 30 seconds	0.010	0.000	0.002	0.008
415	52	after 30 seconds	0.007	0.000	0.002	0.006
456	57	after 30 seconds	0.006	0.000	0.002	0.004
498	62	after 30 seconds	0.004	0.000	0.001	0.003
539	67	after 30 seconds	0.002	0.000	0.000	0.002
581	73	after 30 seconds	0.000	0.000	0.000	0.001
622	78	after 30 seconds	-0.002	0.000	-0.001	0.002
664	83	after 30 seconds	-0.005	0.000	-0.001	0.004
705	88	after 30 seconds	-0.008	0.000	-0.002	0.006
747	93	after 30 seconds	-0.010	0.000	-0.002	0.008
788	99	after 30 seconds	-0.011	0.000	-0.003	0.008
830	104	after 30 seconds	-0.011	0.000	-0.003	0.008
871	109	after 30 seconds	-0.014	0.000	-0.004	0.011
913	114	after 30 seconds	-0.016	0.000	-0.004	0.012
954	119	after 30 seconds	-0.017	0.000	-0.004	0.013
996	124	after 30 seconds	-0.018	0.000	-0.005	0.012
1037	130	after 30 seconds	-0.020	0.000	-0.005	0.014
1078	135	after 30 seconds	-0.020	0.000	-0.004	0.016
1120	140	after 30 seconds	-0.022	0.000	-0.005	0.017
1161	145	after 30 seconds	-0.024	0.000	-0.005	0.018
1203	150	after 30 seconds	-0.026	0.000	-0.005	0.020
1244	156	after 30 seconds	-0.029	0.000	-0.006	0.023
1286	161	after 30 seconds	-0.031	0.000	-0.006	0.026
1327	166	after 30 seconds	-0.032	0.000	-0.006	0.026
1369	171	after 30 seconds	-0.035	0.000	-0.006	0.028
1410	176	after 30 seconds	-0.040	0.000	-0.007	0.033
1452	181	after 30 seconds	-0.040	0.000	-0.007	0.033
1493	187	after 30 seconds	-0.040	0.000	-0.007	0.032
1535	192	after 30 seconds	-0.042	0.000	-0.007	0.035
1576	**197**	**after 30 seconds**	**-0.044**	**0.000**	**-0.007**	**0.036**
0	**0**	**Set after 1 min**	**0.017**	**0.000**	**0.004**	**0.013**
THIRD LOAD TARGET (F = 2360 lbs)						
332	41	after 30 seconds	0.012	0.000	0.002	0.009
373	47	after 30 seconds	0.009	0.000	0.002	0.007
415	52	after 30 seconds	0.007	0.000	0.001	0.006
456	57	after 30 seconds	0.005	0.000	0.000	0.004
498	62	after 30 seconds	0.002	0.000	0.000	0.002
539	67	after 30 seconds	0.000	0.000	-0.001	0.000
581	73	after 30 seconds	-0.002	0.001	-0.001	0.001
622	78	after 30 seconds	-0.005	0.000	-0.002	0.004
664	83	after 30 seconds	-0.006	0.001	-0.002	0.005
705	88	after 30 seconds	-0.008	0.001	-0.003	0.006
747	93	after 30 seconds	-0.012	0.000	-0.004	0.008
788	99	after 30 seconds	-0.013	0.001	-0.004	0.010
830	104	after 30 seconds	-0.015	0.001	-0.004	0.012
871	109	after 30 seconds	-0.016	0.000	-0.004	0.012
913	114	after 30 seconds	-0.017	0.000	-0.005	0.013
954	119	after 30 seconds	-0.019	0.001	-0.005	0.015
996	124	after 30 seconds	-0.021	0.000	-0.005	0.016

1037	130	after 30 seconds	-0.024	0.000	-0.006	0.018	
1078	135	after 30 seconds	-0.026	0.000	-0.006	0.021	
1120	140	after 30 seconds	-0.027	0.001	-0.006	0.022	
1161	145	after 30 seconds	-0.028	0.001	-0.006	0.024	
1203	150	after 30 seconds	-0.030	0.000	-0.006	0.025	
1244	156	after 30 seconds	-0.031	0.000	-0.006	0.026	
1286	161	after 30 seconds	-0.032	0.001	-0.006	0.027	
1327	166	after 30 seconds	-0.033	0.001	-0.006	0.027	
1369	171	after 30 seconds	-0.035	0.001	-0.006	0.030	
1410	176	after 30 seconds	-0.036	0.001	-0.006	0.031	
1452	181	after 30 seconds	-0.039	0.001	-0.007	0.033	
1493	187	after 30 seconds	-0.041	0.001	-0.007	0.034	
1535	192	after 30 seconds	-0.042	0.001	-0.007	0.036	
1576	197	after 30 seconds	-0.044	0.001	-0.007	0.038	
1618	202	after 30 seconds	-0.046	0.001	-0.008	0.039	
1659	207	after 30 seconds	-0.047	0.001	-0.008	0.040	
1701	213	after 30 seconds	-0.049	0.001	-0.008	0.042	
1742	218	after 30 seconds	-0.051	0.001	-0.008	0.043	
1784	223	after 30 seconds	-0.053	0.001	-0.009	0.045	
1825	228	after 30 seconds	-0.055	0.001	-0.009	0.047	
1867	233	after 30 seconds	-0.056	0.001	-0.009	0.048	
1908	239	after 30 seconds	-0.058	0.000	-0.009	0.050	
1950	244	after 30 seconds	-0.060	0.000	-0.009	0.051	
1991	249	after 30 seconds	-0.062	0.000	-0.010	0.053	
2033	254	after 30 seconds	-0.064	0.000	-0.010	0.055	
2074	259	after 30 seconds	-0.066	0.000	-0.010	0.056	
2115	264	after 30 seconds	-0.068	-0.001	-0.010	0.057	
2157	270	after 30 seconds	-0.069	-0.001	-0.010	0.058	
2198	275	after 30 seconds	-0.072	-0.001	-0.010	0.062	
2240	280	after 30 seconds	-0.074	-0.001	-0.010	0.062	
2281	285	after 30 seconds	-0.076	-0.001	-0.011	0.064	
2323	290	after 30 seconds	-0.078	-0.001	-0.011	0.066	
2364	**296**	**after 30 seconds**	**-0.080**	**-0.001**	**-0.011**	**0.067**	
0	**0**	**Set after 1 min**	**0.013**	**0.001**	**0.002**	**0.010**	
LOADING TO ULTIMATE FAILURE. RATE APPROX. 400 lbs/min							
415	52	after 1 minute	0.002	0.001	0.000	0.001	No change, no visible damage
830	104	after 1 minute	-0.016	0.001	-0.005	0.012	No change, no visible damage
1244	156	after 1 minute	-0.033	0.001	-0.007	0.027	No change, no visible damage
1659	207	after 1 minute	-0.050	0.001	-0.008	0.042	No change, no visible damage
2074	259	after 1 minute	-0.066	0.001	-0.010	0.057	No change, no visible damage
2489	311	after 1 minute	-0.085	-0.001	-0.012	0.072	No change, no visible damage
2904	363	after 1 minute	-0.105	-0.005	-0.014	0.086	No change, no visible damage
3318	415	after 1 minute	-0.126	-0.012	-0.016	0.098	No change, no visible damage
3733	467	after 1 minute	-0.146	-0.016	-0.018	0.112	No change, no visible damage
4148	519	after 1 minute	-0.168	-0.018	-0.020	0.129	No change, no visible damage
4563	570	after 1 minute	-0.200	-0.026	-0.024	0.150	No change, no visible damage
4978	622	after 1 minute	-0.229	-0.034	-0.028	0.167	No change, no visible damage
5392	674	after 1 minute	-0.252	-0.041	-0.030	0.181	No change, no visible damage
5807	726	after 1 minute	-0.283	-0.048	-0.034	0.202	No change, no visible damage
6222	778	after 1 minute	-0.310	-0.054	-0.037	0.218	No change, no visible damage
6637	830	after 1 minute	-0.341	-0.064	-0.043	0.234	No change, no visible damage
7052	881	after 1 minute	-0.377	-0.068	-0.050	0.258	No change, no visible damage
7466	933	after 1 minute	-0.411	-0.070	-0.060	0.281	No change, no visible damage
7881	985	after 1 minute	-0.484	-0.079	-0.095	0.310	No change, no visible damage
8296	**1037**	**after 1 minute**	**-0.533**	**-0.081**	**-0.117**	**0.335**	**Test Paused. All Transducers Removed**
8711	1089	after 1 minute	0.000	0.000	0.000	0.000	Test resumed. Some popping heard. No visual damage present
9126	1141	after 1 minute	0.000	0.000	0.000	0.000	No change, no visible damage
9540	1193	after 1 minute	0.000	0.000	0.000	0.000	No change, no visible damage
9955	1244	after 1 minute	0.000	0.000	0.000	0.000	No change, no visible damage
10370	1296	after 1 minute	0.000	0.000	0.000	0.000	No change, no visible damage
10785	1348	after 1 minute	0.000	0.000	0.000	0.000	No change, no visible damage
11200	1400	after 1 minute	0.000	0.000	0.000	0.000	No change, no visible damage
11614	1452	after 1 minute	0.000	0.000	0.000	0.000	No change, no visible damage
12029	1504	after 1 minute	0.000	0.000	0.000	0.000	No change, no visible damage
12444	1556	after 1 minute	0.000	0.000	0.000	0.000	No change, no visible damage
12859	1607	after 1 minute	0.000	0.000	0.000	0.000	No change, no visible damage
13274	1659	after 1 minute	0.000	0.000	0.000	0.000	No change, no visible damage
13688	1711	after 1 minute	0.000	0.000	0.000	0.000	No change, no visible damage
14103	1763	after 1 minute	0.000	0.000	0.000	0.000	No change, no visible damage
14518	1815	after 1 minute	0.000	0.000	0.000	0.000	No change, no visible damage
14933	1867	after 1 minute	0.000	0.000	0.000	0.000	No change, no visible damage
15348	1918	after 1 minute	0.000	0.000	0.000	0.000	No change, no visible damage
15762	1970	after 1 minute	0.000	0.000	0.000	0.000	No change, no visible damage
16177	2022	after 1 minute	0.000	0.000	0.000	0.000	No change, no visible damage
16592	2074	after 1 minute	0.000	0.000	0.000	0.000	No change, no visible damage
17007	2126	after 1 minute	0.000	0.000	0.000	0.000	No change, no visible damage
17422	2178	after 1 minute	0.000	0.000	0.000	0.000	No change, no visible damage
17836	2230	after 1 minute	0.000	0.000	0.000	0.000	No change, no visible damage
18251	2281	after 1 minute	0.000	0.000	0.000	0.000	No change, no visible damage
18666	2333	after 1 minute	0.000	0.000	0.000	0.000	No change, no visible damage
19081	2385	after 1 minute	0.000	0.000	0.000	0.000	Loud pop heard, wall and footer inspected. No visible damage
19496	2437	after 1 minute	0.000	0.000	0.000	0.000	No change, no visible damage
19910	2489	after 1 minute	0.000	0.000	0.000	0.000	No change, no visible damage
20325	2541	after 1 minute	0.000	0.000	0.000	0.000	No change, no visible damage
20740	2593	after 1 minute	0.000	0.000	0.000	0.000	No change, no visible damage
21155	2644	after 1 minute	0.000	0.000	0.000	0.000	No change, no visible damage
21570	**2696**	**Ultimate**	**Panel Failure** Test stopped. Mortar and wire mesh crushing at location of applied load. Foundation crushing between 32" and 52" from footer end, front side (away from the point of load). This was the only 14 foot shear wall specimen that failed before the hydraulic cylinder was maxed out. No additional visible damage present				

Additional Notes: The Horizontal Deflection of the panel at any load is calculated by subtracting the reading of the dial at the upper right less the sum of the readings of the other two dials **[i.e. Horizontal Deflection = Transducer 1 - (Transducer 2 + Transducer 3)]**

*During second load target cycle (F = 1570 lbs), the wall deflections zeroed out at approximately 580 lbs.
*During third load target cycle (F = 2360 lbs), the wall deflections zeroed out at approximately 540 lbs.
*All shear tests were performed without a top horizontal member for uniform load distribution along the specimen length. The client did not install such members into the wall during construction The constructed walls could not be modified with a horizontal load member without sustaining permanent damage.
*The base (or footers) of the walls were attached to the test frame using chains and boomers to resist the overturning moment as the walls were loaded.
*Positive numbers indicate transducers extending **outward**; Negative numbers indicate transducers extending **inward**
*Statistical calculations below computed using Linear Regression Analysis

First Target Load Statistical Analysis (F = 790 lbs)

40100.451	407.598
3544.542	18.166
0.928	42.226
127.990644	10
228213.912	17830.51517

Second Target Load Statistical Analysis (F = 1570 lbs)

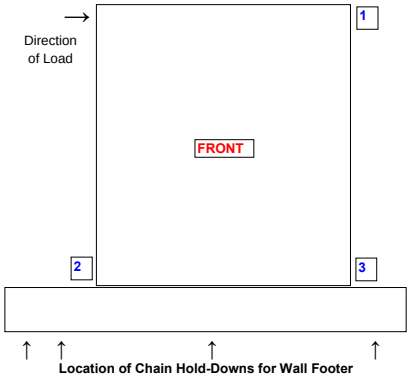
31837.10442	466.418801
2242.279964	42.1468599
0.874240331	136.030496
201.5985719	29
3730439.613	536624.579

Third Target Load Statistical Analysis (F = 2360 lbs)

28945.79043	464.9060423
626.1237655	22.99879329
0.978034309	90.5457509
2137.226006	48
17522117.96	393529.5843

Ultimate Failure Loading Statistical Analysis

14735.53825	2779.29482
4630.094779	788.159396
0.336180365	2248.75986
10.12866589	20
51219862.14	101138418



Transducer Locations and Designations
Transducer 1: Measures Specimen Deformation (Top-Right)
Transducer 2: Measures Specimen Rotation (Bottom-Left)
Transducer 3: Measures Specimen Slippage (Bottom-Right)

APPENDIX C

Test Photographs

Note: Only a small number of photos were selected for this report. A CD copy of all the project photos will be provided to the client

8X8A3 (Setup)

Figure 1A: Front view of wall

Figures 2A and 3A: LVDT #1 (left) and #2 (right) locations

Figure 4A: LVDT #3 location

8X8S1 Failure Mode

Figure 5A: 8X8S1 Failure mode

Figure 6A: Failure mode (close-up)

8X14S3 (Setup and Failure Mode)

Figure 7A: 8X14S3 Setup

Figures 8A: Rear view of chains and boomers setup

Figure 9A: 8X14S3 Failure mode

Intertek ETL SEMKO

PRE-TEST INSPECTION REPORT

Inspection Date: July 1-2, 2007 Intertek Inspector: Matt Lansdowne, EIT

Inspector's Tel: (604) 520 - 3321 Inspector's Email: matt.lansdowne@intertek.com

Product Name: Emmedue Structurally Insulated Panels

Project #: 3083303 Production Lot #: 07/01-02/07 # of Samples: See back page

General Instruction(s): Please complete ALL sections of this report. When information is not applicable, indicate "NA" and provide an explanation. Installation Instructions and MSDS sheets are required. Attach to this form, other product information, which is critical for follow-up inspections and ongoing certification. Please use the enclosed page for manufacturer's shipment.

	Owner/Distributor	Manufacturer (If Different From Owner/Distributor)
Company Name:	**Emmedue S.P.A.**	**SAME AS OWNER**
Address:	Via Toniolo 39/b Z.I. Bellocchi 61032 Fano (PU) Italy	
Tel:	(0039) 0721 855650 / 1	Fax:
Email:	(0039) 0721 854030	
Contact Person:	Omero Bassotti	

FORMULATION (attach material specification sheet(s) or "Certificate of Analysis")

Material	Approved Supplier(s)	Specification	% Content
EPS	ISOPAK Adratica Spa	15AE (It. Gov. Standard)	No Grind
EPS	Sulpol		
Steel Coil	MEttallurgica Ledrense	2.4mm diam., 3.00mm diam., 2.50mm diam.	3.0mm Yield 793 N/mm2 2.5mm Yield 712N/mm2
Adhesive	DA.FO.TEC	ABATECK D40/R	Use to join under length EPS panels

MANUFACTURING PROCESS (attach flowchart and/or details)

EPS and Steel Coil received, COA inspected to ensure quality, moved into inventory. Hotwires are set to Dimension using automated system, operator checks manually to ensure. EPS cut to size. Metal wire is Checked COA and diam. (calibrated caliper), monthly yield, ultimate, and elongation checked with calibrated tensile equipment. Steel wire loaded in to automated system. Unrolled and straightened, passed through welder that joins vertical and horizontal steel columns in preset grid pattern. Steel grid and EPS block taken To automated joiner. The EPS has steel grid laid on bottom surface and top surface. Joiner welds two grid Surfaces together. Inspector verifies welds are present . If > 3% welds missing, manual welding done.

PRODUCT DESCRIPTION: See Next Page

OTHER COMMENTS

Emmedue buys completed component parts. Uses proprietary automated equipment to cut and weld

Components together forming completed EPS Steel Grid System. This system is taken onsite, where Customers follow Emmedue installation instructions to apply shot crete exterior facings.

Intertek Testing Services NA Ltd.
Inspector: Matt Lansdowne, EIT
Email: matt.lansdowne@intertek.com

Phone: (604) 520-3321 ext. 112

EMMEDUE TEST SAMPLE SIZES
July 1-2, 2007

Type of test	Normative	Type of panel	Lengths	Height	Final thickness	Quantity of tests
Load Bearing Wall	ASMT E 119	PSM 80	10'	10'	6"	2
Floor/Roof Fire Test	ASMT E 119	PSM 80	10'	10'	6"	2
Wall Compression	AC15 4.2.2.2	PSM 80	4'	8'	6"	5
	ASTM E 72	PSM 80	4'	14'	6"	5
Wall Flexural	AC15 4.2.2.3	PSM 80	4'	8'	6"	5
	ASTM E 72	PSM 80	4'	14'	6"	4
Wall Flexural-Compression	AC15 4.2.2.4	PSM 80	4'	8'	6"	5
	ASTM E 72	PSM 80	4'	14'	6"	5
Wall Shear	AC15 4.2.2.5	PSM 80	8'	8'	6"	5
	ASTM E 72	PSM 80	8'	14'	6"	4
Floor/Roof Flexural	AC15 4.2.2.6 ASTM E 455	PSM 80	4'	8'	7"	5
		PSM 80	4'	12'	7"	6
		PSM 150	4'	8'	9.5"	6
		PSM 150	4'	12'	9.5"	6
Floor/Roof Diaphragm	AC15 4.2.2.7	PSM 80	4'	8'	6"	5
	ASTM E 455	PSM 80	4'	12'	6"	5
					Total panel	75

2/07/07.

List of Calibrated Instrumentation Used for Testing

Description	Model No.	Serial No.	Last Calibration Date	Calibration Due Date
LVDT (#1)	JEC-AG	L9233000	3/1/07	3/1/08
LVDT (#2)	JEC-AG	L9301100	3/1/07	3/1/08
LVDT (#3)	JEC-AG	L9301000	3/1/07	3/1/08
DAQ Cart	N/A	99LE004	11/27/07	5/27/08
Stopwatch	14-649-9	61809410	8/15/07	8/15/08
3000 psi pressure gauge	N/A	298967	5/18/07	5/18/08

REFERENCES

1) Emmedue Advanced Building Systems Operator's Manual, Rev. 02 or 3/19/2004, pp. 2-7, 15-16.
2) Acceptance Criteria for Sandwich Panels, ICC – AC 04, Effective July 1, 2007, Section 4.4.1, p. 5.
3) Acceptance Criteria for Concrete Floor, Roof and Wall Systems and Concrete Masonry Wall Systems, ICC – AC 15, Effective July 1, 2007.

REVISION SUMMARY

DATE	SUMMARY
January 5, 2009	Section 3.2 (Sample and Assembly Description); galvanized steel wire mesh diameters changed to 0.099 inches (transverse) and 0.121 inches (longitudinal)
February 20, 2008	Original Report Issue Date