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EXTRUTECH PLASTICS, INC.
TEST REPORT

SCOPE OF WORK
COMPRESSION TESTING OF 8 IN THICK CONCRETE WALL PANEL SYSTEM

REPORT NUMBER
M6837.01-119-16 R0

TEST DATES
12/02/21 - 12/03/21

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01/13/22

RECORD RETENTION END DATE
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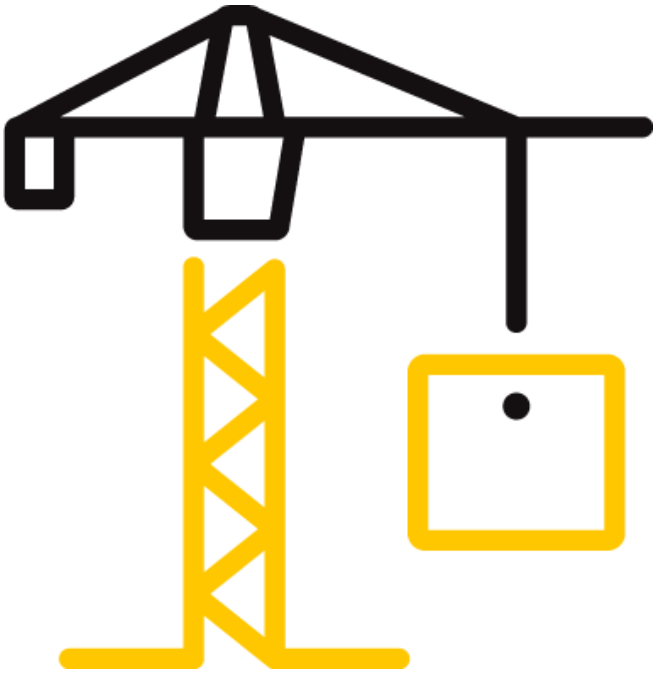

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TEST REPORT FOR EXTRUTECH PLASTICS, INC.
Report No.: M6837.01-119-16 R0
Date: 01/13/22

REPORT ISSUED TO

EXTRUTECH PLASTICS, INC.
5902 W. Custer Street
Manitowoc, WI 54220

SECTION 1

SCOPE

Intertek Building & Construction (B&C) was contracted by Extrutech Plastics, Inc., Manitowoc, WI to perform compression testing in accordance with Section 9 of ASTM E72-15, on their 8 in thick concrete wall panel system. Results obtained are tested values and were secured by using the designated test methods. Testing was conducted at Intertek B&C test facility in York, PA.

Intertek B&C has demonstrated compliance with ISO/IEC International Standard 17025 and is consequently accredited as a Testing Laboratory (TL-144) by the International Accreditation Service, Inc. (IAS). Intertek B&C is accredited to perform all testing reported herein.

This report does not constitute certification of this product nor an opinion or endorsement by this laboratory.

For INTERTEK B&C:

COMPLETED BY:	Adam J. Schrum	**REVIEWED BY:**	V. Thomas Mickley, Jr., P.E.
TITLE:	Project Manager	**TITLE:**	Senior Staff Engineer
SIGNATURE:	Digitally Signed for: Adam Schrum by Amanda Ashby	**SIGNATURE:**	Digitally Signed by: Virgal Thomas Mickley, Jr.
DATE:	01/13/22	**DATE:**	01/13/22

AJS:vtm/aas

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SECTION 2
TEST METHODS

The wall panel specimens were evaluated in accordance with Section 9 of the following:

> **ASTM E72-15**, *Standard Test Methods of Conducting Strength Tests of Panels for Building Construction*

The concrete material was evaluated in accordance with the following:

> **ASTM C39/39M-21**, *Standard Test Method for Compressive Strength of Cylindrical Concrete Specimens*

SECTION 3
MATERIAL SOURCE

The specimens were selected by Intertek B&C personnel. The specimens were tagged prior to shipment on 08/30/21, (Reference Intertek B&C Test Specimen Selection Report No. G104776781, dated 08/30/21).

Representative samples of the test specimen(s) will be retained by Intertek B&C for a minimum of four years from the test completion date.

SECTION 4
LIST OF OFFICIAL OBSERVERS

NAME	COMPANY
V. Thomas Mickley, Jr., P.E.	Intertek B&C
Adam J. Schrum	Intertek B&C
Jordan M. Gault	Intertek B&C

SECTION 5
COMPRESSION TESTING OF WALL PANELS

RE: ASTM E72 - Section 9 - Compressive Load

General
The purpose of this testing was to evaluate the axial compression strength of the wall panel. Wall panels are subject to axial loads generated from supporting floor and/or roof loads. The allowable compression strength must be found through testing.

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Procedure
The test fixture consisted of a flat steel support attached to a rigid steel column at the top. The bottom consisted of a hydraulic jack positioned on a leveling fixture, fitted with a flat steel bearing plate and a 270,000-pound capacity Interface load cell.

Three specimens were tested for compressive loading. The wall systems were installed into the compression fixture with no physical connections between the wall panels and fixture. The center of the flat steel support was offset from the center of the panel by a distance of 1/3 the overall panel thickness. An electronic linear displacement transducer was positioned at the mid-point of each edge of the specimen (two transducers total) to measure lateral displacements of the wall. A dial indicator was attached near each corner on each side of the sample (four transducers total; two-front and two back) to measure load-deformation/shortening. See photographs in Section 7 for test setup.

Testing was performed using the methods described by ASTM E72, Section 9. Each test sample was inspected prior to testing to verify size and general condition of the materials, assembly, and installation. No potentially compromising defects were observed prior to the tests. Each test began with the electronic linear displacement transducers being zeroed. The wall systems were then loaded in increments, each of which was held for a period of no less than five minutes. The load was then released for a period of no less than five minutes. This procedure was repeated until the maximum capacity of the test equipment (200,000 lbs) was achieved. Test specimens were loaded from rest to the specified increment in no less than 20 seconds. Lateral displacements, load-deformation, test load, and time were manually and electronically recorded throughout the test.

Specimen Description
The test specimens were constructed of two, 24 in wide by 144 in high by 8 in thick plastic wall forms interlocked together using plastic keys. The concrete forms were made from extruded plastic measuring 0.120 in thick at the exterior faces and 0.075 in thick along the interior walls. Two, #5 vertical reinforcing bars were placed in each 24 in wide form; one at each end (centered in the thickness). #5 horizontal reinforcing bars were spaced 16 in on-center starting 6-1/2 in from the bottom of the panel. The horizontal rebar went through pre-drilled holes in the forms. The joints of the horizontal and vertical rebar were not tied. The forms were filled with 4000 psi, air entrained, 1/2 in nominal stone concrete. The concrete was placed in 48 in max lift heights and mechanically consolidated using a vibrator.

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Test Results

LATERAL DEFLECTION

TARGET LOAD [1] (lbs)	LATERAL DEFLECTION (in)			
	SPECIMEN NO.			AVERAGE
	1	2	3	
10000-Preload	0.00	0.00	0.00	0.00
25000	0.02	0.01	0.03	0.02
Permanent Set	0.01	0.01	0.02	0.01
50000	0.03	0.03	0.08	0.05
Permanent Set	0.01	0.01	0.03	0.02
75000	0.04	0.05	0.11	0.06
Permanent Set	0.01	0.03	0.04	0.03
100000	0.04	0.07	0.13	0.08
Permanent Set	0.01	0.04	0.04	0.03
125000	0.04	0.10	0.15	0.09
Permanent Set	0.00	0.04	0.05	0.03
150000	0.04	0.11	0.16	0.10
Permanent Set	0.01	0.05	0.06	0.04
175000	0.03	0.11	0.17	0.10
Permanent Set	0.02	0.06	0.06	0.04
200000	0.03	0.12	0.18	0.11
Permanent Set	0.02	0.06	0.06	0.05

[1] *Includes self-weight of panel (6400 lbs.).*

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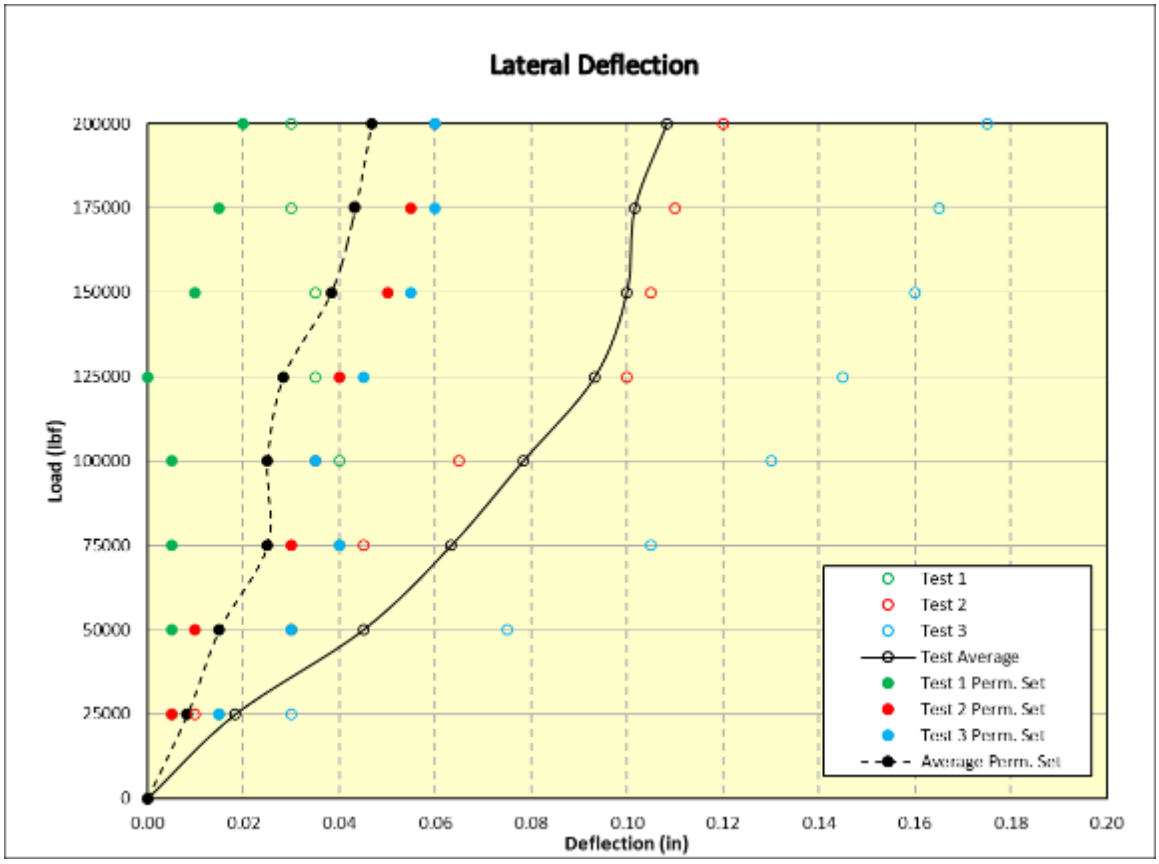

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SHORTENING

	SPECIMEN NO.		
	1	2	3
SPECIMEN LENGTH (in)	144	144	144
GAUGE LENGTH (in)	120	120	120

TARGET LOAD [2] (lbs)	SHORTENING [1] (in)			
	SPECIMEN NO.			AVERAGE
	1	2	3	
10000-Preload	0.000	0.000	0.000	0.000
25000	0.000	0.005	0.000	0.002
Permanent Set	0.000	0.000	0.000	0.000
50000	0.002	0.010	0.006	0.006
Permanent Set	0.002	0.006	0.000	0.003
75000	0.005	0.017	0.009	0.010
Permanent Set	0.003	0.008	0.001	0.004
100000	0.007	0.020	0.013	0.013
Permanent Set	0.004	0.011	0.004	0.006
125000	0.010	0.025	0.021	0.019
Permanent Set	0.005	0.011	0.008	0.008
150000	0.011	0.029	0.025	0.022
Permanent Set	0.005	0.010	0.009	0.008
175000	0.013	0.030	0.029	0.024
Permanent Set	0.005	0.013	0.011	0.010
200000	0.014	0.035	0.032	0.027
Permanent Set	0.005	0.012	0.011	0.009

[1] Shortening was calculated per ASTM E72, Section 9.4.1; Shortening = Deformation x (Specimen Length / Gauge Length).

[2] Includes self-weight of panel (6400 lbs.).

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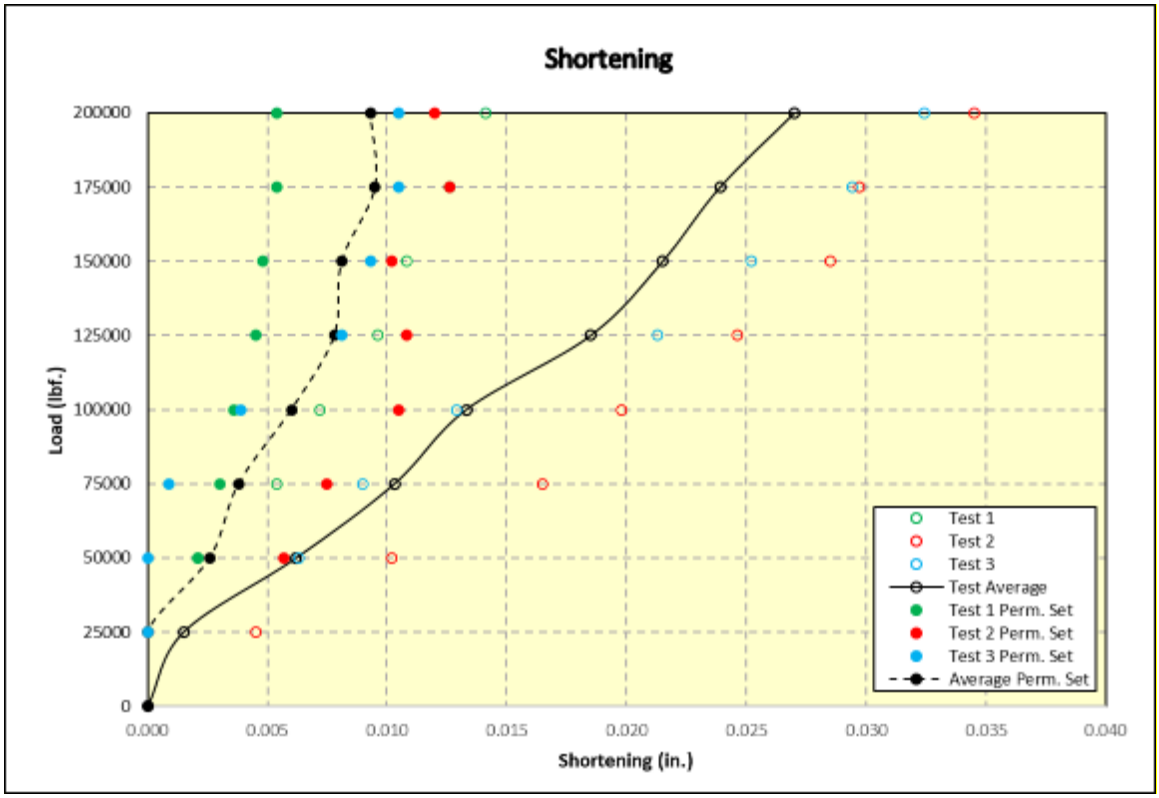

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SECTION 6
COMPRESSION TESTING OF CONCRETE CYLINDERS

RE: ASTM C39

General
The purpose of this testing was to evaluate the compressive strength of the concrete used to fabricate the test panels.

Procedure
Compressive strength testing was performed using the methods described by ASTM C 39. Compressive strength testing was performed in a Forney Compression Test Machine. The specimen was loaded in compression until failure occurred. See photographs in Section 7 for test setup.

Test Results

ASTM C39 - Compressive Strength

SPECIMEN NO.	SPECIMEN DIMENSIONS (in)		AREA (in^2)	PEAK LOAD (lb_f)	COMPRESSIVE STRENGTH (psi)	DEVIATION FROM AVERAGE (%)	FRACTURE PATTERN
	HEIGHT	DIAMETER					
1	6	3	7.07	30190	4271	6.6	1
2	6	3	7.07	27360	3871	-3.4	1
3	6	3	7.07	27430	3881	-3.1	1
				Average:	**4007**		

[1] *Specimen No.'s 1 and 2 were tested at 28 days (start of compression testing) and specimen No. 3 was tested at 31 days (end of compression testing).*

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SECTION 7
PHOTOGRAPHS

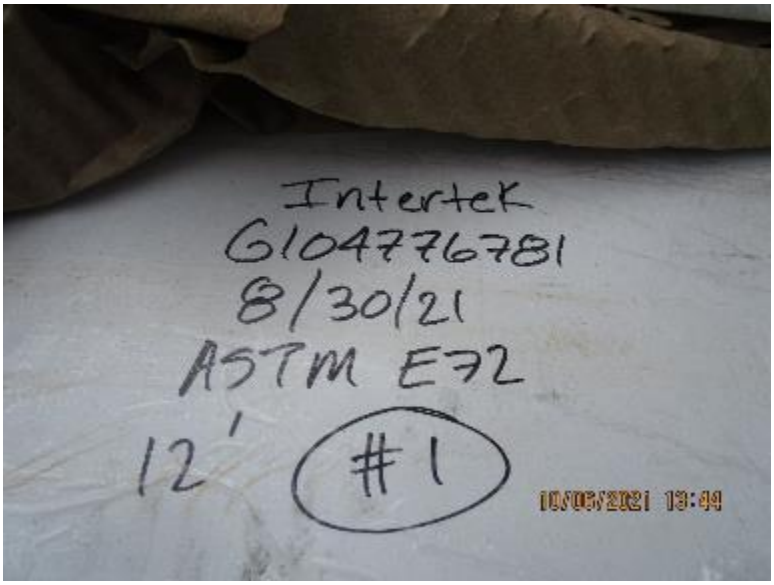

Photo No. 1
Sample Marking

Photo No. 2
Compression Testing

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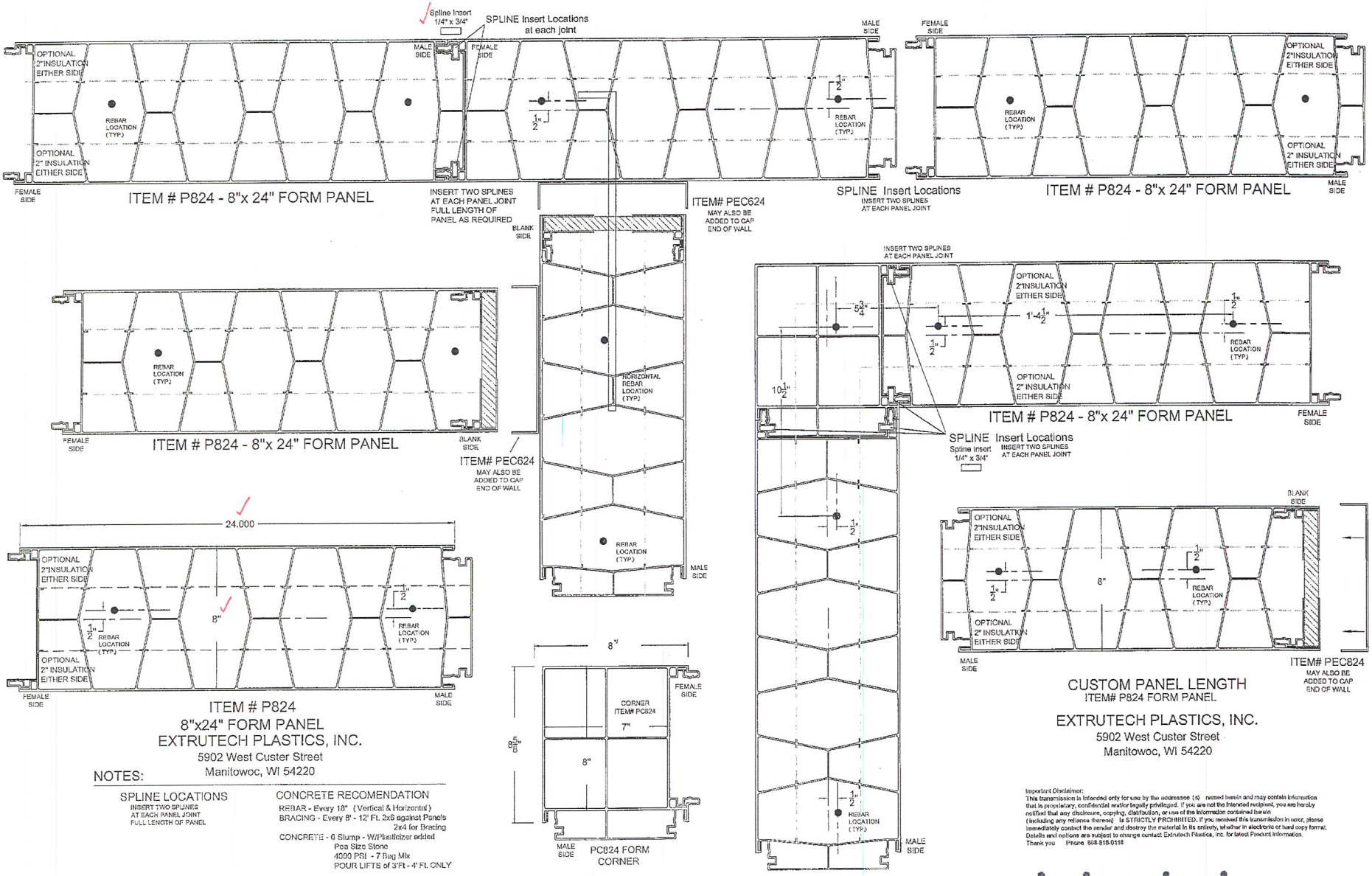
Photo No. 3
Concrete Cylinder Compression Testing Failure

SECTION 8
DRAWINGS

The "As-Built" drawings for the 8 in thick concrete wall panel system which follow have been reviewed by Intertek B&C and are representative of the project reported herein. Project construction was verified by Intertek B&C per the drawings included in this report. Any deviations are documented herein or on the drawings.



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Thank you Phone 888-816-0118

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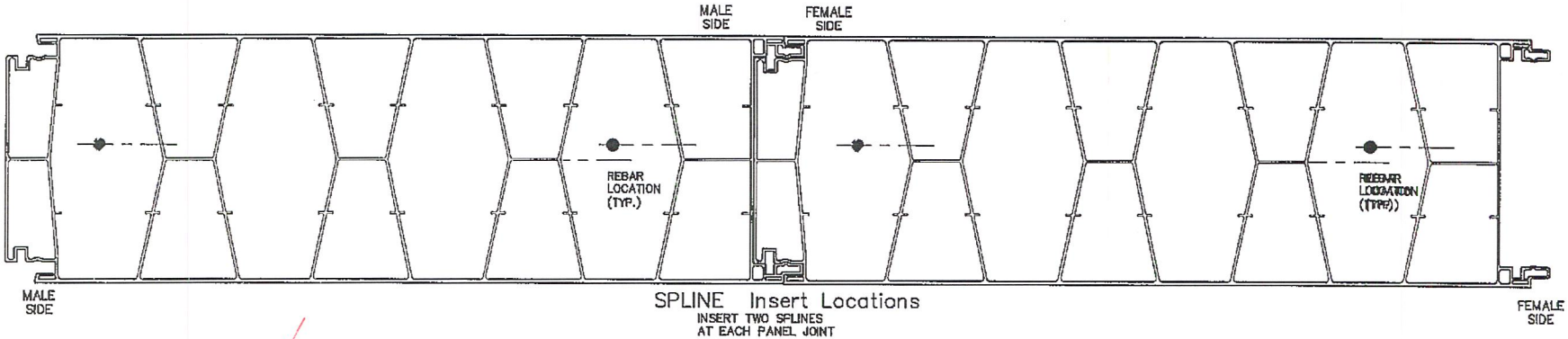
Test sample complies with these details.
Deviations are noted.

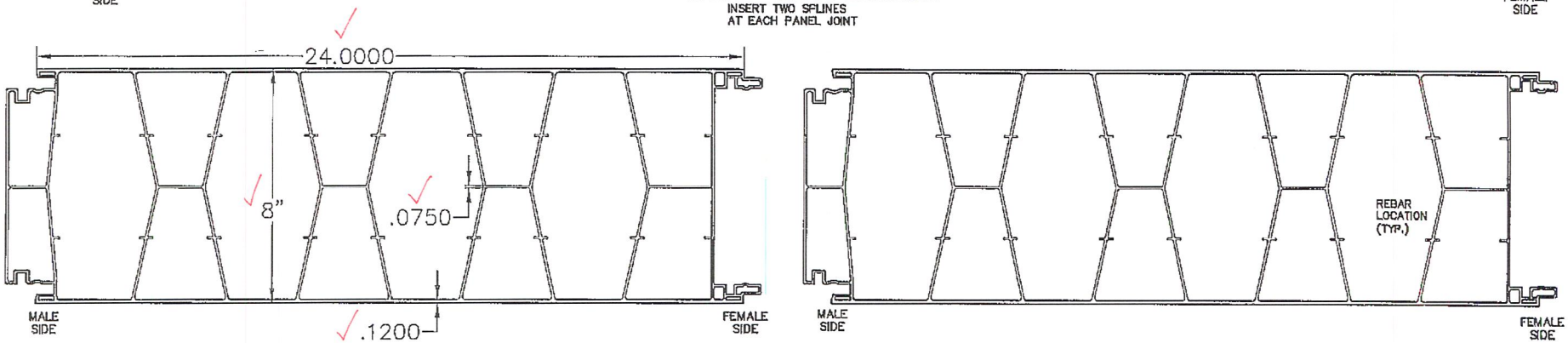
Report # M6837.01-119-16

Date 1-11-22 **Tech** T. MICKLEY



SPLINE Insert Locations

INSERT TWO SPLINES AT EACH PANEL JOINT



ITEM # P824 – 8"x 24" FORM PANEL

EXTRUTECH PLASTICS, INC.
5902 West Custer Street
Manitowoc, WI 54220

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Test sample complies with these details.
Deviations are noted.

Report # M6837.01-119-16

Date 1-11-22 Tech T. MICKLEY

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SECTION 9
REVISION LOG

REVISION #	DATE	PAGES	REVISION
0	01/13/22	N/A	Original Report Issue