



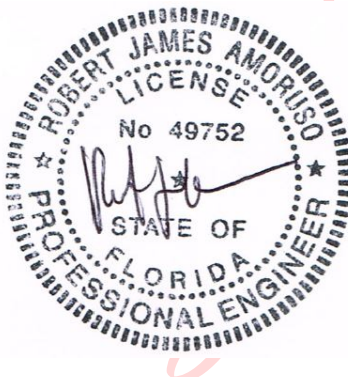
Product Evaluation Report

Date:	June 26, 2023
Report #:	2437-PER
Report Revision No.:	3
Project #:	423-0107
Product Mfg.:	CENTRIA 1550 Coraopolis Heights Road, Suite 500 Moon Township, PA 15108
Product Description:	Formawall Dimension Series/Formawall Dimension Series Graphix 3"T Panels, 30" Module Formawall Dimension Series 2" Panels, 36" Module Formawall Dimension Series/Formawall Dimension Series Graphix 2-1/2" Panels, 36" Module Formawall Dimension Series/Formawall Dimension Series Graphix 3"T Panels, 36" Module
Product Category:	Structural Components
Product Sub-Category:	Structural Wall
Compliance Method:	Product Approval Rule 61G20-3.005(1)(d) – Product Evaluation Report by a Licensed Professional Engineer
Prepared By:	Robert J. Amoruso, P.E. Florida P.E. No. 49752 PTC Product Design Group, LLC, PO Box 520775, Longwood, FL 32752-0775 Florida C of A No. 25935

CERTIFICATE OF INDEPENDENCE

PTC Product Design Group, LLC and Robert J. Amoruso, P.E. do not have, nor will acquire, any financial interest in the company manufacturing or distributing product(s) covered by this Product Evaluation Report.

PTC Product Design Group, LLC and Robert J. Amoruso, P.E. do not have, nor will acquire any financial interest in any other entity involved in the approval process or testing of the product(s) covered by this Product Evaluation Report.



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by Robert J
Amoruso
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Evaluated by:
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No. 2437, Rev. 3

Robert J. Amoruso, P.E.
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SCOPE

Evaluate Centria's Formawall Dimension Series and Formawall Graphix Dimension Series 2", 2-1/2" and 3"T Panels for conformance to the 8th Edition (2023) Florida Building Code including the High Velocity Hurricane Zone (HVHZ).

DESCRIPTION OF PRODUCT – INSTALLATION REQUIREMENTS

See Reference 1 for a description of the product, its installation and other pertinent data related to its approved use.

CODE CONFORMANCE

The 8th Edition (2023) Florida Building Code (FBC) requirements specific to this product that have been met by testing (Reference 2) and engineering evaluation (Reference 3) and depicted on the manufacturer's installation drawings (Reference 1) are the following.

- 1403.3 Exterior Walls – Structural
- 1404.5 Exterior Walls – Metal
- Table 1405.2 Minimum Thickness of Weather Coverings
 - Steel must meet or exceed 0.0149" in thickness.
- 1405.17 Exterior Walls - Fasteners
- Table 1604.3 Deflection Limits
 - Exterior Walls/Flexible Finishes, deflection for wind loading limited to L/120.
- 1609 Wind Loads
- 2210.1 Cold-Formed Steel, General

Testing is based on TAS 201, TAS 202 and TAS 203 per the recommendations of Reference 5.b (basic structural testing) and HVHZ requirements of the FBC. Testing determines the Negative and Positive Wind Pressure Loading in PSF. The safety factor used to determine the allowable design pressure loading is 1.5. Air infiltration and water penetration were assessed in accordance with TAS 202 at the design pressures noted below. Large Missile Impact was assessed in accordance with TAS 201 & TAS 203 at the design pressures noted below.

Fastener Design Safety factors are as prescribed in AISI S100-07/S2-10. Fastener allowable is based on a safety factor of 3. Deflection limitation based on L/240 which exceeds L/120 required by the building code.

- 36" Module Formawall Dimension Series 2" Panel Design Pressure = +/-85 psf.
- 36" Module Formawall Dimension Series/Formawall Dimension Graphix Series 2-1/2" Panel Design Pressure = +/-60 psf. Based on comparison of 2" (higher DP) and 3" (lower DP); use lower DP result of 3" panel to envelop 2-1/2" panel.
- 36" Module Formawall Dimension Series/Formawall Dimension Graphix Series 3"T Panel Design Pressure = +/-60 psf.
- 30" Module Formawall Dimension Series/Formawall Dimension Graphix Series 3"T Panel Design Pressure = +/-90 psf.



LIMITATIONS AND CONDITIONS OF USE

This product evaluation report contains or refers to specifications, technical details and installation details and/or methods that pertain to the proper use and/or installation of the product specified herein. Specific limitations and conditions of its use including but not limited to the following are contained in Reference 1 and are the subject of Product Approval in accordance with the State of Florida Product Approval Rule 61G20-3.

- Design Pressure Rating (psf)
- Installation substrate requirements.
- Installation anchor requirements.
- Installation restrictions.
- Product description.
- Product components.

REFERENCES & SUPPORTING DOCUMENTS

- 1) Manufacturer's Installation Instructions:
 - a) INSTALL_FWDS_FWGS_36in Installation Details, Rev. 1
 - i) For 36" Maximum Panel Module Formawall Dimension Series 2" and Formawall Dimension Series /Formawall Dimension Graphix Series 2-1/2" and 3"T Panels, Signed and Sealed by Robert J. Amoruso, P.E., dated 6/20/18.
 - b) INSTALL_FWDS_FWGS_30in Installation Details, Rev. 1
 - i) For 30" Maximum Panel Module Formawall Dimension Series/Formawall Dimension Graphix Series 3"T Panels, Signed and Sealed by Robert J. Amoruso, P.E., dated 6/20/18.
- 2) Testing
 - a) TAS 201, TAS 202 and TAS 203
 - i) Farabaugh Engineering and Testing Inc. Test Report No. T169-16, Dated 3/31/16, Signed and Sealed by Daniel G. Farabaugh, P.E. for Formawall Dimension Series 2" and Formawall Dimension Series/Formawall Dimension Graphix Series 3"T Panels. 36" Maximum Panel Module used in testing.
 - (1) 2" Panel DP = +/-85 psf LMI
 - (2) 2-1/2" enveloped by 3"T Panel DP = +/-60 psf LMI
 - (3) 3"T Panel DP = +/-60 psf LMI
 - ii) Farabaugh Engineering and Testing Inc. Test Report No. T182-16, Dated 4/20/16, Signed and Sealed by Daniel G. Farabaugh, P.E. for Formawall Dimension Series/Formawall Graphix Series 3"T Panels. 30" Maximum Panel Module used in testing.
 - (1) 3"T Panel DP = +/-90 psf LMI
 - b) ASTM E8-04 testing
 - i) Farabaugh Engineering and Testing Inc. Test Report No. T169-16, Dated 3/31/16, Signed and Sealed by Daniel G. Farabaugh, P.E. for Formawall Dimension Series/Formawall Graphix Series 2" and 3"T Panels (22 GA (0.0269") G90 Galvanized Steel)
 - (1) Yield Strength = 52380 psf (min)
 - (2) Tensile Strength = 61430 psf (min)
 - ii) Farabaugh Engineering and Testing Inc. Test Report No. T182-16, Dated 4/20/16, Signed and Sealed by Daniel G. Farabaugh, P.E. for Formawall Dimension Series/Formawall Graphix Series 3"T Panels (22 GA (0.0269") G90 Galvanized Steel)
 - (1) Yield Strength = 58120 psf (min)



- (2) Tensile Strength = 64523 psf (min)
- c) Farabaugh Engineering and Testing Inc. Test Report No. T177-17, Dated 5/29/17, Uniform Load Test of CENTRIA FWDS & FWDS60 w/ Rubitherm (PIR) , Signed and Sealed by Daniel G. Farabaugh, P.E.
 - i) Used as basis for evaluation in Reference 3.ii.
- d) ASTM E84-16 Flame Spread and Smoke Developed Index testing of foam core material in various thicknesses to envelope Formawall product.
 - i) Intertek Report No. F9712.08-121-24, dated 8/4/16, 2" foam
 - (1) SDI = 250 < 450 required by building code.
 - (2) FSI = 20 < 75 required by building code.
 - ii) Intertek Report No. F9712.09-121-24, dated 8/4/16, 2" foam
 - (1) SDI = 300 < 450 required by building code.
 - (2) FSI = 20 < 75 required by building code.
 - iii) Intertek Report No. F9712.01-121-24, dated 8/3/16, 3" foam
 - (1) SDI = 250 < 450 required by building code.
 - (2) FSI = 20 < 75 required by building code.
 - iv) Intertek Report No. F9712.02-121-24, dated 8/3/16, 3" foam
 - (1) SDI = 250 < 450 required by building code.
 - (2) FSI = 15 < 75 required by building code.
 - v) Intertek Report No. F9712.03-121-24, dated 8/3/16, 3" foam
 - (1) SDI = 200 < 450 required by building code.
 - (2) FSI = 20 < 75 required by building code.
- e) ASTM D1929-16 Self-Ignition and Flash- Ignition Temperature testing of foam core material
 - i) Intertek Report No. F9652.03-106-31, dated 8/23/17
 - (1) SIT = 950°F (510°C) > 650°F (343°C) required by building code.
 - (2) FIT = 860°F (430°C); not a code requirement.
- 3) Reports and Calculations
 - i) PTC Calculation No. 2436, Anchorage Analysis - Formawall Dimension Series/Formawall Graphix Series 2" and 3" T Panels, Signed and Sealed by Robert J. Amoruso, P.E.
 - ii) PTC/Centria Product Evaluation No. 2437-1, Rev. 0, Structural Comparison between Baytherm PIR & Rubitherm PIR, Formawall Dimension Series & Graphix Series
 - iii) PTC Equivalency Evaluation Report No. 2437-EER, Formawall Dimension Series, by Robert j Amoruso, P.E.
 - (1) EER evaluates AISI S100-07/S2-10 used in Ref. 3.i above as compared to AISI S100-16.



- 4) 8th Edition (2023) Florida Building Code (FBC), Building Volume
 - i) 1403.3 Exterior Walls – Structural
 - ii) 1404.5 Exterior Walls – Metal
 - iii) Table 1405.2 Minimum Thickness of Weather Coverings
 - (1) Steel must meet or exceed 0.0149” in thickness.
 - iv) 1405.17 Exterior Walls - Fasteners
 - v) Table 1604.3 Deflection Limits
 - (1) Exterior Walls/Flexible Finishes, deflection for wind loading limited to L/120.
 - vi) 1609 Wind Loads
 - vii) 2210.1 Cold-Formed Steel, General
- 5) Standards
 - a) AISI S100-07/S2-10, North American Specification for the Design of Cold-formed Steel Structural Members
 - b) Metal Construction Association, Guidelines for Wall Panel, Preformed Metal Wall Specification Guidelines, 3rd Edition.