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DIVISION: 06 00 00 – WOOD, PLASTICS, AND COMPOSITES
Section: 06 12 00 – Structural Panels
Section: 06 12 19 – Shear Wall Panels
Section: 06 16 00 – Sheathing

DIVISION: 07 00 00 – THERMAL AND MOISTURE PROTECTION
Section: 07 21 00 – Thermal Insulation
Section: 07 25 00 – Water-Resistive Barriers/Weather Barriers

1. Products Evaluated:

1.1. Hunter PW-CG

1.2. Hunter PW-STR

1.2.1. Throughout this TER, wherever PUReWall™ is cited, the provisions are applicable to Hunter PW-CG and Hunter PW-STR.

1.3. For the most recent version of this Technical Evaluation Report (TER), visit drjcertification.org. For more detailed state professional engineering and code compliance legal requirements and references, visit drjengineering.org/statelaw. DrJ is fully compliant with all state professional engineering and code compliance laws.

1.4. This TER can be used to obtain product approval in any country that is an IAF MLA Signatory (all countries found here) and covered by an IAF MLA Evaluation per the Purpose of the MLA (as an example, see letter to ANSI from the Standards Council of Canada). Manufacturers can go to jurisdictions in the U.S., Canada and other IAF MLA Signatory Countries and have their products readily approved by authorities having jurisdiction using DrJ's ANSI accreditation.

1.5. Building code regulations require that evaluation reports are provided by an approved agency meeting specific requirements, such as those found in *IBC* Section 1703. Any agency accredited in accordance with ANSI ISO/IEC 17065 meets this requirement within ANSI's scope of accreditation. For a list of accredited agencies, visit ANSI's website. For more information, see drjcertification.org.

1.6. Requiring an evaluation report from a specific private company (i.e., ICC-ES, IAPMO, CCMC, DrJ, etc.) can be viewed as discriminatory and is a violation of international, federal, state, provincial and local anti-trust and free trade regulations.

1.7. DrJ's code compliance work:

1.7.1. Conforms to code language adopted into law by individual states and any relevant consensus based standard such as an ANSI or ASTM standard.

1.7.2. Complies with accepted engineering practice, all professional engineering laws and by providing an engineer's seal DrJ takes professional responsibility for its specified scope of work.

2. Applicable Codes and Standards:[1]

2.1. *2012*, *2015* and *2018 International Building Code* (*IBC*)

2.2. *2012*, *2015* and *2018 International Residential Code* (*IRC*)

2.3. *2012*, *2015* and *2018 International Energy Conservation Code* (*IECC*)

2.4. *ACC – Guidance on Best Practices for the Installation of Spray Polyurethane Foam*

2.5. *ACC – Ventilation Considerations for Spray Polyurethane Foam*

2.6. *ASCE 7 – Minimum Design Loads for Buildings and Other Structures*

2.7. *ASHRAE Fundamentals Handbook – Heat, Air and Moisture Control in Building Assemblies – Material Properties*

2.8. *ASTM C518 – Standard Test Method for Steady-State Thermal Transmission Properties by Means of the Heat Flow Meter Apparatus*

2.9. *ASTM D1621 – Standard Test Method for Compressive Properties of Rigid Cellular Plastics*

2.10. *ASTM D1622 – Standard Test Method for Apparent Density of Rigid Cellular Plastics*

2.11. *ASTM D1623 – Standard Test Method for Tensile and Tensile Adhesion Properties of Rigid Cellular Plastics*

2.12. *ASTM D2126 – Standard Test Method for Response of Rigid Cellular Plastics to Thermal and Humid Aging*

2.13. *ASTM D2842 – Standard Test Method for Water Absorption of Rigid Cellular Plastics*

2.14. *ASTM D6226 – Standard Test Method for Open Cell Content of Rigid Cellular Plastics*

2.15. *ASTM E72 – Standard Test Methods of Conducting Strength Tests of Panels for Building Construction*

2.16. *ASTM E84 – Standard Test Method for Surface Burning Characteristics of Building Materials*

2.17. *ASTM E96 – Standard Test Methods for Water Vapor Transmission of Materials*

2.18. *ASTM E283 – Standard Test Method for Determining Rate of Air Leakage Through Exterior Windows, Curtain Walls, and Doors Under Specified Pressure Differences Across the Specimen*

2.19. *ASTM E330 – Standard Test Method for Structural Performance of Exterior Windows, Doors, Skylights and Curtain Walls by Uniform Static Air Pressure Difference*

2.20. *ASTM E331 – Standard Test Method for Water Penetration of Exterior Windows, Skylights, Doors, and Curtain Walls by Uniform Static Air Pressure Difference*

2.21. *ASTM E564 – Standard Practice for Static Load Test for Shear Resistance of Framed Walls for Buildings*

2.22. *ASTM E2126 – Standard Test Methods for Cyclic (Reversed) Load Test for Shear Resistance of Vertical Elements of the Lateral Force Resisting Systems for Buildings*

[1] Unless otherwise noted, all references in this code compliant technical evaluation report (TER) are from the 2018 version of the codes and the standards referenced therein, including, but not limited to, *ASCE 7*, *SDPWS* and *WFCM*. This product also complies with the 2000-2015 versions of the *IBC* and *IRC* and the standards referenced therein. As required by law, where this TER is not approved, the building official shall respond in writing, stating the reasons this TER was not approved. For variations in state and local codes, if any see Section 8.

2.23. *ASTM E2178 – Standard Test Method for Air Permeance of Building Materials*

2.24. *AWC Wind & Seismic – Special Design Provisions for Wind and Seismic* (*SDPWS*)

2.25. *NFPA 286 – Standard Methods of Fire Tests for Evaluating Contribution of Wall and Ceiling Interior Finish to Room Fire Growth*

2.26. *SBCA – Guide for Handling, Installing & Temporary Bracing of Wall Panels*

3. Performance Evaluation:

3.1. The PUReWall™ was evaluated to determine:

3.1.1. Structural performance under lateral load conditions for use as an alternative to the *IRC* Continuous Wall Bracing provisions of *IRC* Section R602.10.4 Method CS-WSP[2].

3.1.2. Structural performance under lateral load conditions for use as an alternative to the Conventional Wall Bracing provisions of *IBC* Section 2308.6.3, Method 3, for Type V construction.

3.1.3. Structural performance under lateral load conditions for both wind and seismic loading for use with the performance-based provisions of *IBC* Section 2306.1 and 2306.3 for light-frame wood wall assemblies.

3.1.3.1. Table 5 provides seismic design coefficients (SDC) that conform to the requirements in *ASCE 7-10* Section 12.2.1 and Table 12.2-1 for design of wall assemblies in buildings that require seismic design in accordance with *ASCE 7* (i.e., all SDC).

3.1.3.2. The basis for equivalency testing is outlined in Section 12.2.1 of *ASCE 7*:

> Seismic force-resisting systems not contained in Table 12.2-1 are permitted provided analytical and test data are submitted to the authority having jurisdiction for approval that establish their dynamic characteristics and demonstrate their lateral force resistance and energy dissipation capacity to be equivalent to the structural systems listed in Table 12.2-1 for equivalent values of response modification coefficient, R, over strength factor, Ω_o, and deflection amplification factor, C_d.

3.1.3.3. The SDC evaluation uses the approach found in documentation entitled “Equivalency Characteristics and Parameters for Proprietary Shear Walls Used in Wood Framed or Cold-formed Steel Construction”[3] and “Seismic Design Coefficients: How they are determined for light-frame components” [4] using code-defined accepted engineering procedures, experience, and technical judgment.

3.1.4. Structural performance under lateral load conditions for use as an alternative to *SDPWS* Section 4.3 Wood-Frame Shear Walls.

3.1.5. Structural performance under transverse load conditions for use as an exterior wall covering in accordance with *IBC* Chapter 14 and *IRC* Chapter 7.

3.1.6. Continuous insulated sheathing requirements for thermal resistance (R-value) complying with the provisions of *IRC* Section N1102 and *IECC* Section C402.

3.1.7. Performance for use as a component of the air barrier in accordance with *IRC* Section N1102.4.1 and *IECC* Section R402.4.1.1 and C402.1.1[5].

3.1.8. Surface burn characteristics complying with the provisions of *IBC* Section 2603.3 and *IRC* Section R316.3.

3.1.9. Performance of the PUReWall™ for use as a water-resistive barrier (WRB) in accordance with *IBC* Section 1403.2 and *IRC* Section R703.2.

3.2. Performance of the PUReWall™ or any of its component materials as used in the normal construction process is outside the scope of this TER.

3.2.1. This includes storage, weather conditions, durability considerations, handling, installing, restraining and bracing of the PUReWall™ through the shipping, storing and construction means and methods process.

3.3. Use of the PUReWall™ in a portal frame is outside the scope of this TER.

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[2] Continuously Sheathed-Wood Structural Panel
[3] http://www.structuremag.org/wp-content/uploads/2014/08/C-StructuralPerformance-Nelson-Aug081.pdf
[4] http://www.sbcmag.info/article/2014/seismic-design-coefficients-how-they-are-determined-light-frame-components
[5] *2012 IECC* Section C402.4.1.1

3.4. Any code compliance issues not specifically addressed in this section are outside the scope of this TER.

4. Product Description and Materials:

4.1. PUReWall™ is a proprietary wall system consisting of Hunter PW-STR Spray Polyurethane Foam (SPF) combined with rigid Foam Plastic Insulated Sheathing (FPIS).

4.1.1. PUReWall™ described in this TER and shown in Figures 1a and 1b contains a combination of the following materials:

4.1.1.1. 1½" to 2" Hunter PW-STR SPF Structural Wall Insulation

4.1.1.2. 1" to 2" Hunter Panel PW CG Polyiso FPIS product

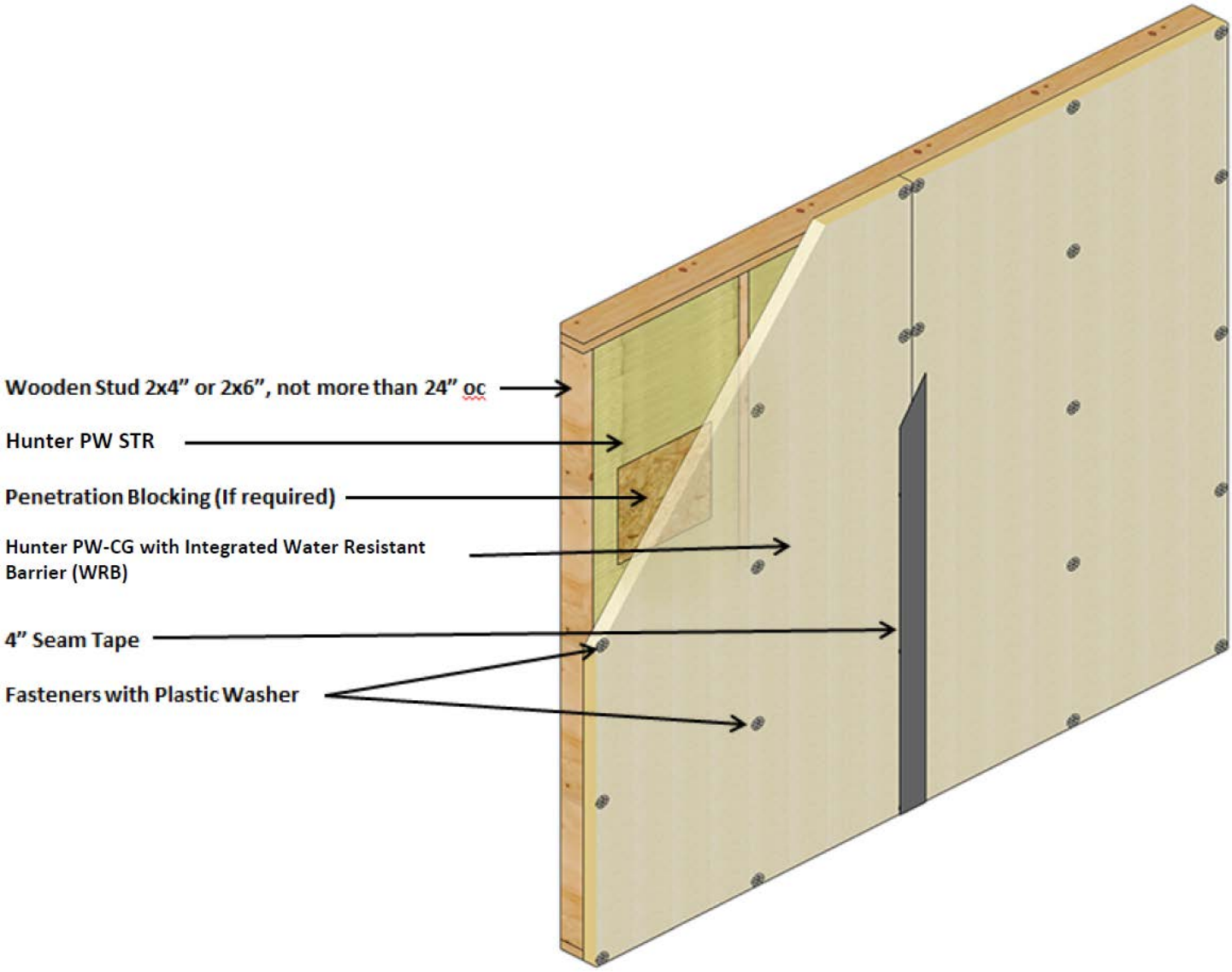

Figure 1a: Illustration of the PUReWall™

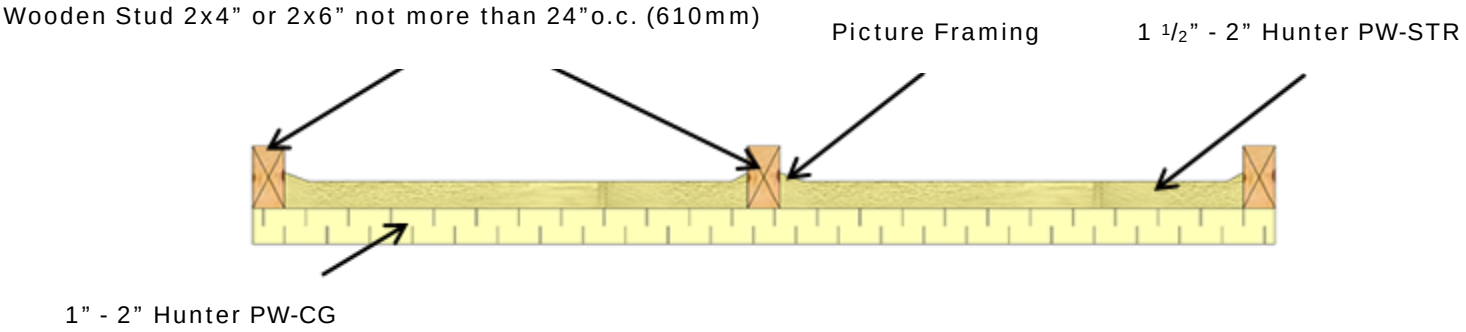

Figure 1b: Cross Section of PUReWall™

5. Applications:

5.1. General

5.1.1. PUReWall™ is used in buildings constructed in accordance with the *IRC* requirements for light-frame wood construction.

5.1.2. PUReWall™ is used in buildings constructed in accordance with the *IBC* requirements for Type V light-frame construction.

5.1.3. PUReWall™ is used to provide:

5.1.3.1. Lateral load resistance (wind and seismic) for braced wall panels and shear walls.

5.1.3.2. Transverse load resistance (wind positive and negative pressure).

5.1.3.3. Thermal resistance in the exterior wall component of the building thermal envelope.

5.1.3.4. Water resistant barrier.

5.1.3.5. Air barrier.

5.2. Structural Applications

5.2.1. Where the application exceeds the limitations set forth herein, design shall be permitted in accordance with accepted engineering procedures, experience and technical judgment.

5.2.2. General Structural Provisions

5.2.2.1. Except as otherwise described in this TER, the PUReWall™ shall be installed in accordance with the applicable building codes listed in Section 2 using the provisions set forth therein for the design and installation of wood structural panels (WSP) and shear walls.

5.2.2.1.1. PUReWall™ is permitted to be designed in accordance with *SDPWS* for the design of shear walls using the methods set forth therein, including the perforated shear wall methodology, and subject to the *SDPWS* boundary conditions, except as specifically allowed in this TER.

5.2.2.2. Anchorage for in-plane shear shall be provided to transfer the induced shear force into and out of each shear wall.

5.2.2.2.1. For wind design, anchor bolt spacing shall not exceed 6' o.c. (1829 mm).

5.2.2.2.2. For seismic design, anchor bolt spacing shall not exceed 4' o.c. (1219 mm).

5.2.2.3. The maximum aspect ratio for full height PUReWall™ braced wall segments shall be 4:1.

5.2.2.4. The minimum full height panel width shall be 24" (610 mm).

5.2.2.5. Minimum panel widths shall satisfy the requirements of *IRC* Table R602.10.5.

5.2.2.6. All Hunter PW-CG panel edges shall be supported with dimensional lumber or blocking a minimum 2" (51 mm) nominal in the least dimension.

5.2.2.7. Where the application exceeds the limitations set forth herein, design shall be permitted in accordance with code-defined accepted engineering procedures, experience and technical judgment.

5.2.3. Prescriptive *IRC* Bracing Applications

5.2.3.1. PUReWall™ may be used to brace walls of buildings as an alternative to the *IRC* Continuous Wall Bracing provisions, *IRC* Section R602.10.4[6] (CS-WSP), in accordance with the bracing amounts shown in Table 1, as adjusted in accordance with *IRC* Table R602.10.3(2)[7] for wind design.

Table 1: PUReWall™ (1" FPIS) Required Bracing Lengths for Installation with ½" Gypsum Wallboard @ Maximum 24" o.c. Stud Spacing in Accordance with the *IRC* Bracing Provisions – Wind

Condition	Braced Wall Line Spacing (ft.)	PUReWall™ Assembly Fastened with #9 screw with plastic washer 24" o.c. Edges & 48" o.c. in the Field				
		Wind Speed mph (V_{asd})				
		≤ 110 mph	≤ 115 mph	≤ 120 mph	≤ 130 mph	≤ 140 mph
		Length of Wall Line to be Braced (ft.)				
One Story or the Top of Two or Three Stories	10	1.2	1.5	1.5	1.9	1.9
	20	2.3	2.7	2.7	3.1	3.9
	30	3.5	3.5	3.9	4.6	5.4
	40	4.2	4.6	5.0	5.8	6.9
	50	5.4	5.8	6.2	7.3	8.5
	60	6.2	6.9	7.3	8.5	10.0
First Story of Two Stories or Second Story of Three Stories	10	2.3	2.7	2.7	3.5	3.9
	20	4.2	5.0	5.4	6.2	6.9
	30	6.2	6.9	7.3	8.9	10.0
	40	8.1	8.9	9.6	11.6	13.1
	50	10.0	10.8	11.9	13.9	16.2
	60	11.9	13.1	14.2	16.6	19.3
First Story of Three Stories	10	3.5	3.9	4.2	5.0	5.8
	20	6.5	6.9	7.7	8.9	10.4
	30	9.2	10.0	11.2	13.1	15.0
	40	11.9	13.1	14.2	16.9	19.3
	50	14.6	16.2	17.7	20.4	23.9
	60	17.7	19.3	20.8	24.3	28.1

1. Demonstrates equivalency to *IRC* Table R602.10.3(1). Design assumptions in this table are the same as those found in the *IRC* bracing tables (e.g., Exposure B, 30' mean roof height, etc.). All adjustment factors from *IRC* Table R602.10.3(2) shall be applied. A minimum of ½" gypsum sheathing shall be applied to the interior side of the PUReWall™ assembly and fastened with minimum 5d cooler nails or 1¼" #6 type W or S screws spaced 16" o.c. at panel edges and 16" o.c. in the field of the panels.
2. Demonstrates equivalency to *2009 IRC* Table R602.10.1.2(1). Design assumptions in this table are the same as those found in the *IRC* bracing tables (e.g., Exposure B, 30' mean roof height, etc.). All adjustment factors from *IRC* Table R602.10.1.2(1) shall be applied. A minimum of ½" gypsum sheathing shall be applied to the interior side of the PUReWall™ assembly and fastened with minimum 5d cooler nails or 1-¼" #6 type W or S screws spaced 16" o.c. at panel edges and 16" o.c. in the field of the panels.
3. Where gypsum wallboard is not applied to the interior side of the PUReWall™ assembly, bracing lengths shall be multiplied by a factor of 1.5.
4. Bracing lengths are the result of comparative equivalency testing and analysis using both tested and published design values as points of comparison.
5. Wind speeds shown are V_{ult} in accordance with *ASCE 7*. To convert to equivalent V_{asd} wind speed, $V_{asd} = V_{ult} / 1.26$.
6. Continuous insulation may be fastened with #9 screw or 2-½" long SCRAIL® fasteners from Fasco America® using the same pattern as described above.

[6] *2009 IRC* Section R602.10.4
[7] *2009 IRC* Table R602.10.1.2(1), including all footnotes

5.2.3.2. For seismic design, required braced wall panel lengths for PUReWall™ shall be as shown in Table 2, and shall be used in conjunction with *IRC* Table R602.10.3(4)[8], which provides the required adjustments.

Table 2: Required Bracing Lengths for PUReWall™ (1" min FPIS) for Installation with ½" Gypsum Wallboard @ maximum 24" o.c. Stud Spacing in Accordance with the *IRC* Bracing Provisions – Seismic

Condition	Braced Wall Line Length (ft.)	PUReWall™ Assembly Fastened with #9 screw with plastic washer 24" o.c. Edges & 48" o.c. in the Field			
		Length of Wall Line to be Braced (ft.)			
		SDC C (townhouses only)	SDC D_0	SDC D_1	SDC D_2
One Story or the Top of Two or Three Stories	10	1.1	1.3	1.3	1.6
	20	2.1	2.4	2.6	3.3
	30	3.2	3.5	3.9	4.9
	40	4.2	4.7	5.3	6.5
	50	5.3	5.9	6.5	8.2
First Story of Two Stories or Second Story of Three Stories	10	2.0	2.4	2.9	3.6
	20	3.9	4.9	5.9	7.3
	30	5.9	7.4	8.9	10.8
	40	7.9	9.9	11.8	14.4
	50	9.9	12.3	14.7	18.0
First Story of Three Stories	10	2.9	3.4	3.9	NP
	20	5.9	6.9	7.9	NP
	30	8.9	10.3	11.8	NP
	40	11.8	13.8	15.7	NP
	50	14.7	17.1	19.6	NP

1. Demonstrates equivalency to *IRC* Table R602.10.3(3). Design assumptions in this table are the same as those found in the *IRC* bracing tables. All adjustment factors from *IRC* Table R602.10.3(4) shall be applied. A minimum of ½" gypsum sheathing shall be applied to the interior side of the PUReWall™ assembly and fastened with minimum 5d cooler nails or 1-¼" #6 type W or S screws spaced 16" o.c. at panel edges and 16" o.c. in the field of the panels.
2. Demonstrates equivalency to *2009 IRC* Table R602.10.1.2(2). Design assumptions in this table are the same as those found in the *IRC* bracing tables. All adjustment factors from *IRC* Table R602.10.1.2(2) shall be applied. A minimum of ½" gypsum sheathing shall be applied to the interior side of the PUReWall™ assembly and fastened with minimum 5d cooler nails or 1-¼" #6 type W or S screws spaced 16" o.c. at panel edges and 16" o.c. in the field of the panels.
3. Tabulated bracing lengths are based on the following:
   a. Soil Class D
   b. 10 psf floor dead load
   d. 15 psf roof/ceiling dead load
   e. Braced PUReWall™ line spacing ≤ 25' and PUReWall™ height = 10'
4. Linear interpolation is permitted.
5. Bracing lengths are the result of comparative equivalency testing and analysis using both tested and published design values as points of comparison.

5.2.3.3. Where a building, or portion thereof, does not comply with one or more of the bracing requirements within the prescriptive section of the *IRC*, those portions shall be designed and constructed in accordance with *IRC* Section R301.1.

5.2.4. Alternative Prescriptive *IRC* Bracing Applications

5.2.4.1. As an alternative to Section 5.2.3, the following provisions are permitted:

5.2.4.1.1. PUReWall™ may be used to brace walls of buildings as an alternative to the Continuous Wall Bracing provisions of *IRC* Section R602.10.4, when installed in accordance with this TER.

[8] *2009 IRC* Table R602.10.1.2(2), including all footnotes

5.2.4.1.2. Required braced wall panel lengths for PUReWall™ shall be as determined by the equivalency factor shown in Table 3 and *IRC* Table R602.10.3(1) including all footnotes.

5.2.4.1.2.1. Bracing lengths in these tables for Method CS-WSP shall be multiplied by the equivalency factor listed in Table 3.

Table 3: PUReWall™ (1" min FPIS) Braced Wall Line Length Equivalency Factors

Wall Assembly	Gypsum Sheathing (16:16)	Maximum Stud Spacing (in.)	FPIS Fastener	Fastener Spacing	Wind SPF Framing PUReWall™ Tested Equivalency Factors to *IRC* CS-WSP
1" FPIS	Yes	24" o.c.	#9 Screw with plastic washer	24:48	0.77

For SI: 1" = 25.4 mm
1. Fastener heads shall be installed flush to the surface of the sheathing, fastened using a #9 screw or a 2-½" SCRAIL® fastener from Fasco America® using the same fastening pattern and approved plastic washer.
2. Multiply the bracing lengths in *IRC* Table R602.10.3(1) and *IRC* Table R602.10.3(2) Method WSP or CS-WSP (continuous sheathing) as applicable, including all footnotes, by the factors shown here, to establish the required bracing length.
3. Multiply the bracing lengths in *2009 IRC* Table R602.10.1.2(1) Method CS-WSP as applicable, including all footnotes, by the factors shown here, to establish the required bracing length.
4. Where gypsum wallboard is not applied to the interior side of the PUReWall™ assembly, bracing lengths shall be multiplied by a factor of 1.5.
5. Valid for double top plate PUReWall™ installations.

5.2.4.1.2.2. These braced wall line length equivalency factors are based on equivalency testing and are used to comply with Method CS-WSP of the *IRC*.

5.2.4.1.2.3. PUReWall™ tested equivalency factors in Table 3 allow the user to determine the length of bracing required, by multiplying the factor from Table 3 by the length shown in the CS column in *IRC* Table R602.10.3(1), as modified by all applicable factors in Table R602.10.3(2).

5.2.4.1.3. All *IRC* prescriptive bracing minimums, spacing requirements and rules must still be met.

5.2.5. Prescriptive *IBC* Conventional Light-Frame Wood Construction

5.2.5.1. PUReWall™ may be used to brace exterior walls of buildings as an equivalent alternative to Method 3 of the *IBC* when installed continuously along the length of the braced wall line with ½" (13 mm) gypsum on the interior fastened with a minimum 5d cooler nail or #6 type W or S screw spaced a maximum of 16" o.c. (406 mm) at panel edges and 16" o.c. in the field. Bracing shall be in accordance with the conventional light-frame construction method of *IBC* Section 2308.6[9] and this TER.

5.2.6. Performance-Based Wood-Framed Construction

5.2.6.1. PUReWall™ designed as shear walls are permitted to be designed in accordance with the methodology used in *SDPWS* for WSP using the capacities shown in Tables 4-7.

5.2.6.2. PUReWall™ shear walls are permitted to resist horizontal wind load forces using the allowable shear loads (in pounds per linear foot) set forth in Table 4.

[9] *2012 IBC* Section 2308.9.3

Table 4: PUReWall™ Nominal Unit Shear Capacity (NUSC) & Allowable Strength Design (ASD) Capacity – Wind					
Wall Assembly	PUReWall™ Fastener & Spacing (edge : field)[1,2]	Maximum Stud Spacing (in.)	Gypsum Wallboard (GWB)	Ultimate Unit Shear Capacity (plf)	Allowable Unit Shear Capacity (plf)
PUReWall™ (1" FPIS)	#9 Screw with plastic washer (24:48)	24" o.c.	No GWB	760	380
			½" GWB	940	470
For SI: 1" = 25.4 mm 1 lb./ft. = 0.0146 kN/m 1. Minimum fastener size and spacing are as shown above with a minimum panel edge distance of $^3/_8$". 2. Sheathing used in the PUReWall™ shall have joints butted at framing members, and a single row of fasteners must be applied to each panel edge into the stud below.					

5.2.6.3. PUReWall™ shear walls that require seismic design in accordance with *IBC* Section 1613 shall use the seismic allowable unit shear capacities set forth in Table 5.

5.2.6.3.1. The response modification coefficient, R, system overstrength factor, Ω_0, and deflection amplification factor, C_d, indicated in Table 5 shall be used to determine the base shear, element design forces, and design story drift in accordance with *ASCE 7* Chapter 12 and Section 14.5.

Table 5: PUReWall™ (1" min FPIS) Allowable Strength Design (ASD) Capacity & Seismic Design Coefficients – Seismic												
Seismic Force-Resisting System	Maximum Stud Spacing (in.)	Gypsum Wallboard (GWB)[6]	Seismic Allowable Unit Shear Capacity[1] (plf)	Apparent Shear Stiffness, G_a (kips/in.)	Response Modification Factor, R[2]	System Overstrength **Factor, Ω_0**[3]	Deflection Amplification Coefficient, C_d[4]	Structural System Limitations & Building Height (ft.) Limit[5]				
								Seismic Design Category				
								B	C	D	E	F
1" FPIS	24" o.c.	No GWB	215	4.0	3	2.5	3	NL	NL	40	NP	NP
		½" GWB	280	5.6	3	2.5	3	NL	NL	40	NP	NP
For SI: 1" = 25.4 mm 1 lb./ft. = 0.0146 kN/m 1. Allowable unit shear capacity is based on a safety factor of 2.5, in accordance with *ASCE 7* Chapter 12. 2. Response modification coefficient, R, for use throughout *ASCE 7*. Note R reduces forces to a strength level, not an allowable stress level. 3. The tabulated value of the overstrength factor, Ω_0, is permitted to be reduced by subtracting one-half (0.5) for structures with flexible diaphragms. 4. Deflection amplification factor, C_d, for use with *ASCE 7* Sections 12.8.6, 12.8.7, and 12.9.2. 5. NL = Not Limited. Heights are measured from the base of the structure as defined in *ASCE 7* Section 11.2. 6. Gypsum attached with minimum #6 type W or S screws 1¼" long spaced 16" o.c. at panel edges and in the field. Maximum stud spacing is 24" o.c.												

5.3. Perforated Shear Walls

5.3.1. PUReWall™ shear walls are permitted to be designed in accordance with the methodology found in *SDPWS* Section 4.3.3.5.

5.4. Transverse Wind Loading

5.4.1. PUReWall™ installed over exterior framing spaced a maximum of 24" o.c. without an interior covering can resist allowable wind loads as shown in Table 6. Required components and cladding (C&C) loads to be resisted are found in *IBC* Section 1609.1.1, *IRC* Table R301.2(2) and R301.2(3).

Table 6: Summary of Transverse Load Capacity of PUReWall™ (1" min FPIS)						
PUReWall™	Transverse Wind Load Resistance				Maximum 24" o.c. Framing	
	Negative		Positive			
	Ultimate Average Pressure (psf)	Allowable Design Value (psf)	Ultimate Average Pressure (psf)	Allowable Design Value (psf)	C&C Basic Wind Speed (V_{ULT}) (mph)	C&C Basic Wind Speed (V_{ASD}) (mph)
1" FPIS	160	105	195	130	210	160

1. FPIS attached to wall framing at a maximum 24" at panel edges and 48" on intermediate studs using either a 0.19" x 2½" galvanized nail with 2" plastic washer, or a 3" inch nail with 2" plastic washer. Suitable plastic washers are the Plasti-Grip ci Prong washer or the Thermal-Grip ci prong washers from Rodenhouse or equivalent. The attachment of the sheathing to the framing is primarily through the adhesion of the cc- SPF to the framing and FPIS. Average depth is 1.5".
2. Stud spacing shall be a maximum 24" o.c.
3. The ASD allowable uniform load capacities shown are the minimum of the ultimate average pressure divided by an ASD reduction factor of 1.5, or the yield point in accordance with *ANSI/ FS100*. PEF = 1.0
4. Allowable wind speeds are based on the following: Mean roof height 30', Exposure B, 10 sq. ft. effective wind area, corner zone 5.

5.5. Uplift and Compression Axial loading

5.5.1. PUReWall™ has been tested for both compression and uplift.

5.5.2. Table 7 shows the maximum allowable compression and uplift forces allowed in this application.

5.5.2.1. Designs using the allowable loads in Table 7 shall have a load path capable of transferring loads from their point of origin to their final point of resistance, in accordance with *IRC* Section R301.1.

5.5.2.2. Installation is permitted for double top plate applications only.

5.5.2.2.1. Where truss reactions are less than or equal to the values in Table 7, trusses can be set anywhere along the top plate as needed to frame the roof system.

Table 7: Allowable Axial Roof Framing Reactions on PUReWall™ Top Plate			
Wall Assembly	Interior Sheathing Material	Max. Allowable Roof framing Uplift & Gravity Reaction for General Placement Anywhere Along the Wall Top Plate (plf)	
	Type	Uplift	Compression
PUReWall™	Gypsum – ½" – Light Weight	390	1,350

1. Maximum allowable load assumes load is concentrated at the mid-span of the top plate between studs.
2. PUReWall™ assemblies are a maximum 24" o.c. stud spacing and a double top plate. All stud cavities are sprayed with Hunter PW-STR SPF. Roof framing assumed to be 24" o.c.
3. All other framing connections are in accordance with the applicable building code.
4. Uplift values apply to single bottom plates.

5.6. Shear and Uplift Interactions

5.6.1. PUReWall™ combined uplift and lateral loads can be calculated using the following equation when used with adequate hold downs on each end of the shear wall:

$$v = 470 - \frac{u^2}{325}$$

Values are based on allowable loads and where:

v = allowable unit shear capacity, plf

u = allowable unit uplift capacity, plf

5.6.2. When using QuickTie™ (QT) System cables spaced 4', 6' and 8' o.c., lateral loads can be calculated as follows:

5.6.2.1. Interaction equation for 4' o.c.

5.6.2.1.1. The allowable lateral load capacity is 385 plf for unfactored uplift loads of 520 plf or less. If the unfactored uplift load exceeds 520 plf, then the lateral load capacity can be calculated using:

$$v = 2035 - 3.18 * u$$

5.6.2.2. Interaction equation for 6' o.c.

5.6.2.2.1. For unfactored uplift loads of 340 plf or less, the allowable lateral load capacity is calculated as:

$$v = 445 - 0.183 * u$$

5.6.2.2.2. If the unfactored uplift load exceeds 340 plf, then the lateral load capacity is calculated as:

$$v = 1710 - 3.92 * u$$

5.6.2.3. Interaction equation for 8' o.c.

5.6.2.3.1. The allowable lateral load capacity for unfactored uplift loads of 340 plf or less is calculated as:

$$v = 445 - 0.183 * u$$

5.6.2.3.2. If the unfactored uplift load exceeds 340 plf, then the lateral load capacity is calculated as:

$$v = 1710 - 3.92 * u$$

5.6.3. QuickTie™ (QT) System cables shall be sized per the manufacturer's design requirements.

5.6.4. An interaction diagram showing the allowable uplift and lateral loads for the PUReWall™ system is given in Figure 2.

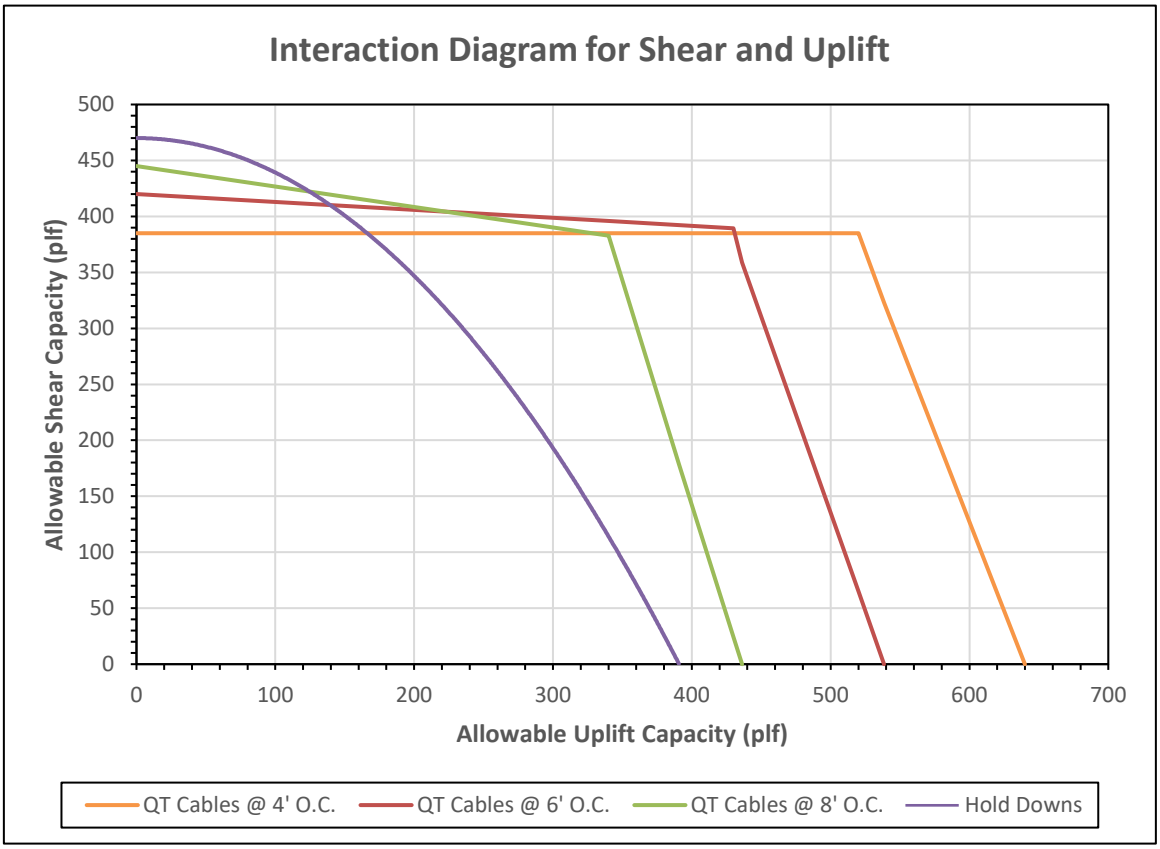

Figure 2: PUReWall™ System Interaction Diagram

5.6.5. A comparison of the PUReWall™ systems under a unit shear load of 385 plf is given in Table 8.

Table 8: PUReWall™ System Comparison

Wall Type		Unit Shear, *v* (plf)	Allowable Uplift Capacity, *u* (plf)
PUReWall™ System	QT Cables @ 4' O.C.	385	520
	QT Cables @ 6' O.C.		430
	QT Cables @ 8' O.C.		340
	Hold Downs		165
Wood Structural Panel Sheathing[1]	Nails-Single Row[2]	310	110
	Nails-Double Row[3]		430

1. Allowable capacities for wood structural panel sheathing are based on 7/16" OSB or plywood fastened with 8d common (0.131" dia. x 2-½" long) nails spaced 6" o.c. along panel edges, 4" o.c. along the top and bottom plates, and 12" o.c. in the field.
2. Wood structural panels shall overlap the top member of the double top plate and bottom plate by 1-½" and a single row of fasteners shall be placed ¾" from the panel edge.
3. Wood structural panels shall overlap the top member of the double top plate and bottom plate by 1-½". Rows of fasteners shall be ½" apart with a minimum edge distance of ½". Each row shall have nails at the specified spacing.

5.7. Water-Resistive Barrier

5.7.1. Where used as a water resistant barrier, the foam sheathing used as part of the PUReWall™ shall have all joints taped. Approved tapes are 4" wide Protecto Wrap® BT20XL Butyl or any 4" non-foil tape meeting American Architectural Manufacturers Association (AAMA®) specification 711-13. Tape must be applied in accordance with the sheathing manufacturer's recommendations or as defined in the PUReWall™ Quality Control Manual, otherwise shall be covered with a code-compliant WRB in accordance with *IBC* Section 1404.2 and *IRC* Section R703.2.

5.7.2. Flashing shall be installed at all sheathing penetrations and shall comply with all applicable code sections.

5.8. *IECC* Compliance

5.8.1. PUReWall™ meets the continuous insulated sheathing requirements complying with the provisions of *IRC* Section N1102 and *IECC* Section C402.

5.8.2. PUReWall™ has the thermal resistance shown in Table 9.

Table 9: PUReWall™ Thermal Resistance Properties – Component R-Values

Component	Thickness (in)	R-Value ($h \cdot ft.^2 \cdot °F/Btu$)
Hunter PW-STR	$1\text{-}1/2$	10
	2	13

1. In accordance with ASTM C518, aged 90 days.

5.8.2.1. Given the R-values of common wall assembly components, listed in Table 10, the assembly R-value and U-Factor can be calculated for a wood framing construction assembly using the methods described in the California Energy Commission 2013 Joint Appendices Appendix JA4-5 Table 4.1.1 U-Factor Calculations for Wood Framed Assembly.

Table 10: PUReWall™ Assembly Component Standard R-Values	
Assembly Components	Component R-Value
Outside Air Film[1]	0.17
Vinyl Siding[1,4]	0.62
1/2" Hunter PW-CG[2]	3.0
1" Hunter PW-CG[2]	6.0
1-1/2" Hunter PW-CG[2]	9.0
2" Hunter PW-CG[2]	12.0
3 1/2" stud[5,]	4.38
5 1/2" stud[5]	6.9
1-1/2" Hunter PW-STR[3]	10.0
2" Hunter PW-STR[3]	13.0
Fiberglass Batt[1]	13.0
1 1/2" Header	1.88
1-1/2" Hunter PW-STR Insulation in Header	10.0
Enclosed Air Cavity[1]	0.93
1/2" Interior Gypsum Board[1]	0.45
Interior Air Film[1]	0.68

1. ASHRAE Heat, Air and Moisture Control in Building Assemblies Ch.26 Table 1.
2. Thermal values per manufacturers according to *ASTM C518* in accordance with *ASTM C1289*.
3. Thermal values per Table 9 above.
4. Exterior cladding must be added as required. In this example vinyl is used.
5. ASHRAE® Heat, Air and Moisture Control in Building Assemblies –Examples Ch.27.3 Two Dimensional Assembly U-Factor Calculation.

5.8.2.2. See Table 11 for an example of an assembly containing 2x4 wood framing spaced 24" o.c. with a 22% Framing Fraction, 1" Hunter PW-CG and 1-1/2" Hunter PW-STR.

Table 11: PUReWall™ U-Factor Calculations for Wood Framed Assembly using PUReWall™
(2x4 Wood Framing, 24" o.c., 22% Framing Fraction, 1" Hunter PW-CG, 1-1/2" Hunter PW-STR)

Assembly Components	Component R-Value	Assembly R-Value		
		Cavity (Rc)	Frame (Rf)	Insulated Header(Rh)
Outside Air Film[1]	0.17	0.17	0.17	0.17
Vinyl siding[1,4]	0.62	0.62	0.62	0.62
1" Hunter PW-CG[2]	6.0	6.0	6.0	6.0
3-1/2" Stud[5]	4.38	-	4.38	-
1-1/2" Hunter PW-STR[3]	10	10	-	
1/2" Hunter PW-CG				3.0
1-1/2" Lumber Header[6]	1.88	-	-	3.76
Enclosed Air Cavity[1]	0.93	0.93	-	-
1/2" Interior Gypsum Board[1]	0.45	0.45	0.45	0.45
Interior air film[1]	0.68	0.68	0.68	0.68
Subtotal		18.85	12.30	14.67
U-Factors (1/R-Value)		0.053	0.081	0.068
Framing Fraction[5]		78%	18%	4%
Assembly U-Factor Calculation[5]	= (Rc x Framing Fraction) + (Rf x % Framing Fraction) + (Rh x % Framing Fraction) = (0.053 x .78) + (0.081 x .18) + (0.068 x .04) = 0.0413 + 0.01458 + 0.00272 = 0.0586			
Assembly U-Factor	0.059			

1. ASHRAE® Heat, Air and Moisture Control in Building Assemblies Ch.26 Table 1
2. Thermal values per manufacturers according to *ASTM C518* in accordance with *ASTM C1289*.
3. Thermal values per Table 9 above.
4. Exterior cladding must be added as required. In this example vinyl is used.
5. ASHRAE® Heat, Air and Moisture Control in Building Assemblies –Examples Ch.27.3 Two Dimensional Assembly U-Factor Calculation.
6. Using Double header, single header would allow additional insulation and reduce U factor

5.8.2.3. The same methodology used in Table 11, with alternate polyiso board and cc-SPF thicknesses, is shown in Table 12. The calculations use 2x4 and 2x6 framing spaced 24" o.c. with a 78/18/4% framing fraction with the same assembly components.

Table 12: PUReWall™ U-Factor Calculations for Wood Framed Assembly

Framing Used	Hunter PW-STR Thickness (in)[1]	Hunter PW-CG Thickness (in)[2]		
		1	1 1/2	2
2x4	1-1/2	0.059	0.050	0.043
	2	0.053	0.046	0.040
2x6	1-1/2	0.053	0.046	0.040
	2	0.049	0.043	0.038

1. Exterior cladding must be added as required. In this example vinyl cladding is used.
2. ASHRAE® Heat, Air and Moisture Control in Building Assemblies – Examples Ch.27.3 Two Dimensional Assembly U-Factor Calculation.

5.8.2.4. These U-Factors can be compared to requirements found in 2015 *IECC* Table R402.1.4, which are in harmony with the 2015 *IRC* and *IBC*. As seen in Figure 2, 2015 Climate Zones 3-5 U-Factors can be met with 1-½" of Hunter PW-STR and 1" of Hunter PW-CG and Climate Zones 6-8 with 1-½" of Hunter-STR and 2" of Hunter PW-CG.

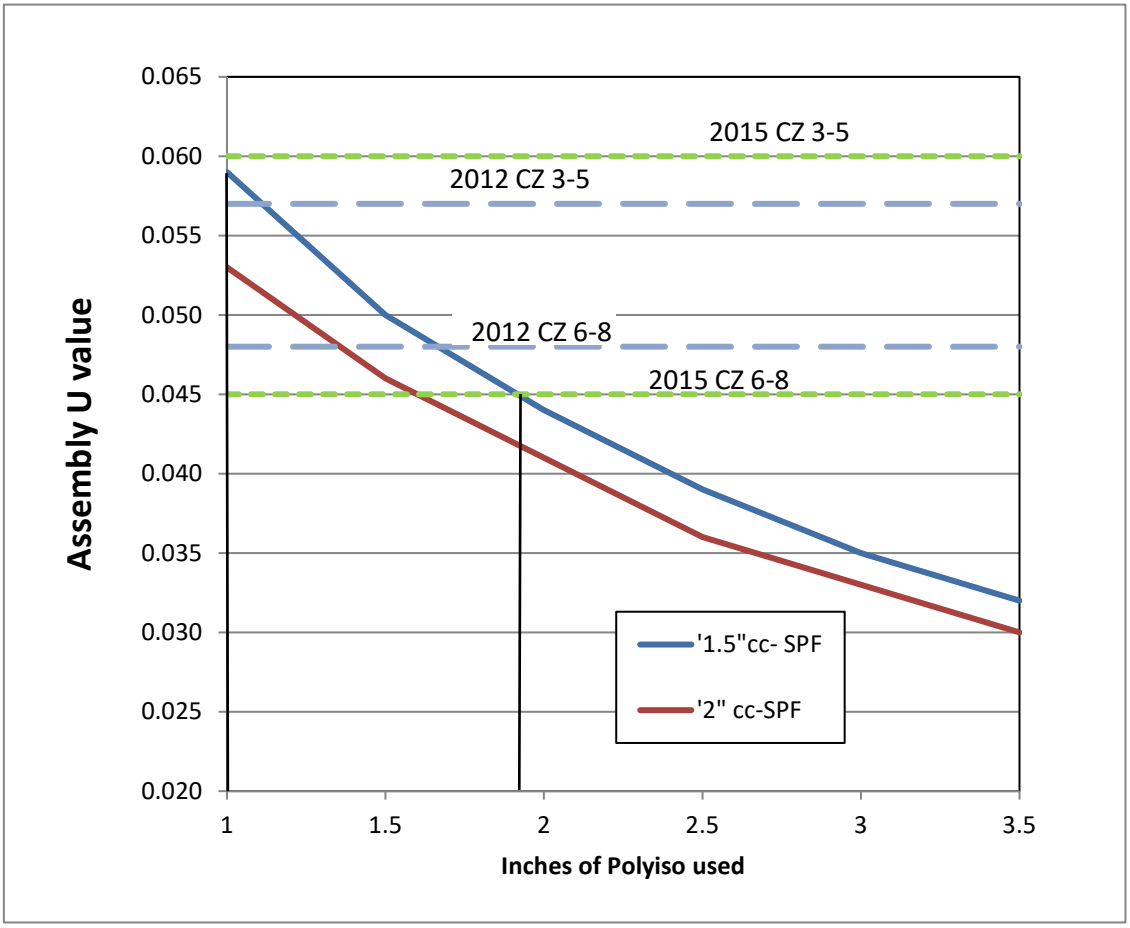

Figure 3: Assembly U-Factors for each SPF & Polyiso thickness to meet *IECC* 2012 & 2015 requirements

5.9. Air Barrier

5.9.1. PUReWall™ meets the requirements of *IECC* Section C402 for use as a component of the air barrier, when installed in accordance with the manufacturer's installation instructions and this TER.

5.10. Fire Resistance Properties

5.10.1. Surface Burn Characteristics

5.10.1.1. PUReWall™ has the flame spread characteristics shown in Table 13.

Table 13: Fire Performance of PUReWall™ Component, Hunter PW-STR – Flame Spread & Smoke Developed Indexes

Component	Flame Spread	Smoke Developed
Hunter PW-STR [1]	<25	<450

1. Tested in accordance with *ASTM E84*.

5.11. Thermal Barrier Requirements – Attic, Crawlspace or Other Uninhabitable Space Applications

5.11.1. Installation shall be fully protected from the interior of the building by an approved 15-minute thermal barrier or ignition barrier, as required by *IBC* Section 2603.4 and *IRC* Section R316.4.

5.12. One-hour Fire Rating

5.12.1. PUReWall™ is approved for use as a one-hour fire resistance rated assembly when constructed in accordance with Figure 4.

5.12.2. This assembly is limited to the conditions where the fire resistance rating is from the interior (gypsum) side of the wall and the assembly is constructed as follows:

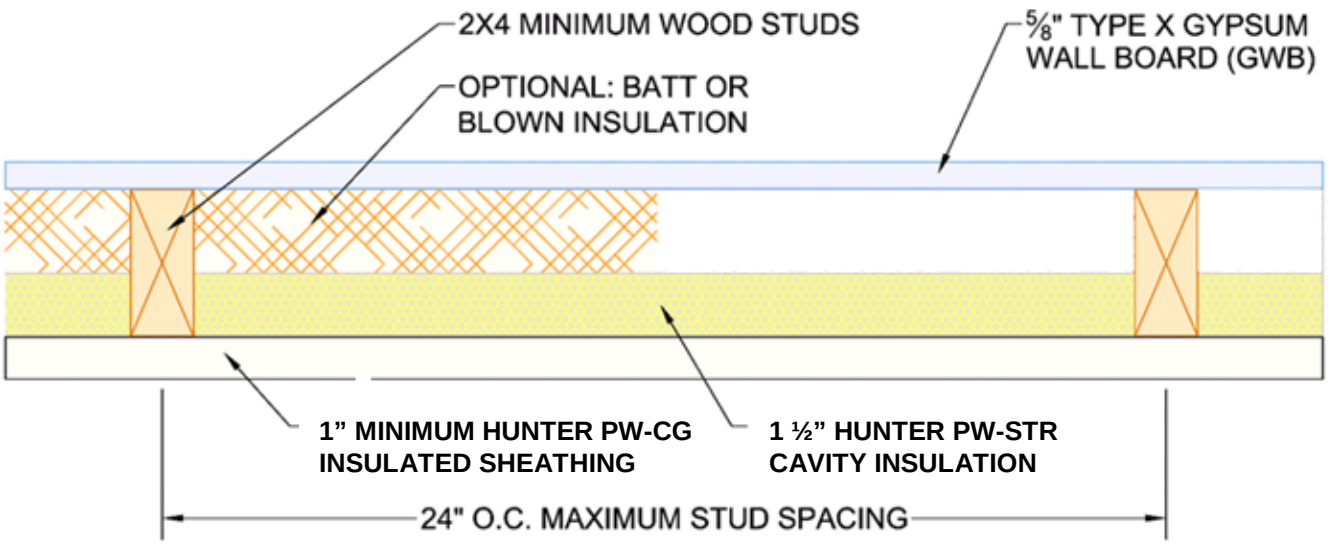

Figure 4: PUReWall™ One-Hour Fire Resistance Rated Wall Assembly

6. Installation

6.1. General

6.1.1. Installation shall comply with the component manufacturer's installation instructions and this TER. In the event of a conflict between the component manufacturer's installation instructions and this TER, the more restrictive shall govern.

6.1.2. Frame walls in accordance with the construction documents and the applicable building codes.

6.1.3. Wall panel/section shall be square and true prior to sheathing with Hunter PW-CG. Wall panels must meet the standards as defined by SBCA www.sbcindustry.com/wtca-qc-wall-panel and the Hunter Panels Quality Control Manual.

6.1.4. Means and methods for construction of temporary bracing is the responsibility of the building contractor. Insure temporary bracing is in place until the complete PUReWall™ is installed. For guidance in temporary bracing, see SBCA's *Guide for Handling, Installing & Temporary Bracing of Wall Panels*.

6.2. Hunter PW-CG

6.2.1. Hunter PW-CG must be installed over studs having a nominal thickness of not less than 2" (51 mm) in the least dimension and spaced a maximum of 24" (610 mm) o.c.

6.2.2. Hunter PW-CG must be installed vertically with the length dimension of the panels parallel to the framing behind and all panel edges supported by framing or blocking.

6.2.3. Hunter PW-CG shall be installed with A) a minimum #9 screw with an approved minimum 1¾" (45 mm) diameter cap washer; B) a 10d nail with an approved minimum 1¾" (45 mm) diameter cap washer; or C) A 2½" SCRAIL® fastener from Fasco America® with an approved minimum 1¾" (45 mm) diameter cap washer.

6.2.4. Fasteners shall be spaced a maximum of 24" o.c. (610 mm) at panel edges and 48" o.c. (1219 mm) in the field. Additional fasteners may be added to secure edges of penetrations if required.

6.2.5. The 1¾" (45 mm) diameter cap washer used in all instances in Section 6.2.3 may be replaced with an approved 1" (25mm) cap washer if a maximum spacing of 12" (305 mm) o.c. is used at the panel edges and in the field.

6.2.6. Fasteners shall be of sufficient length to penetrate the framing a minimum of ¾" (20 mm) and shall be installed with the head flush with the surface of the sheathing.

6.2.7. Fasteners shall be installed into framing members and driven flush and snug such that gaps between layers are removed, except where a gap under the cladding fastener head is required for attachment of vinyl siding.

6.2.8. Fasteners shall be installed in a workmanlike manner and not over-driven, resulting in material damage or excessive distortion of cladding, furring or Hunter PW-CG.

6.2.9. Ensure Hunter PW-CG is fastened tightly to the stud to prevent spray foam from entering and expanding between the stud and the Hunter PW-CG.

6.3. SPF Installation

6.3.1. SPF shall be applied in-plant only:

6.3.1.1. By persons trained in accordance with the requirements outlined in the PUReWall™ Quality Control Manual.

6.3.1.2. In an approved manufacturing plant constructed according to the Hunter Panels Manufacturing Installation Guide or at a site otherwise approved by Hunter Panels.

6.3.1.3. Exceptions – Minor repairs and penetrations as described in either the Construction or the Quality Control Manual.

6.3.2. Structural spray foam, Hunter PW-STR, shall be sprayed into wall panels as described in the Hunter Panels Quality Control Manual.

6.3.3. Structural spray foam, Hunter PW-STR, sets almost immediately. Ensure wall is square and true prior to SPF application.

6.3.4. Take care to protect area and personnel from overspray.

6.3.5. Reference *Guidance on Best Practices for the Installation of Spray Polyurethane Foam* and the *Technical Product Data* to understand how to properly process PUReWall™ at various conditions.

6.3.6. Use properly functioning high pressure proportioning spray equipment to process Hunter PW-STR. All parts of the spray gun need to function as intended and be clean and free of debris.

6.3.7. Substrate shall be clear of debris and dry to the touch before applying Hunter PW-STR.

6.3.8. Measure the dew point of the area where the spray foam is being applied. Dew point shall be at 70°F or less, when measured with a calibrated instrument.

6.3.9. For proper processing of SPF components, refer to the *PUReWall™ Quality Control Manual* and the *Hunter PW-STR Technical Product Data*.

6.3.9.1. Spray the initial pass of Hunter PW-STR to the Hunter PW-CG so that enough material is laid down to wet the surface without running or sagging.

6.3.9.2. If the cavity is sufficiently large enough, the Hunter PW-STR first pass should be about $^1/_2$" (13 mm) thick and sprayed in a picture frame, around the edge of the panel.

6.3.9.3. Subsequent applications should be layered, until the required total thickness is achieved. The thickness should be measured to ensure compliance before the panel leaves the spray booth. Remedial spraying may be carried out, if required, to achieve the required total thickness. See the *PUReWall™ Quality Control Manual* for details.

6.3.10. Panels may be handled immediately after spraying. Full strength develops after 24 hours.

6.3.11. For more detailed installation guidelines, see *Guidance on Best Practices for the Installation of Spray Polyurethane Foam* and *Ventilation Considerations for Spray Polyurethane Foam*.

6.4. Installation of PUReWall™ in the field:

6.4.1. PUReWall™ shall be installed in a workmanlike manner subject to industry-accepted tolerances. Additional guidelines for trade installations and management of penetrations in the PUReWall™ may be found in the PUReWall™ Installation Guide (contact Hunter Panels for details).

6.4.2. When components are being installed in the PUReWall™ a copy of the component manufacturers' installation instructions shall be available at all times on the jobsite during installation.

6.4.3. The building designer is responsible for all temporary bracing. Please consult SBCA's *Guide for Handling, Installing & Temporary Bracing of Wall Panels* for further information.

6.4.4. Store PUReWall™ on site according to the requirements and conditions outlined in the *Hunter Panels Quality Control Manual*.

6.5. Gypsum Wallboard

6.5.1. Where required, and unless 5/8" gypsum wallboard is required in accordance with Section 5.12 for a one-hour fire resistance rated assembly, gypsum wallboard shall be a minimum ½" (13 mm) thick and shall be installed with a minimum of either:

6.5.1.1. #6 x 1 1/4" (32 mm) type W or S screws

6.5.1.2. 5d cooler nails

6.5.2. For *IRC* and *IBC* prescriptive applications, gypsum fasteners shall be spaced a maximum of 16" (406 mm) o.c. at panel edges and 16" (406 mm) o.c. at intermediate framing. For engineered design, see Table 3.

6.5.3. Fastener edge distance is a minimum of 3/8" (10 mm).

7. Test and Engineering Substantiating Data:

7.1. Test reports and data supporting the following material and structural properties:

7.1.1. Lateral load testing in accordance with *ASTM E2126* and *ASTM E564*.

7.1.2. Transverse wind load testing in accordance with *ASTM E330*.

7.1.3. Uplift load testing in accordance with *ASTM E72*.

7.1.4. Surface burning testing for the SPF used in the production of the PUReWall™ in accordance with *ASTM E84*.

7.1.5. Material property testing for Hunter PW-STR SPF in accordance with *ASTM D1623*, *D1622*, *D2842*, *D2126*, *D6226*, *E2178*, *C518* and *E96*.

7.1.6. Air leakage properties of Hunter PW-STR SPF in accordance with *ASTM E2178*.

7.1.7. Thermal transmission properties of Hunter PW-STR SPF in accordance with *ASTM C518*.

7.2. The product(s) evaluated by this TER fall within the scope of one or more of the model, state or local building codes for building construction. The testing and/or substantiating data used in this TER is limited to buildings, structures, building elements, construction materials and civil engineering related specifically to buildings.

7.3. The provisions of model, state or local building codes for building construction do not intend to prevent the installation of any material or to prohibit any design or method of construction. Alternatives shall use consensus standards, performance-based design methods or other engineering mechanics based means of compliance. This TER assesses compliance with defined standards, accepted engineering analysis, performance-based design methods, etc. in the context of the pertinent building code requirements.

7.4. Some information contained herein is the result of testing and/or data analysis by other sources, which DrJ relies on to be accurate, as it undertakes its engineering analysis.

7.5. DrJ has reviewed and found the data provided by other professional sources are credible. The information in this TER conforms to DrJ's procedure for acceptance of data from approved sources.

7.6. DrJ's responsibility for data provided by approved sources conforms to *IBC* Section 1703 and any relevant professional engineering law.

7.7. Where appropriate, DrJ's analysis is based on design values that have been codified into law through codes and standards (e.g., *IRC*, *WFCM*, *IBC*, *SDPWS, NDS®, ACI®, AISI, PS-20, PS-2*, etc.). This includes review of code provisions and any related test data that aids in comparative analysis or provides support for equivalency to an intended end-use application. Where the accuracy of design values provided herein is reliant upon the published properties of commodity materials (e.g., lumber, steel, concrete, etc.), DrJ relies upon grade/properties provided by the raw material supplier to be accurate and conforming to the mechanical properties defined in the relevant material standard.

8. Findings:

8.1. When installed in accordance with the manufacturer installation instructions and this TER, PUReWall™ complies with, or is a suitable alternative to, the applicable sections of the codes listed in Section 2 for the following applications:

8.1.1. Lateral load resistance due to wind and seismic loads carried by shear walls in accordance with Tables 1-5.

8.1.2. Transverse wind load resistance in accordance with Table 6.

8.1.3. Axial tension and compression resistance in accordance with Table 7.

8.1.4. Combined shear and uplift in accordance with Table 8.

8.1.5. Thermal resistance properties in accordance with Table 9 and Table 10 and Table 11.

8.1.6. Component of an air barrier in accordance with *IECC* Section C402.

8.1.7. Surface burning characteristics in accordance with Table 13.

8.1.8. Water-resistive barrier in accordance with *IBC* Section 1403.2 and *IRC* Section R703.2

8.2. *IBC* Section 104.11 (*IRC* Section R104.11 and *IFC* Section 104.9 are similar) states:

> 104.11 Alternative materials, design and methods of construction and equipment. The provisions of this code are not intended to prevent the installation of any material or to prohibit any design or method of construction not specifically prescribed by this code, provided that any such alternative has been *approved*. An alternative material, design or method of construction shall be *approved* where the *building official* finds that the proposed design is satisfactory and complies with the intent of the provisions of this code, and that the material, method or work offered is, for the purpose intended, not less than the equivalent of that prescribed in this code. … Where the alternative material, design or method of construction is not *approved*, the *building official* shall respond in writing, stating the reasons the alternative was not *approved*.

8.3. This product has been evaluated with the codes listed in Section 2, and is compliant with all known state and local building codes. Where there are known variations in state or local codes that are applicable to this evaluation, they are listed here:

8.3.1. No known variations

8.4. This TER uses professional engineering law, the building code, ANSI/ASTM consensus standards and generally accepted engineering practice as its criteria for all testing and engineering analysis. DrJ's professional engineering work falls under the jurisdiction of each state Board of Professional Engineers, when signed and sealed.

9. Conditions of Use:

9.1. Where required by the authority having jurisdiction (AHJ) in which the project is to be constructed, this TER and the installation instructions shall be submitted at the time of permit application.

9.2. Any generally accepted engineering calculations needed to show compliance with this TER shall be submitted to the code official for review and approval.

9.3. Design loads shall be determined in accordance with the building code adopted by the jurisdiction in which the project is to be constructed and/or by the Building Designer (e.g., Owner, Registered Design Professional, etc.).

9.4. When the PUReWall™ is not installed for use as wall bracing, as described in this TER, the walls shall be braced by other materials, in accordance with the applicable code.

9.5. When used in accordance with the *IBC* in Seismic Design Categories C, D, E or F, special inspections shall comply with *IBC* Section 1705.11.

9.6. When used in accordance with the *IBC* in high wind areas, special inspections shall comply with *IBC* Section 1705.10.

9.7. Loads applied shall not exceed those recommended by the manufacturer as follows:

9.7.1. Allowable shear loads do not exceed values in Tables 1-5, as applicable.

9.7.2. Allowable axial loads do not exceed values in Table 7.

9.7.3. Allowable transverse loads do not exceed values in Table 6.

9.8. All panel edges shall be supported by wall framing or solid blocking a minimum of 2" (51 mm) nominal thickness in the least dimension.

9.9. The panel manufacturer's installation instructions shall be available on the jobsite for inspection.

9.10. Refer to the PUReWall™ quality control manual and Field Guide for construction means and methods support.

9.10.1. Storage handling, installing, restraining and bracing of the panels are defined in the QC procedures and installation guide and in the SBCA bracing instructions. The installer and builder are required to account for any adverse weather or other local conditions that may affect the proper construction means and methods.

9.10.2. The contractor or wall installer is responsible for following the PUReWall™ Quality Control Manual, and Installation Guide for recommended installation instructions, and all means and methods of construction.

9.10.3. Contact Hunter Panels for additional information regarding means and methods.

9.11. In areas where the probability of termite infestation is very heavy, in accordance with *IBC* Section 2603.8 or *IRC* Section R318.4, the product must not be placed on exterior walls located within 6" (152mm) of the ground, unless an approved method of protecting the plastic foam and structure from subterranean termite damage is provided, as required in *IRC* Section R318.1.

9.12. The Hunter PW-STR SPF insulation components are manufactured in Spring, TX and Cartersville, GA under a quality program with inspections by UL.

9.13. This TER only applies to walls manufactured under the Hunter Panels Quality Control and Manufacturing Guidelines Documents issued under license to panel producers.

9.14. Design

9.14.1. Building Designer Responsibility

9.14.1.1. Unless the AHJ allows otherwise, the Construction Documents shall be prepared by a Building Designer for the Building and shall be in accordance with *IBC* Section 107 and *IRC* Section R106.

9.14.1.2. The Construction Documents shall be accurate and reliable and shall provide the location, direction and magnitude of all applied loads and shall be in accordance with *IBC* Section 1603 and *IRC* Section R301.

9.14.2. Construction Documents

9.14.2.1. Construction Documents shall be submitted to the Building Official for approval and shall contain the plans, specifications and details needed for the Building Official to approve such documents.

9.15. Responsibilities

9.15.1. The information contained herein is a product, material, detail, design and/or application TER evaluated in accordance with the referenced building codes, testing and/or analysis through the use of accepted engineering practice, experience and technical judgment.

9.15.2. DrJ TERs provide an assessment of only those attributes specifically addressed in the Products Evaluated or Code Compliance Process Evaluated sections.

9.15.3. The engineering evaluation was performed on the dates provided in this TER, within DrJ's professional scope of work.

9.15.4. This product is manufactured under a third-party quality control program in accordance with *IBC* Sections 104.4 and 110.4 and *IRC* Sections R104.4 and R109.2.

9.15.5. The actual design, suitability and use of this TER, for any particular building, is the responsibility of the Owner or the Owner's authorized agent, and the TER shall be reviewed for code compliance by the Building Official.

9.15.6. The use of this TER is dependent on the manufacturer's in-plant QC, the ISO/IEC 17020 third-party quality assurance program and procedures, proper installation per the manufacturer's instructions, the Building Official's inspection and any other code requirements that may apply to demonstrate and verify compliance with the applicable building code.

10. Identification:

10.1. Each PUReWall™ panel described in this TER is identified by a label bearing the panel manufacturer's name, product name, TER number, and other information to confirm code compliance.

10.1.1. Hunter PW-STR spray foam components are identified by a label on the containers bearing the manufacturer's name, product name, and other information to confirm code compliance.

10.2. Additional technical information can be found at hunterpanels.com.

11. Review Schedule:

11.1. This TER is subject to periodic review and revision. For the most recent version of this TER, visit drjcertification.org.

11.2. For information on the current status of this TER, contact DrJ Certification.

- Mission, Belief and Independence
- Product Evaluation Policies
- Product Approval – Building Code, Administrative Law and P.E. Law