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**EVALUATION REPORT**

**Firestone Building Products**  
**525 Congressional Blvd.**  
**Carmel, IN 46032**

**Evaluation Report F8970.01.08-1**  
**FL10128**  
**Date of Issuance: 01/02/2008**

**SCOPE:**

This Evaluation Report is issued under Rule 9B-72 and the applicable rules and regulations governing the use of construction materials in the State of Florida. The documentation submitted has been reviewed by Robert Nieminen, P.E. for use of the product under the Florida Building Code. The product described herein has been designed to comply with the 2004 Florida Building Code, with 2006 Supplements.

**DESCRIPTION: Firestone Ultraply TPO (MD) Single Ply Roof Systems**

**LABELING:** Each unit shall bear labeling in accordance with the requirements the Accredited Quality Assurance Agency noted herein.

**CONTINUED COMPLIANCE:** This Evaluation Report is valid until such time as the named product(s) changes, the referenced Quality Assurance documentation changes, or provisions of the Code that relate to the product change. Acceptance of this Evaluation Report by the named client constitutes agreement to notify Robert Nieminen, P.E. if the product changes or the referenced Quality Assurance documentation changes. Trinity|ERD requires a complete review of this Evaluation Report relative to updated Code requirements with each Code Cycle.

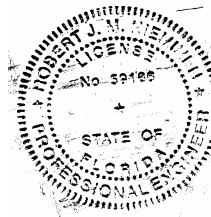
**ADVERTISEMENT:** The Evaluation Report number preceded by the words "Trinity | ERD Evaluated" may be displayed in advertising literature. If any portion of the Evaluation Report is displayed, then it shall be done in its entirety.

**INSPECTION:** Upon request, a copy of this entire Evaluation Report shall be provided to the user by the manufacturer or its distributors and shall be available for inspection at the job site at the request of the Building Official.

This Evaluation Report consists of pages 1 through 4, plus a 14-page Appendix.

**Prepared by:**

**Robert J.M. Nieminen, P.E.**  
 Florida Registration No. 59166, Florida DCA ANE1983



The facsimile seal appearing was authorized by Robert Nieminen, P.E. on 01/02/2008. This does not serve as an electronically signed document. Signed, sealed hardcopies have been transmitted to the Product Approval Administrator and to the named client.

**CERTIFICATION OF INDEPENDENCE:**

1. Exterior Research & Design, LLC. d/b/a Trinity | ERD does not have, nor does it intend to acquire or will it acquire, a financial interest in any company manufacturing or distributing products it evaluates.
2. Exterior Research & Design, LLC. d/b/a Trinity | ERD is not owned, operated or controlled by any company manufacturing or distributing products it evaluates.
3. Robert Nieminen, P.E. does not have nor will acquire, a financial interest in any company manufacturing or distributing products for which the evaluation reports are being issued.
4. Robert Nieminen, P.E. does not have, nor will acquire, a financial interest in any other entity involved in the approval process of the product.

**ROOFING SYSTEMS EVALUATION:**

**1. SCOPE:**

**Product Category:** Roofing  
**Sub-Category:** Single Ply Roof Systems  
**Compliance Statement:** Firestone Ultraply TPO (MD) Single Ply Roof Systems, as produced by Firestone Building Products, have demonstrated compliance with the following sections of the Florida Building Code through testing in accordance with the following Standards. Compliance is subject to the Installation Requirements and Limitations / Conditions of Use set forth herein.

**2. STANDARDS:**

<u>Section</u>	<u>Property</u>	<u>Standard</u>	<u>Year</u>
1504.3.1	Wind	FM 4470	1992
1504.7	Impact	FM 4470	1992
1515.2.4	Impact	FM 4470	1992
1523.6.2	Physical Properties	TAS 110	2000
1523.6.2	System Performance	TAS 114	1995
1523.6.2	Physical Properties	TAS 131	1995

**3. REFERENCES:**

<u>Entity</u>	<u>Examination</u>	<u>Reference</u>	<u>Date</u>
FM Approvals	FM 4470	3009797	02/04/2002
FM Approvals	FM 4470	3007119	01/02/2002
FM Approvals	FM 4470	3005794	12/13/2001
FM Approvals	FM 4470	3002357	05/16/2000
FM Approvals	FM 4470	3005415	02/08/2000
FM Approvals	FM 4470	3002775	09/16/1999
FM Approvals	FM 4470	3000919	04/07/1999
FM Approvals	FM 4470	3003690	03/29/1999
FM Approvals	FM 4470	3B9A2.AM	01/25/1999
FM Approvals	FM 4470	4B1A9.AM	09/09/1998
FM Approvals	FM 4470	1D9A7.AM	01/31/1998
FM Approvals	FM 4470	1D9A0.AM	07/30/1998
FM Approvals	FM 4470	1D0A3.AM	09/24/1997
FM Approvals	FM 4470	1B0A9.AM	05/09/1997
FM Approvals	FM 4470	3012149	08/28/2002
FM Approvals	FM 4470	3015927	01/26/2004
FM Approvals	FM 4470	3019052	01/28/2005
FM Approvals	FM 4470	3023988	09/29/2005
FM Approvals	FM 4470	3025484	05/31/2006
FM Approvals	FM 4470	3026594	06/01/2006
FM Approvals	FM 4470	3025659	06/02/2006
FM Approvals	FM 4470	3027476	08/11/2006
FM Approvals	FM 4470	3027946	10/18/2006
IRT-ARCON, Inc.	FM 4470 / TAS 114	01-012	04/26/2001
IRT-ARCON, Inc.	FM 4470 / TAS 114	01-031/032/033/034	10/12/2001
Momentum Technologies	Physical Properties	EX30M3B	06/17/2004
Underwriters Labs	Fire Classification	01NK14490	06/01/2001
Underwriters Labs	TAS 114, (UL 790)	96NK22037	03/10/1997
Underwriters Labs	UL 1897	01NK25823	07/02/2001
Underwriters Labs	Fire Classification	02NK47751	10/10/2003
Underwriters Labs	Fire Classification	04NK04226	11/12/2004

#### 4. PRODUCT DESCRIPTION:

The following roof covers are mechanically attached or fully adhered to Approved substrates using fasteners, stress plates and adhesives, as outlined in the Limitations / Conditions of Use herein.

- **Firestone Ultraply TPO (MD)** is a nominal 45-mil (1.1mm), 60-mil (1.5mm), 70-mil (1.8mm), 75-mil (1.9mm), 80-mil (2.0mm), 96-mil (2.4mm) or 120-mil (3.1mm) thick, polyester scrim reinforced, single-ply roof membrane.

#### 5. LIMITATIONS:

- 5.1 Refer to a current Roofing Materials Directory for fire ratings of this product.
- 5.2 For steel deck installations, foam plastic insulation shall be separated from the building interior in accordance with FBC 2603.4 unless the exceptions stated in FBC 2603.4.1 and 2603.8 apply.
- 5.3 Unless otherwise noted in Appendix 1, roof decking and its attachment shall be specified and installed to meet project design criteria to the satisfaction of the AHJ.
- 5.4 For recover installations, the existing roof shall be examined in accordance with FBC 1510.
- 5.5 For mechanically attached insulation or membrane, the maximum design pressure for the selected assembly shall meet or exceed the Zone 1 design pressure determined in accordance with FBC Chapter 16. Zones 2 and 3 shall employ a tighter membrane or insulation attachment density designed by a qualified design professional to resist the elevated pressure criteria. Commonly used methods are RAS 117, RAS 137 and FM LPDS 1-29.
- 5.6 For mechanically attached insulation or membrane over existing roof decks, fasteners shall be tested in the existing deck for withdrawal resistance. A qualified design professional shall review the data for comparison to the minimum requirements for the system. Testing and analysis shall be in accordance with TAS 105.
- 5.7 For bonded insulation or membrane over existing substrates in a re-roof (tear off) or recover installation, the existing deck or existing roof surface shall be examined for compatibility with the adhesive to be installed. If any surface conditions exist that bring system performance into question, field uplift testing in accordance with ASTM E907 or FM LPDS 1-52 shall be conducted on mock-ups of the proposed new roof assembly.
- 5.8 For bonded insulation or membrane over existing substrates in a recover installation, the existing roof system shall be capable of resisting project design pressures on its own merit to the satisfaction of the AHJ, as documented through field uplift testing in accordance with ASTM E907 or FM LPDS 1-52.
- 5.9 All products in the roof assembly shall have quality assurance audit in accordance with the FBC and F.A.C. Rule 9B-72.

##### 5.10 **STEEL DECK SYSTEM:**

- 5.10.1 For steel deck application where specific deck construction is not referenced: The deck shall be a minimum 22 gage attached with 5/8" puddle welds with weld washers at every flute with maximum deck spans of 5 ft o.c.

##### 5.11 **LIGHT WEIGHT CONCRETE DECK SYSTEM:**

- 5.11.1 For systems where specific lightweight insulating concrete is not referenced, the minimum design mix shall be a minimum of 250 psi.

##### 5.12 **RECOVER SYSTEM:**

- 5.12.1 All System Limitations and General Limitations shall apply. See specific deck type Notice of Acceptance for deck type System Limitations.



**6. INSTALLATION:**

- 6.1 Firestone Ultraply TPO (MD) shall be installed in accordance with Firestone Building Products published installation instructions, subject to the Limitations / Conditions of Use noted below.
- 6.2 System attachment requirements for wind load resistance are set forth in Appendix 1.
- 6.3 For installations over profiled steel deck, membrane shall be installed running perpendicular to steel deck flutes.

**7. BUILDING PERMIT REQUIREMENTS:**

As required by the Building Official or Authority Having Jurisdiction in order to properly evaluate the installation of this product.

**8. MANUFACTURING PLANTS:**

Tuscumbia, AL

**9. QUALITY ASSURANCE ENTITY:**

Underwriters Laboratories – QUA1743

***- THE 14-PAGES THAT FOLLOW FORM PART OF THIS EVALUATION REPORT -***

## **WIND UPLIFT PERFORMANCE TABLES:**

### **The following notes apply to the systems outlined herein:**

1. Roof deck shall be specified and installed in accordance with FBC requirements to the satisfaction of the AHJ.
2. Unless otherwise noted, insulation may be any one layer or combination of polyisocyanurate, polystyrene, wood fiberboard, perlite, DensDeck, DensDeck Prime, DensDeck DuraGuard or Securock documented as meeting the fire classification requirements of FBC 1505.1 / 1516.1 with Firestone membrane.
3. Fasteners shall be of sufficient length for the following engagements:
  - Steel Deck: Minimum ¾-inch steel penetration and engage the top flute of the steel deck.
  - Concrete Deck: Minimum 1-inch embedment, installed with a pilot hole in accordance with the fastener manufacturer's published installation instructions.
4. Preliminary insulation attachment for System Type D: Minimum four fasteners per 4 x 8 ft board or minimum two fasteners per 4 x 4 ft board.
5. Unless otherwise noted, insulation adhesive application rates are as follows:
  - Olybond Adhesive Fastener: Full coverage at 1 gal/square
  - OlyBond 500 or SpotShot: Continuous ¾ to 1-inch wide ribbons, 12-inch o.c.
  - TITASET: Continuous 3 to 3½-inch ribbons, 12" o.c.
  - WT One Step Foamable Adhesive: Continuous ½ to ¾-inch beads, 12" o.c.
  - Firestone ISO Twinpack: Continuous ½ to ¾-inch beads, 12" o.c.
6. Bonded polyisocyanurate insulation boards shall be maximum 4 x 4 ft.
7. Tapered polyisocyanurate may be substituted for the flat stock board with the following Maximum Design Pressure (MDP) limitations:
  - OlyBond 500 or SpotShot: Maximum Design Pressure -90.0 psf
  - TITASET: Maximum Design Pressure -117.5 psf
8. For mechanically attached components, the maximum design pressure for the selected assembly shall meet or exceed the Zone 1 design pressure determined in accordance with FBC Chapter 16, and Zones 2 and 3 shall employ a tighter attachment density designed by a qualified design professional to resist the elevated pressure criteria. For projects within the HVHZ, analysis shall be in accordance with RAS 137. This is analogous to General Limitation #7 in typical Miami-Dade NOAs.
9. For fully bonded assemblies, the maximum design pressure for the selected assembly shall meet or exceed critical design pressure determined in accordance with FBC Chapter 16, and no rational analysis is permitted. For partially bonded insulation, refer to FM Loss Prevention Data Sheet 1-29 for enhanced pressure zones.
10. For mechanically attached components over existing decks, fasteners shall be tested in the existing deck for withdrawal resistance. A qualified design professional shall review the data for comparison to the minimum requirements for the system. Testing shall be in accordance with TAS 105.
11. For existing substrates in a bonded re-cover installation, the existing roof system shall be capable of resisting project design pressures on its own merit to the satisfaction of the AHJ, as documented through field uplift testing in accordance with ASTM E907 or FM LPDS 1-52.
12. For steel deck applications, the roof membrane shall be run with its length perpendicular to the steel deck flutes.
13. For membrane attachment using batten-strips, batten-strip end laps shall be spliced with sufficient dimension to allow for minimum 2-fasteners at each batten-strip lap.
14. For adhered membrane systems, side laps shall be minimum 3-inch wide sealed with min. 1.5-inch heat weld. Membrane adhesive application rates are as follows: UltraPly Bonding Adhesive (MD) applied to both the substrate and the bottom side of the roof cover for a combined rate of 60-65 ft<sup>2</sup>/gal (1.5m<sup>2</sup>/L).

TABLE 1A: NEW CONSTRUCTION, REROOF (Tear-Off) or RECOVER – STEEL or CONCRETE DECKS								
SYSTEM TYPE B: MECHANICALLY ATTACHED BASE INSULATION, BONDED TOP INSULATION, BONDED MEMBRANE								
System No.	Roof Deck	Base Insulation Layer			Top Insulation Layer		Roof Cover	Max. Design Pressure
		Type	Fastener	Attach	Type	Attach		
SC-1	Min. 22 ga., type B, Grade 33 steel or min. 2,500 psi concrete	Min. 1.4-inch ACFoam II, H-Shield, ISO 95+GL, ENRGY 3	OMG #12 (steel only) or #14 HD with OMG 3-inch Metal Plates	1:2 ft <sup>2</sup>	(Optional) Min. 1.4-inch ACFoam II, H-Shield, ISO 95+GL, ENRGY 3; (Optional) Min. 0.25-inch DensDeck, DensDeck Prime	OlyBond Adhesive Fastener	UltraPly TPO (MD) adhered in Ultraply Bonding Adhesive (MD)	-45.0 psf

TABLE 1B: NEW CONSTRUCTION, REROOF (Tear-Off) or RECOVER – STEEL or CONCRETE DECKS							
SYSTEM TYPE C: MECHANICALLY ATTACHED INSULATION, BONDED MEMBRANE							
System No.	Roof Deck	Base Insulation Layer	Top Insulation Layer			Roof Cover	Max. Design Pressure
			Type	Fasteners	Attach		
SC-2	Min. 22 ga., type B, Grade 33 steel or min. 2,500 psi concrete	(Optional) One or more layers, any combination, loose laid	Min. 1.5-inch ACFoam II	#12 (steel only) or #14 screws with 3-inch metal plates from SFS Intec, OMG, Tru-Fast, or Firestone	1 per 2 ft <sup>2</sup>	UltraPly TPO (MD) adhered in Ultraply Bonding Adhesive (MD)	-45.0 psf
SC-3	Min. 22 ga., type B, Grade 33 steel or min. 2,500 psi concrete	(Optional) One or more layers, any combination, loose laid	Min. 2.0-inch ACFoam II	#12 (steel only) or #14 screws with 3-inch metal plates from SFS Intec, OMG, Tru-Fast, or Firestone	1 per 4 ft <sup>2</sup>	UltraPly TPO (MD) adhered in Ultraply Bonding Adhesive (MD)	-45.0 psf
SC-4	Min. 22 ga., type B, Grade 33 steel or min. 2,500 psi concrete	One or more layers, any combination, loose laid	Min. ¼-inch DensDeck	#12 (steel only) or #14 screws with 3-inch metal plates from SFS Intec, OMG, Tru-Fast, or Firestone	1 per 1.78 ft <sup>2</sup>	UltraPly TPO (MD) adhered in Ultraply Bonding Adhesive (MD)	-45.0 psf
SC-5	Min. 22 ga., type B, Grade 33 steel or min. 2,500 psi concrete	(Optional) One or more layers, any combination, loose laid	Min. 1.5-inch ACFoam II	Firestone Steel Insulation Plate with Firestone AP (steel only) or HD Fastener	1 per 1.78 ft <sup>2</sup>	UltraPly TPO (MD) adhered in Ultraply Bonding Adhesive (MD)	-52.5 psf
SC-6	Min. 22 ga., type B, Grade 33 steel or min. 2,500 psi concrete	(Optional) One or more layers, any combination, loose laid	Min. 2.0-inch ACFoam II	Firestone Steel Insulation Plate with Firestone AP (steel only) or HD Fastener	1 per 1.78 ft <sup>2</sup>	UltraPly TPO (MD) adhered in Ultraply Bonding Adhesive (MD)	-60.0 psf

**TABLE 1C: NEW CONSTRUCTION, REROOF (Tear-Off) or RECOVER - STEEL DECKS  
SYSTEM TYPE D: MECHANICALLY ATTACHED MEMBRANE**

System No.	Deck	Insulation		Roof Cover			Max. Design Pressure
		Type	Attachment	Membrane	Fasteners	Attachment	
S-1	Min. 22 ga., type B, Grade 80 steel or min. 20 ga., type B, Grade 33 steel	One or more layers, any combination	Preliminarily attached	Ultraply TPO (MD)	Firestone HD Plus Fastener and Firestone HD Plus Seam Plates	Fasteners / plates max. 18-inch o.c. within 6-inch wide laps spaced 114-inch o.c. Laps sealed with 1.75-inch heat weld outside lap	-30.0 psf
S-2	Min. 22 ga., type B, Grade 80 steel or min. 20 ga., type B, Grade 33 steel	One or more layers, any combination	Preliminarily attached	Ultraply TPO (MD)	Firestone HD Plus Fastener and Firestone HD Plus Seam Plates	Fasteners / plates max. 12-inch o.c. within 6-inch wide laps spaced 144-inch o.c. Laps sealed with 1.75-inch heat weld outside lap	-30.0 psf
S-3	Min. 22 ga., type B, Grade 80 steel or min. 20 ga., type B, Grade 33 steel	One or more layers, any combination	Preliminarily attached	Ultraply TPO (MD)	Firestone Heavy-Duty Fasteners and Firestone HD Seam Plates	Fasteners / plates max. 18-inch o.c. within 6-inch wide laps spaced 90-inch o.c. Laps sealed with 1.75-inch heat weld outside lap	-30.0 psf
S-4	Min. 22 ga., type B, Grade 80 steel or min. 20 ga., type B, Grade 33 steel	One or more layers, any combination	Preliminarily attached	Ultraply TPO (MD)	Firestone Heavy-Duty Fasteners and Firestone HD Seam Plates	Fasteners / plates max. 12-inch o.c. within 6-inch wide laps spaced 114-inch o.c. Laps sealed with 1.75-inch heat weld outside lap	-30.0 psf
S-5	Min. 22 ga., type B, Grade 33 steel	One or more layers, any combination	Preliminarily attached	Ultraply TPO (MD)	Firestone Heavy-Duty Fasteners and Firestone HD Seam Plates	Fasteners / plates max. 12-inch o.c. within 5-inch wide laps spaced 70.5-inch o.c. Laps sealed with 1.75-inch heat weld outside lap	-37.5 psf
S-6	Min. 22 ga., type B, Grade 50 steel	One or more layers, any combination	Preliminarily attached	Ultraply TPO (MD)	Firestone HD Plus Fastener and Firestone HD Plus Seam Plates	Fasteners / plates max. 12-inch o.c. within 6-inch wide laps spaced 144-inch o.c. Laps sealed with 1.75-inch heat weld outside lap	-37.5 psf
S-7	Min. 22 ga., type B, Grade 33 steel	One or more layers, any combination	Preliminarily attached	Ultraply TPO (MD)	Firestone 2-inch Metal Plates with Firestone AP or HD Fasteners or Firestone 2-inch Metal Seam Plates with Firestone AP or HD Fasteners or OMG #14 HD Screws	6-inch o.c. within 4.5-inch wide laps spaced 70.5-inch o.c. Laps sealed with 1.5-inch heat weld.	-45.0 psf
S-8	Min. 22 ga., type B, Grade 80 steel or min. 20 ga., type B, Grade 33 steel	One or more layers, any combination	Preliminarily attached	Ultraply TPO (MD)	SFS Intec Extra Load Fastener screws and Firestone Metal Batten Strips	12-inch o.c. within 4.5-inch wide laps spaced 70-inch o.c. Laps sealed with 1.5-inch heat weld.	-45.0 psf

**TABLE 1C: NEW CONSTRUCTION, REROOF (Tear-Off) or RECOVER - STEEL DECKS  
SYSTEM TYPE D: MECHANICALLY ATTACHED MEMBRANE**

System No.	Deck	Insulation		Roof Cover			Max. Design Pressure
		Type	Attachment	Membrane	Fasteners	Attachment	
S-9	Min. 22 ga., type B, Grade 80 steel or min. 20 ga., type B, Grade 33 steel	One or more layers, any combination	Preliminarily attached	Ultraply TPO (MD)	Firestone TPO Plates and Firestone HD Fasteners or OMG XHD 2.375 – inch barbed plates OMG XHD screws	12-inch o.c. within 4.5-inch wide laps spaced 70-inch o.c. Laps sealed with 1.5-inch heat weld.	-45.0 psf
S-10	Min. 22 ga., type B, Grade 80 steel or min. 20 ga., type B, Grade 33 steel	One or more layers, any combination	Preliminarily attached	Ultraply TPO (MD)	Firestone HD Seam Plates and Firestone HD Fasteners or OMG XHD plates and OMG XHD screws	12-inch o.c. within 6-inch wide laps spaced 90-inch o.c. Laps sealed with 1.75-inch heat weld.	-45.0 psf
S-11	Min. 22 ga., type B, Grade 33 steel	One or more layers, any combination	Preliminarily attached	Ultraply TPO (MD)	Firestone HD Seam Plates and Firestone HD Fasteners or OMG XHD plates and OMG XHD screws	6-inch o.c. within 6-inch wide laps spaced 114-inch o.c. Laps sealed with 1.75-inch heat weld.	-45.0 psf
S-12	Min. 22 ga., type B, Grade 80 steel or min. 20 ga., type B, Grade 33 steel	One or more layers, any combination	Preliminarily attached	Ultraply TPO (MD)	Firestone HD Seam Plates and Firestone HD Fasteners or OMG XHD plates and OMG XHD screws	12-inch o.c. within 5-inch wide laps spaced 70-inch o.c. Laps sealed with 2-inch heat weld.	-45.0 psf
S-13	Min. 22 ga., type B, Grade 80 steel or min. 20 ga., type B, Grade 33 steel	One or more layers, any combination	Preliminarily attached	Ultraply TPO (MD)	Firestone HD Fasteners and Firestone Polymer Batten Strips	12-inch o.c. within 4.5-inch wide laps spaced 140.5-inch o.c. Laps sealed with 1.5-inch heat weld outside batten and 1-inch heat weld inside batten	-45.0 psf
S-14	Min. 22 ga., type B, Grade 80 steel or min. 20 ga., type B, Grade 33 steel	One or more layers, any combination	Preliminarily attached	Ultraply TPO (MD)	Firestone HD Fasteners and Firestone HD Seam Plates	6-inch o.c. within 6-inch wide laps spaced 144-inch o.c. Laps sealed with 1.75-inch heat weld outside lap	-45.0 psf
S-15	Min. 22 ga., type B, Grade 80 steel or min. 20 ga., type B, Grade 33 steel	One or more layers, any combination	Preliminarily attached	Ultraply TPO (MD)	Firestone Plus HD Fasteners and Firestone 3-inch HD Seam Plates	12-inch o.c. within 6-inch wide laps spaced 114-inch o.c. Laps sealed with 1.75-inch heat weld outside lap	-45.0 psf
S-16	Min. 22 ga., type B, Grade 80 steel or min. 20 ga., type B, Grade 33 steel	One or more layers, any combination	Preliminarily attached	Ultraply TPO (MD)	Firestone Plus HD Fasteners and Firestone 3-inch HD Seam Plates	6-inch o.c. within 6-inch wide laps spaced 144-inch o.c. Laps sealed with 1.75-inch heat weld outside lap	-45.0 psf
S-17	Min. 22 ga., type B, Grade 80 steel or min. 20 ga., type B, Grade 33 steel	One or more layers, any combination	Preliminarily attached	Ultraply TPO (MD)	Firestone SXHD Plus Fasteners and Firestone 2.325-inch SXHD Seam Plates	6-inch o.c. within 6-inch wide laps spaced 144-inch o.c. Laps sealed with 1.75-inch heat weld outside lap	-45.0 psf
S-18	Min. 22 ga., type B, Grade 80 steel or min. 20 ga., type B, Grade 33 steel	One or more layers, any combination	Preliminarily attached	Ultraply TPO (MD)	Firestone Plus HD Fasteners and Firestone 3-inch HD Seam Plates	12-inch o.c. within 6-inch wide laps spaced 90-inch o.c. Laps sealed with 1.75-inch heat weld outside lap	-45.0 psf



**TABLE 1C: NEW CONSTRUCTION, REROOF (Tear-Off) or RECOVER - STEEL DECKS  
SYSTEM TYPE D: MECHANICALLY ATTACHED MEMBRANE**

System No.	Deck	Insulation		Roof Cover			Max. Design Pressure
		Type	Attachment	Membrane	Fasteners	Attachment	
S-19	Min. 22 ga., type B, Grade 80 steel or min. 20 ga., type B, Grade 33 steel	One or more layers, any combination	Preliminarily attached	Ultraply TPO (MD)	Firestone HD Fasteners and Firestone Metal Batten Strips	12-inch o.c. within 4.5-inch wide laps spaced 70.25-inch o.c. Laps sealed with 0.75-inch heat weld outside lap and 1-inch heat weld inside lap	-52.5 psf
S-20	Min. 22 ga., type B, Grade 80 steel or min. 20 ga., type B, Grade 33 steel	One or more layers, any combination	Preliminarily attached	Ultraply TPO (MD)	Firestone HD Fasteners and Firestone Metal Batten Strips	6-inch o.c. within 4.5-inch wide laps spaced 142.5-inch o.c. Laps sealed with 1-inch heat weld outside lap and 1-inch heat weld inside lap	-52.5 psf
S-21	Min. 22 ga., type B, Grade 80 steel or min. 20 ga., type B, Grade 33 steel	One or more layers, any combination	Preliminarily attached	Ultraply TPO (MD)	Firestone HD Fasteners and Firestone Polymer Batten Strips	6-inch o.c. within 5-inch wide laps spaced 144-inch o.c. Laps sealed with 1-inch heat weld outside lap and 1.5-inch heat weld inside lap	-52.5 psf
S-22	Min. 22 ga., type B, Grade 80 steel or min. 20 ga., type B, Grade 33 steel	One or more layers, any combination	Preliminarily attached	Min. 0.070-inch Ultraply TPO (MD)	Firestone HD Plus Fasteners and Firestone 3-inch HD Plus Seam Plates	12-inch o.c. within 6-inch wide laps spaced 69.75-inch o.c. Laps sealed with 1.5-inch heat weld outside lap	-52.5 psf
S-23	Min. 22 ga., type B, Grade 80 steel or min. 20 ga., type B, Grade 33 steel	One or more layers, any combination	Preliminarily attached	Ultraply TPO (MD)	Firestone HD Fasteners and Firestone Metal Batten Strips	6-inch o.c. within 4.5-inch wide laps spaced 142.5-inch o.c. Laps sealed with 1-inch heat weld outside lap and 1.5-inch heat weld inside lap	-60.0 psf
S-24	Min. 22 ga., type B, Grade 80 steel or min. 20 ga., type B, Grade 33 steel	One or more layers, any combination	Preliminarily attached	Ultraply TPO (MD)	Firestone HD Fasteners and Firestone Polymer Batten Strips	6-inch o.c. within 6-inch wide laps spaced 114-inch o.c. Laps sealed with 1-inch heat weld inside lap, 1.25-inch heat weld outside lap	-60.0 psf
S-25	Min. 22 ga., type B, Grade 33 steel	One or more layers, any combination	Preliminarily attached	Ultraply TPO (MD)	Firestone HD Fasteners and Firestone HD Seam Plates	6-inch o.c. within 6-inch wide laps spaced 90-inch o.c. Laps sealed with 1.5-inch heat weld outside lap	-60.0 psf
S-26	Min. 22 ga., type B, Grade 80 steel or min. 20 ga., type B, Grade 33 steel	One or more layers, any combination	Preliminarily attached	Ultraply TPO (MD)	Firestone HD Plus Fasteners and Firestone 3-inch HD Plus Seam Plates	6-inch o.c. within 6-inch wide laps spaced 90-inch o.c. Laps sealed with 1.5-inch heat weld outside lap	-67.5 psf

**TABLE 1C: NEW CONSTRUCTION, REROOF (Tear-Off) or RECOVER - STEEL DECKS  
SYSTEM TYPE D: MECHANICALLY ATTACHED MEMBRANE**

System No.	Deck	Insulation		Roof Cover			Max. Design Pressure
		Type	Attachment	Membrane	Fasteners	Attachment	
S-27	Min. 22 ga., type B, Grade 80 steel or min. 20 ga., type B, Grade 33 steel	One or more layers, any combination	Preliminarily attached	Ultraply TPO (MD)	Firestone HD Fasteners and Firestone Metal Batten Strips	6-inch o.c. within 4.5-inch wide laps spaced 70.25-inch o.c. Laps sealed with 0.75-inch heat weld outside lap and 1-inch heat weld inside lap	-75.0 psf
S-28	Min. 22 ga., type B, Grade 33 steel	One or more layers, any combination	Preliminarily attached	Min. 0.070-inch Ultraply TPO (MD)	Firestone HD Fasteners and Firestone Polymer Batten Strips	6-inch o.c. within 6-inch wide laps spaced 69-inch o.c. Laps sealed with 1-inch heat weld inside lap, 1.5-inch heat weld outside lap	-75.0 psf
S-29	Min. 22 ga., type B, Grade 80 steel or min. 20 ga., type B, Grade 33 steel	One or more layers, any combination	Preliminarily attached	Min. 0.070-inch Ultraply TPO (MD)	Firestone HD Fasteners and Firestone HD Seam Plates	12-inch o.c. within 6-inch wide laps spaced 69.75-inch o.c. Laps sealed with 1.5-inch heat weld outside lap	-75.0 psf
S-30	Min. 22 ga., type B, Grade 33 steel	One or more layers, any combination	Preliminarily attached	Min. 0.070-inch Ultraply TPO (MD)	Firestone HD Fasteners and Firestone HD Seam Plates	6-inch o.c. within 6-inch wide laps spaced 69-inch o.c. Laps sealed with 1.5-inch heat weld outside lap	-82.5 psf
S-31	Min. 22 ga., type B, Grade 33 steel	One or more layers, any combination	Preliminarily attached	Min. 0.070-inch Ultraply TPO (MD)	Firestone HD Plus Fasteners and Firestone 3-inch HD Plus Seam Plates	6-inch o.c. within 6-inch wide laps spaced 90-inch o.c. Laps sealed with 1.5-inch heat weld outside lap	-82.5 psf
S-32	Min. 22 ga., type B, Grade 80 steel or min. 20 ga., type B, Grade 33 steel	One or more layers, any combination	Preliminarily attached	Ultraply TPO (MD)	Firestone HD Fasteners and Firestone Polymer Batten Strips	6-inch o.c. within 4.5-inch wide laps spaced 69.5-inch o.c. Laps sealed with 1.25-inch heat weld outside lap	-90.0 psf
S-33	Min. 22 ga., type B, Grade 33 vented steel	Min. 200 psi, min. 2-inch thick cellular lightweight insulating concrete		Ultraply TPO (MD)	Firestone HD Fasteners and Firestone Polymer Batten Strips	Max. 6-inches o.c. within min 4.5-inch laps spaced max. 143.5-inches o.c. with min. 0.75-inch heat weld inside, min. 1-inch heat weld outside.	-90.0 psf
S-34	Min. 22 ga., type B, Grade 33 steel	One or more layers, any combination	Preliminarily attached	Min. 0.070-inch Ultraply TPO (MD)	Firestone HD Fasteners and Firestone HD Seam Plates	6-inch o.c. within 6-inch wide laps spaced 90-inch o.c. Laps sealed with 1-inch heat weld outside lap; intermediate batten within laps with 5-inch cover strip with min. 1.5-inch heat weld	-97.5 psf

**TABLE 1C: NEW CONSTRUCTION, REROOF (Tear-Off) or RECOVER - STEEL DECKS  
SYSTEM TYPE D: MECHANICALLY ATTACHED MEMBRANE**

System No.	Deck	Insulation		Roof Cover			Max. Design Pressure
		Type	Attachment	Membrane	Fasteners	Attachment	
S-35	Min. 22 ga., type B, Grade 33 steel	One or more layers, any combination	Preliminarily attached	Ultraply TPO (MD)	Firestone HD Fasteners and Firestone HD Seam Plates Firestone 0.75-inch Polymer Batten Strips	Fasteners / plates 6-inch o.c. within 6-inch wide laps spaced 90-inch o.c. Laps sealed with 1.5-inch heat weld outside lap; intermediate batten within laps with 5-inch cover strip with min. 1.5-inch heat weld	-105.0 psf

**TABLE 2A: NEW CONSTRUCTION or REROOF (Tear-Off) – CONCRETE DECKS  
SYSTEM TYPE A: BONDED INSULATION, BONDED MEMBRANE**

System No.	Roof Deck	Primer / Vapor Barrier	Base Insulation Layer		Top Insulation Layer		Roof Cover	Max. Design Pressure
			Type	Attach	Type	Attach		
C-1	Min. 2,500 psi concrete	D41 Primer	One or more layers, min. 1.5-inch ACFoam II	Hot asphalt	None	N/A	UltraPly TPO (MD) adhered in Ultraply Bonding Adhesive (MD)	-112.5 psf
C-2	Min. 2,500 psi concrete	D41 primer	One or more layers min. 1.5-inch H-Shield, ACFoam II	Hot asphalt	Min. 0.25-inch DensDeck, DensDeck Prime, min. 0.5-inch High Density Fiber Board	Hot asphalt	UltraPly TPO (MD) adhered in Ultraply Bonding Adhesive (MD)	-202.5 psf
C-3	Min. 2,500 psi concrete	None	One or more layers min. 1.0-inch H-Shield, ACFoam II, ENRGY 3	Olybond Adhesive Fastener	Min. 0.25-inch DensDeck, DensDeck Prime	Olybond Adhesive Fastener	UltraPly TPO (MD) adhered in Ultraply Bonding Adhesive (MD)	-202.5 psf
C-4	Min. 2,500 psi concrete	None	(Optional) One or more layers min. 2.0-inch thick, min. 1.25 pcf ASTM C578 expanded polystyrene	Olybond 500 or Spot Shot	Min. 1.0-inch High Density Wood Fiberboard, min. 0.25-inch DensDeck, DensDeck Prime	Olybond 500 or Spot Shot	UltraPly TPO (MD) adhered in Ultraply Bonding Adhesive (MD)	-120.0 psf
C-5	Min. 2,500 psi concrete	None	One or more layers min. 1.5-inch ENRGY 3	Olybond 500 or Spot Shot	Min. 0.25-inch DensDeck, DensDeck Prime	Olybond 500 or Spot Shot	UltraPly TPO (MD) adhered in Ultraply Bonding Adhesive (MD)	-127.5 psf
C-6	Min. 2,500 psi concrete	None	One or more layers min. 1.5-inch ACFoam II, H-Shield, ISO 95+GL	Olybond 500 or Spot Shot	None	N/A	UltraPly TPO (MD) adhered in Ultraply Bonding Adhesive (MD)	-150.0 psf
C-7	Min. 2,500 psi concrete	None	(Optional) One or more layers min. 1.5-inch ACFoam II, H-Shield, ISO 95+GL	Olybond 500 or Spot Shot	Min. 0.25-inch DensDeck, DensDeck Prime	Olybond 500 or Spot Shot	UltraPly TPO (MD) adhered in Ultraply Bonding Adhesive (MD)	-150.0 psf
C-8	Min. 2,500 psi concrete	None	One or more layers min. 1.5-inch ISO 95+GL	Olybond 500 or Spot Shot	Min. 0.5-inch High Density Wood Fiberboard, min.	Olybond 500 or Spot Shot	UltraPly TPO (MD) adhered in Ultraply Bonding Adhesive (MD)	-202.5 psf
C-9	Min. 2,500 psi concrete	None	One or more layers min. 1.0-inch Foamular 250	Olybond 500 or Spot Shot	One or more layers Min. 0.25-inch DensDeck, DensDeck Prime	Olybond 500 or Spot Shot	UltraPly TPO (MD) adhered in Ultraply Bonding Adhesive (MD)	-202.5 psf

**TABLE 2A: NEW CONSTRUCTION or REROOF (Tear-Off) – CONCRETE DECKS  
SYSTEM TYPE A: BONDED INSULATION, BONDED MEMBRANE**

System No.	Roof Deck	Primer / Vapor Barrier	Base Insulation Layer		Top Insulation Layer		Roof Cover	Max. Design Pressure
			Type	Attach	Type	Attach		
C-10	Min. 2,500 psi concrete	(Optional) D41 primer / asphaltic vapor retarder	One or more layers min. 1.5-inch ACFoam II, Multi-Max, ENRGY 3, H-Shield, ISO 95+GL	Firestone ISO Twin Pack or Weather-Tite One Step Foamable Adhesive	Min. 0.5-inch High Density Wood Fiberboard, min.	Firestone ISO Twin Pack or Weather-Tite One Step Foamable Adhesive	UltraPly TPO (MD) adhered in Ultraply Bonding Adhesive (MD)	-127.5 psf
C-11	Min. 2,500 psi concrete	D41 primer / Asphaltic vapor retarder	One or more layers min. 1.5-inch ACFoam II, Multi-Max, ENRGY 3, H-Shield	Firestone ISO Twin Pack or Weather-Tite One Step Foamable Adhesive	(Optional) Min. 0.25-inch DensDeck, DensDeck Prime	Firestone ISO Twin Pack or Weather-Tite One Step Foamable Adhesive	UltraPly TPO (MD) adhered in Ultraply Bonding Adhesive (MD)	-157.5 psf
C-12	Min. 2,500 psi concrete	None	One or more layers min. 1.5-inch ACFoam II, Multi-Max, ENRGY 3, H-Shield	Firestone ISO Twin Pack or Weather-Tite One Step Foamable Adhesive	(Optional) Min. 0.25-inch DensDeck, DensDeck Prime	Firestone ISO Twin Pack or Weather-Tite One Step Foamable Adhesive	UltraPly TPO (MD) adhered in Ultraply Bonding Adhesive (MD)	-202.5 psf
C-13	Min. 2,500 psi concrete	None	One or more layers min. 1.5-inch ACFoam II, ACFoam III, ISO 95+GL, JM ISO1, Multi-Max FA	TITASET	Min. 0.25-inch DensDeck, DensDeck Prime	TITASET	UltraPly TPO (MD) adhered in Ultraply Bonding Adhesive (MD)	-202.5 psf
C-14	Min. 2,500 psi concrete	None	One or more layers min. 1.5-inch ACFoam II, ACFoam III, ISO 95+GL	TITASET	None	N/A	UltraPly TPO (MD) adhered in Ultraply Bonding Adhesive (MD)	-202.5 psf

**TABLE 2B: NEW CONSTRUCTION, REROOF (Tear-Off) or RECOVER - CONCRETE DECKS  
SYSTEM TYPE D: MECHANICALLY ATTACHED MEMBRANE**

System No.	Deck	Insulation		Roof Cover			Max. Design Pressure
		Type	Attachment	Membrane	Fasteners	Attachment	
C-15	Min. 2,500 psi structural concrete	One or more layers, any combination	Preliminarily attached	Ultraply TPO (MD)	Firestone HD Seam Plates and Firestone HD Fasteners or Firestone Concrete Drive	Fasteners / plates max. 18-inch o.c. within 6-inch wide laps spaced 90-inch o.c. Laps sealed with 1.75-inch heat weld outside lap	-30.0 psf
C-16	Min. 2,500 psi structural concrete	One or more layers, any combination	Preliminarily attached	Ultraply TPO (MD)	Firestone HD Seam Plates and Firestone HD Fasteners or Firestone Concrete Drive	Fasteners / plates max. 12-inch o.c. within 6-inch wide laps spaced 114-inch o.c. Laps sealed with 1.75-inch heat weld outside lap	-30.0 psf
C-17	Min. 2,500 psi structural concrete	One or more layers, any combination	Preliminarily attached	Ultraply TPO (MD)	Firestone HD Seam Plates and Firestone HD Fasteners or Firestone Concrete Drive	Fasteners / plates max. 12-inch o.c. within 5-inch wide laps spaced 70.5-inch o.c. Laps sealed with 1.75-inch heat weld outside lap	-37.5 psf
C-18	Min. 2,500 psi structural concrete	One or more layers, any combination	Preliminarily attached	Ultraply TPO (MD)	Firestone 2-inch Metal Plates or 2-inch Metal Seam Plates with Firestone HD Fasteners or Concrete Drive	6-inch o.c. within 4.5-inch wide laps spaced 70.5-inch o.c. Laps sealed with 1.5-inch heat weld.	-45.0 psf
C-19	Min. 2,500 psi structural concrete	One or more layers, any combination	Preliminarily attached	Ultraply TPO (MD)	Firestone TPO Plates and Firestone HD Fasteners or Firestone Concrete Drive	12-inch o.c. within 4.5-inch wide laps spaced 70-inch o.c. Laps sealed with 1.5-inch heat weld.	-45.0 psf
C-20	Min. 2,500 psi structural concrete	One or more layers, any combination	Preliminarily attached	Ultraply TPO (MD)	Firestone HD Seam Plates and Firestone HD Fasteners or Firestone Concrete Drive	12-inch o.c. within 6-inch wide laps spaced 90-inch o.c. Laps sealed with 1.75-inch heat weld.	-45.0 psf
C-21	Min. 2,500 psi structural concrete	One or more layers, any combination	Preliminarily attached	Ultraply TPO (MD)	Firestone HD Seam Plates and Firestone HD Fasteners or Firestone Concrete Drive	6-inch o.c. within 6-inch wide laps spaced 114-inch o.c. Laps sealed with 1.75-inch heat weld.	-45.0 psf
C-22	Min. 2,500 psi structural concrete	One or more layers, any combination	Preliminarily attached	Ultraply TPO (MD)	Firestone HD Seam Plates and Firestone HD Fasteners or Firestone Concrete Drive	12-inch o.c. within 5-inch wide laps spaced 70-inch o.c. Laps sealed with 2-inch heat weld.	-45.0 psf

**TABLE 2B: NEW CONSTRUCTION, REROOF (Tear-Off) or RECOVER - CONCRETE DECKS  
SYSTEM TYPE D: MECHANICALLY ATTACHED MEMBRANE**

System No.	Deck	Insulation		Roof Cover			Max. Design Pressure
		Type	Attachment	Membrane	Fasteners	Attachment	
C-23	Min. 2,500 psi structural concrete	One or more layers, any combination	Preliminarily attached	Ultraply TPO (MD)	Firestone HD Fasteners or Firestone Concrete Drive and Firestone Polymer Batten Strips	12-inch o.c. within 4.5-inch wide laps spaced 140.5-inch o.c. Laps sealed with 1.5-inch heat weld outside batten and 1-inch heat weld inside batten	-45.0 psf
C-24	Min. 2,500 psi structural concrete	One or more layers, any combination	Preliminarily attached	Ultraply TPO (MD)	Firestone HD Fasteners or Firestone Concrete Drive and Firestone HD Seam Plates	6-inch o.c. within 6-inch wide laps spaced 144-inch o.c. Laps sealed with 1.75-inch heat weld outside lap	-45.0 psf
C-25	Min. 2,500 psi structural concrete	One or more layers, any combination	Preliminarily attached	Ultraply TPO (MD)	Firestone HD Fasteners or Firestone Concrete Drive and Firestone Metal Batten Strips	12-inch o.c. within 4.5-inch wide laps spaced 70.25-inch o.c. Laps sealed with 0.75-inch heat weld outside lap and 1-inch heat weld inside lap	-52.5 psf
C-26	Min. 2,500 psi structural concrete	One or more layers, any combination	Preliminarily attached	Ultraply TPO (MD)	Firestone HD Fasteners or Firestone Concrete Drive and Firestone Metal Batten Strips	6-inch o.c. within 4.5-inch wide laps spaced 142.5-inch o.c. Laps sealed with 1-inch heat weld outside lap and 1-inch heat weld inside lap	-52.5 psf
C-27	Min. 2,500 psi structural concrete	One or more layers, any combination	Preliminarily attached	Ultraply TPO (MD)	Firestone HD Fasteners or Firestone Concrete Drive and Firestone Polymer Batten Strips	6-inch o.c. within 5-inch wide laps spaced 144-inch o.c. Laps sealed with 1-inch heat weld outside lap and 1.5-inch heat weld inside lap	-52.5 psf
C-28	Min. 2,500 psi structural concrete	One or more layers, any combination	Preliminarily attached	Ultraply TPO (MD)	Firestone HD Fasteners or Firestone Concrete Drive and Firestone Metal Batten Strips	6-inch o.c. within 4.5-inch wide laps spaced 142.5-inch o.c. Laps sealed with 1-inch heat weld outside lap and 1.5-inch heat weld inside lap	-60.0 psf
C-29	Min. 2,500 psi structural concrete	One or more layers, any combination	Preliminarily attached	Ultraply TPO (MD)	Firestone HD Fasteners or Firestone Concrete Drive and Firestone Polymer Batten Strips	6-inch o.c. within 6-inch wide laps spaced 114-inch o.c. Laps sealed with 1-inch heat weld inside lap, 1.25-inch heat weld outside lap	-60.0 psf
C-30	Min. 2,500 psi structural concrete	One or more layers, any combination	Preliminarily attached	Ultraply TPO (MD)	Firestone HD Fasteners or Firestone Concrete Drive and Firestone HD Seam Plates	6-inch o.c. within 6-inch wide laps spaced 90-inch o.c. Laps sealed with 1.5-inch heat weld outside lap	-60.0 psf

**TABLE 2B: NEW CONSTRUCTION, REROOF (Tear-Off) or RECOVER - CONCRETE DECKS  
SYSTEM TYPE D: MECHANICALLY ATTACHED MEMBRANE**

System No.	Deck	Insulation		Roof Cover			Max. Design Pressure
		Type	Attachment	Membrane	Fasteners	Attachment	
C-31	Min. 2,500 psi structural concrete	One or more layers, any combination	Preliminarily attached	Ultraply TPO (MD)	Firestone HD Fasteners or Firestone Concrete Drive and Firestone Metal Batten Strips	6-inch o.c. within 4.5-inch wide laps spaced 70.25-inch o.c. Laps sealed with 0.75-inch heat weld outside lap and 1-inch heat weld inside lap	-75.0 psf
C-32	Min. 2,500 psi structural concrete	One or more layers, any combination	Preliminarily attached	Min. 0.070-inch Ultraply TPO (MD)	Firestone HD Fasteners or Firestone Concrete Drive and Firestone Polymer Batten Strips	6-inch o.c. within 6-inch wide laps spaced 69-inch o.c. Laps sealed with 1-inch heat weld inside lap, 1.5-inch heat weld outside lap	-75.0 psf
C-33	Min. 2,500 psi structural concrete	One or more layers, any combination	Preliminarily attached	Min. 0.070-inch Ultraply TPO (MD)	Firestone HD Fasteners or Firestone Concrete Drive and Firestone HD Seam Plates	12-inch o.c. within 6-inch wide laps spaced 69.75-inch o.c. Laps sealed with 1.5-inch heat weld outside lap	-75.0 psf
C-34	Min. 2,500 psi structural concrete	One or more layers, any combination	Preliminarily attached	Min. 0.070-inch Ultraply TPO (MD)	Firestone HD Fasteners or Firestone Concrete Drive and Firestone HD Seam Plates	6-inch o.c. within 6-inch wide laps spaced 69-inch o.c. Laps sealed with 1.5-inch heat weld outside lap	-82.5 psf
C-35	Min. 2,500 psi structural concrete	One or more layers, any combination	Preliminarily attached	Ultraply TPO (MD)	Firestone HD Fasteners or Firestone Concrete Drive and Firestone Polymer Batten Strips	6-inch o.c. within 4.5-inch wide laps spaced 69.5-inch o.c. Laps sealed with 1.25-inch heat weld outside lap	-90.0 psf
C-36	Min. 2,500 psi structural concrete	Min. 200 psi, min. 2-inch thick cellular lightweight insulating concrete		Ultraply TPO (MD)	Firestone HD Fasteners or Firestone Concrete Drive and Firestone Polymer Batten Strips	Max. 6-inches o.c. within min 4.5-inch laps spaced max. 143.5-inches o.c. with min. 0.75-inch heat weld inside, min. 1-inch heat weld outside.	-90.0 psf
C-37	Min. 2,500 psi structural concrete	One or more layers, any combination	Preliminarily attached	Min. 0.070-inch Ultraply TPO (MD)	Firestone HD Fasteners or Firestone Concrete Drive and Firestone HD Seam Plates	6-inch o.c. within 6-inch wide laps spaced 90-inch o.c. Laps sealed with 1-inch heat weld outside lap; intermediate batten within laps with 5-inch cover strip with min. 1.5-inch heat weld	-97.5 psf
C-38	Min. 2,500 psi structural concrete	One or more layers, any combination	Preliminarily attached	Ultraply TPO (MD)	Firestone HD Fasteners or Firestone Concrete Drive and Firestone HD Seam Plates and Firestone 0.75-inch Polymer Batten Strips	Fasteners / plates 6-inch o.c. within 6-inch wide laps spaced 90-inch o.c. Laps sealed with 1.5-inch heat weld outside lap; intermediate batten within laps with 5-inch cover strip with min. 1.5-inch heat weld	-105.0 psf



**TABLE 3A: NEW CONSTRUCTION or REROOF (Tear-Off) – LIGHTWEIGHT CONCRETE DECKS  
SYSTEM TYPE A: BONDED INSULATION, BONDED MEMBRANE**

System No.	Roof Deck	Base Insulation Layer		Coverboard		Roof Cover	Max. Design Pressure
		Type	Attachment	Type	Attachment		
LWC-1	Min. 200 psi cellular LWIC	One or more layers min. 1.0-inch ACFoam II, H-Shield, ENRGY 3, or ISO 95+GL	OlyBond 500 or SpotShot or TITASET	None	N/A	UltraPly TPO (MD) in UltraPly Bonding Adhesive (MD)	-90.0 psf
LWC-2	Min. 200 psi cellular LWIC	One or more layers min. 1.0-inch ACFoam II, H-Shield, ENRGY 3, or ISO 95+GL	OlyBond Adhesive Fastener, OlyBond 500 or SpotShot, or TITASET	Min. 1.0-inch High Density Wood Fiberboard or 0.25-inch DensDeck or DensDeck Prime	OlyBond Adhesive Fastener, OlyBond 500 or SpotShot, or TITASET	UltraPly TPO (MD) in UltraPly Bonding Adhesive (MD)	-202.5 psf

**TABLE 3B: NEW CONSTRUCTION– LIGHTWEIGHT CONCRETE DECKS  
SYSTEM TYPE F: MEMBRANE FULLY ADHERED TO DECK**

System No.	Roof Deck	Roof Cover	Max. Design Pressure
LWC-3	Min. 200 psi Range II Elastizell LWIC cast over structural concrete deck. Elastizell ZEL-ERATOR is applied over the final LWIC surface and allowed to dry to the touch prior to membrane application.	UltraPly TPO (MD) fully adhered with UltraPly TPO Bonding Adhesive (MD)	-235.0 psf

**TABLE 6A: RECOVER APPLICATIONS**  
**SYSTEM TYPE A: BONDED INSULATION, BONDED MEMBRANE**

System No.	Substrate	Base Insulation Layer		Top Insulation Layer		Roof Cover	Max. Design Pressure
		Type	Attachment	Type	Attachment		
R-1	Existing asphaltic BUR or mineral surface cap sheet	One or more layers, min. 1.5-inch ACFoam II	Hot asphalt	None	N/A	UltraPly TPO (MD) adhered in Ultraply Bonding Adhesive (MD)	-112.5 psf
R-2	Existing asphaltic BUR or mineral surface cap sheet	One or more layers min. 1.5-inch H-Shield, ACFoam II	Hot asphalt	Min. 0.25-inch DensDeck, DensDeck Prime, min. 0.5-inch High Density Fiber Board	Hot asphalt	UltraPly TPO (MD) adhered in Ultraply Bonding Adhesive (MD)	-202.5 psf
R-3	Existing asphaltic BUR or mineral surface cap sheet	(Optional) One or more layers min. 1-inch ACFoam II, H-Shield, ENRGY 3	Olybond Adhesive Fastener	Min. 0.25-inch DensDeck, DensDeck Prime	Olybond Adhesive Fastener	UltraPly TPO (MD) in UltraPly Bonding Adhesive (MD)	-150.0 psf
R-4	Existing asphaltic BUR or mineral surface cap sheet	(Optional) One or more layers min. 1.5-inch ACFoam II, ISO 95+GL, H-Shield, ENRGY 3 or min. 1.0-inch Foamular 250 or min. 1.5-inch, min. 1.25 pcf ASTM C578 expanded polystyrene	OlyBond 500 or SpotShot	(Optional) Min. 0.25-inch DensDeck, DensDeck Prime or min. 0.5-inch HD Wood Fiberboard	OlyBond 500 or SpotShot	UltraPly TPO (MD) in UltraPly Bonding Adhesive (MD)	-120.0psf
R-5	Existing asphaltic BUR or mineral surface cap sheet	One or more layers min. 1.5-inch ACFoam II, Multi-Max, ENRGY 3, H-Shield	Firestone ISO Twin Pack or Weather-Tite One Step Foamable Adhesive	Min. 0.5-inch High Density Wood Fiber	Firestone ISO Twin Pack or Weather-Tite One Step Foamable Adhesive	UltraPly TPO (MD) in UltraPly Bonding Adhesive (MD)	-127.5 psf
R-6	Existing asphaltic BUR or mineral surface cap sheet	One or more layers min. 1.5-inch ACFoam II, Multi-Max, ENRGY 3, H-Shield;	Firestone ISO Twin Pack or Weather-Tite One Step Foamable Adhesive	Min. 0.25-inch DensDeck, DensDeck Prime	Firestone ISO Twin Pack or Weather-Tite One Step Foamable Adhesive	UltraPly TPO (MD) in UltraPly Bonding Adhesive (MD)	-157.5 psf
R-7	Existing asphaltic BUR or mineral surface cap sheet	One or more layers min. 1.5-inch ACFoam II, ACFoam III, ISO 95+ (M-Plus), ISO 95+GL Multi-Max FA	TITASET	Min. 0.5-inch DensDeck, DensDeck Prime	TITASET	UltraPly TPO (MD) in UltraPly Bonding Adhesive (MD)	-202.5 psf