MIAMI-DADE

BUILDING CODE COMPLIANCE OFFICE (BCCO)
PRODUCT CONTROL DIVISION

**MIAMI-DADE** COUNTY, FLORIDA
METRO-DADE FLAGLER BUILDING
**140 WEST FLAGLER STREET, SUITE 1603**
MIAMI, FLORIDA 33130-1563
(305) 375-2901 FAX (305) 375-2908

# NOTICE OF ACCEPTANCE (NOA)

**Firestone Building Products Company**
**250 East 96th Street**
**Indianapolis, IN 46240**

**SCOPE:**
This NOA is being issued under the applicable rules and regulations governing the use of construction materials. The documentation submitted has been reviewed by Miami-Dade County Product Control Division and accepted by the Board of Rules and Appeals (BORA) to be used in Miami Dade County and other areas where allowed by the Authority Having Jurisdiction (AHJ).

This NOA shall not be valid after the expiration date stated below. The Miami-Dade County Product Control Division (In Miami Dade County) and/or the AHJ (in areas other than Miami Dade County) reserve the right to have this product or material tested for quality assurance purposes. If this product or material fails to perform in the accepted manner, the manufacturer will incur the expense of such testing and the AHJ may immediately revoke, modify, or suspend the use of such product or material within their jurisdiction. BORA reserves the right to revoke this acceptance, if it is determined by Miami-Dade County Product Control Division that this product or material fails to meet the requirements of the applicable building code.

This product is approved as described herein, and has been designed to comply with the Florida Building Code and the High Velocity Hurricane Zone of the Florida Building Code.

**DESCRIPTION: Firestone UltraPly TPO (MD) Single Ply Roof Systems over Recover Deck**

**LABELING:** Each unit shall bear a permanent label with the manufacturer's name or logo, city, state and following statement: "Miami-Dade County Product Control Approved", unless otherwise noted herein.

**RENEWAL** of this NOA shall be considered after a renewal application has been filed and there has been no change in the applicable building code negatively affecting the performance of this product.

**TERMINATION** of this NOA will occur after the expiration date or if there has been a revision or change in the materials, use, and/or manufacture of the product or process. Misuse of this NOA as an endorsement of any product, for sales, advertising or any other purposes shall automatically terminate this NOA. Failure to comply with any section of this NOA shall be cause for termination and removal of NOA.

**ADVERTISEMENT:** The NOA number preceded by the words Miami-Dade County, Florida, and followed by the expiration date may be displayed in advertising literature. If any portion of the NOA is displayed, then it shall be done in its entirety.

**INSPECTION:** A copy of this entire NOA 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 NOA revises NOA No. 07-0723.07 and consists of pages 1 through 29.
The submitted documentation was reviewed by Jorge L. Acebo.

MIAMI-DADE COUNTY APPROVED

## ROOFING SYSTEM APPROVAL

| | |
|---|---|
| **Category:** | Roofing |
| **Sub-Category:** | Single Ply |
| **Material:** | TPO |
| **Deck Type:** | Recover |
| **Maximum Design Pressure** | See Specific Deck Type |

### TRADE NAMES OF PRODUCTS MANUFACTURED OR LABELED BY APPLICANT:

**TABLE 1**

| Product Name | Dimensions | Test Specifications | Product Description |
|---|---|---|---|
| Firestone UltraPly TPO (MD) | 45", 75", 96", 120" or 148" wide x 100' long x 45, 60, 70 or 80 mils thick | TAS 131 | Polyester reinforced Thermoplastic Olefin single ply membrane. |
| UltraPly Bonding Adhesive (MD) | 5 gallon pails | Proprietary | Solvent based, contact adhesives for bonding of roof membrane to substrate. |
| Firestone Metal Batten Strip | 1" wide x 0.046" thick x 10 ft. long | TAS 110 | Batten bar for mechanical attachment of membrane |
| Firestone Polymer Batten Strip | 1" wide x 0.05" thick x 250' long. Holes pre-punched 6" o.c. | Proprietary | Batten strip for mechanical attachment of membrane |
| Firestone ISO Twin Pack | | Proprietary | Insulation Adhesive |

### APPROVED INSULATIONS:

**TABLE 2**

| Product | Product Description | Manufacturer (With current NOA) |
|---|---|---|
| AC Foam II | Isocyanurate insulation | Atlas Roofing Corp. |
| ACFoam III | Isocyanurate insulation | Atlas Roofing Corp. |
| AC Foam composite | Isocyanurate insulation with perlite facer | Atlas Roofing Corp. |
| ISO 95+ GL | Isocyanurate Insulation | Firestone Building Products |
| H-Shield | Isocyanurate insulation | Hunter Panels |
| H-Shield-WF | Isocyanurate insulation with wood fiberboard facer | Hunter Panels |
| ENRGY2, ENRGY3 | Isocyanurate insulation | Johns Manville |
| E'NRG'Y 2 Plus | Isocyanurate insulation with wood fiberboard facer | Johns Manville |
| Multi-Max FA | Isocyanurate insulation | R-Max, Inc |
| Thermaroof composite | Isocyanurate insulation with perlite facer | R-Max, Inc |
| High Density Fiberboard | Wood fiberboard insulation | The Celotex Corp. |
| DensDeck | Silicon treated gypsum | G-P Gypsum |

**APPROVED FASTENERS:**

**TABLE 3**

| Fastener No. | Product | Product Description | Manufacturer (With current NOA) |
|---|---|---|---|
| 1. | SFS Intec Fasteners | Insulation and membrane fasteners | SFS Intec |
| 2. | Olympic Fasteners | Insulation and membrane fasteners | Olympic Manufacturing |
| 3. | Tru-Fast Fasteners | Insulation and membrane fasteners | Tru-Fast Corporation |
| 4. | Firestone Fasteners | Insulation and membrane fasteners | Firestone Building Products |

**EVIDENCE SUBMITTED:**

| Test Agency | Test Identifier | Description | Date |
|---|---|---|---|
| Factory Mutual Research | 3009797 | FM 4470 | 02/04/02 |
| | 3007119 | FM 4470 | 01/02/02 |
| | 3005794 | FM 4470 | 12/13/01 |
| | 3002357 | FM 4470 | 05/16/00 |
| | 3005415 | FM 4470 | 02/08/00 |
| | 3002775 | FM 4470 | 09/16/99 |
| | 3000919 | FM 4470 | 04/07/99 |
| | 3003690 | FM 4470 | 03/29/99 |
| | 3B9A2.AM | FM 4470 | 01/25/99 |
| | 4B1A9.AM | FM 4470 | 09/09/98 |
| | 1D9A7.AM | FM 4470 | 07/31/98 |
| | 1D9A0.AM | FM 4470 | 07/30/98 |
| | 1D0A3.AM | FM 4470 | 09/24/97 |
| | 1B0A9.AM | FM 4470 | 05/09/97 |
| | 3012149 | FM 4470 | 08/28/02 |
| | 3015927 | FM 4470 | 01/26/04 |
| | 3023988 | FM 4470 | 09/29/05 |
| | 3019052 | FM 4470 | 01/28/06 |
| | 3025484 | FM 4470 | 05/31/06 |
| | 3026594 | FM 4470 | 06/01/06 |
| | 3025659 | FM 4470 | 06/02/06 |
| | 3027476 | FM 4470 | 08/11/06 |
| Exterior Research & Design LLC. | 8054.02.02-1 | TAS 131 | 02/22/02 |
| Underwriters Laboratories, Inc. | 01NK14490 | Fire Classification | 06/01/01 |
| | 96NK22037 | TAS 114, (UL 790) | 03/10/97 |
| | 01NK25823 | Wind Uplift, TAS 114, (UL 1897) | 07/02/01 |

## APPROVED ASSEMBLIES:

**Membrane Type:** Single Ply, Thermoplastic, TPO

**Deck Type 7I:** Recover

**Deck Description:** Steel/Concrete/Lightweight Concrete/Cementitious Wood Fiber/Gypsum

**System Type A(1):** One or more layers of insulation adhered to existing roof surface with approved asphalt or adhesive

**All General and System Limitations apply.**

**Insulation** Existing roof surface shall be primed with ASTM D41 asphalt primer and allowed to dry. One or more layers of maximum 4 x 4 ft (1.2 x 1.2m) ACFoam II adhered to the existing roof surface or to each other with hot asphalt applied within the EVT range and at a rate of 20-40 lbs/100 $ft^2$. Membrane applied as noted below.

**Membrane:** UltraPly TPO (MD) adhered to insulation using UltraPly Bonding Adhesive (MD) applied at 30 $ft^2$/gal (0.7 $m^2$/L) to both the substrate and the bottom side of the roof cover for a combined rate of 60 $ft^2$/gal (1.5 $m^2$/L).

**Maximum Design Pressure:** **-112.5 psf** (See General Limitation #9)

**Membrane Type:** Single Ply, Thermoplastic, TPO

**Deck Type 7I:** Recover

**Deck Description:** Min. 2500 psi structural concrete or concrete plank

**System Type A(2):** One or more layers of insulation adhered with approved adhesive, membrane fully adhered

**All General and System Limitations apply.**

One or more layers of the following insulations:

| **Base Insulation Layer** | **Fastener Density/ft$^2$** | **Fastener Type** |
|---|---|---|
| **ACFoam II, H-Shield, ENRGY 2, ENRGY 3** Minimum 1.0" thick | N/A | N/A |
| **DensDeck, DensDeck Prime** Minimum 0.25" thick | N/A | N/A |

| **Top Insulation Layer** | **Fastener Density/ft$^2$** | **Fastener Type** |
|---|---|---|
| **DensDeck, DensDeck Prime** Minimum 0.25" thick | N/A | N/A |

**Note: All insulation shall be adhered to the deck in full coating of OlyBond Adhesive Fastener at a rate of 1 gal/sq. Please refer to Roofing Application Standard RAS 117 for insulation attachment. Insulation listed as base layer only shall be used only as base layers with a second layer of approved top layer insulation installed as the final membrane substrate.**

**Membrane:** UltraPly TPO (MD) adhered to insulation using UltraPly Bonding Adhesive (MD) applied to both the substrate and the bottom side of the roof cover for a combined rate of 65 ft$^2$/gal (1.6 m$^2$/L)

**Maximum Design Pressure:** **-150 psf** (See General Limitation #9)

**Membrane Type:** Single Ply, Thermoplastic, TPO

**Deck Type 7I:** Recover, Insulated

**Deck Description:** Steel / concrete / cementitious wood fiber / lightweight concrete / gypsum / wood

**System Type A(3):** One or more layers of insulation adhered with approved adhesive, membrane fully adhered.

**All General and System Limitations apply.**

| Insulation Layer | Fastener Density/ft$^2$ | Fastener Type |
|---|---|---|
| **ACFoam II, ISO 95+GL, ENRGY2, ENRGY3** Maximum 1" thick | N/A | N/A |
| **DensDeck, DensDeck Prime** Minimum 5/8" thick | N/A | N/A |

**Note: Insulation shall be adhered to the deck in full coating of OlyBond Adhesive Fastener at a rate of 1 gal/sq. Please refer to Roofing Application Standard RAS 117 for insulation attachment. Insulation listed as base layer only shall be used only as base layers with a second layer of approved top layer insulation installed as the final membrane substrate**

**Membrane:** UltraPly TPO (MD) adhered to insulation using UltraPly Bonding Adhesive (MD) applied at 30 ft$^2$/gal (0.7 m$^2$/L) to both the substrate and the bottom side of the roof cover for a combined rate of 60 ft$^2$/gal (1.5 m$^2$/L)

**Maximum Design Pressures:** **-45 psf.** (See General Limitation #9)

| | |
|---|---|
| **Membrane Type:** | Single Ply, Thermoplastic, TPO |
| **Deck Type 7I:** | Recover, Insulated |
| **Deck Description:** | Steel/concrete/lwc/cwf/gypsum/wood |
| **System Type A(4):** | One or more layers of insulation adhered with approved adhesive, membrane fully adhered |

**All General and System Limitations apply.**

One or more layers of the following insulations:

| **Base Insulation Layer** | **Fastener Density/ft$^2$** | **Fastener Type** |
|---|---|---|
| **(Optional) ASTM C578 (min 1.25 pcf) expanded polystyrene EPS** Minimum 2.0" thick | N/A | N/A |

| **Top Insulation Layer** | **Fastener Density/ft$^2$** | **Fastener Type** |
|---|---|---|
| **High Density Wood Fiberboard** Minimum 1.0" thick | N/A | N/A |
| **DensDeck, DensDeck Prime** Minimum 0.25" thick | N/A | N/A |

**Note: All insulation shall be adhered to the deck in ¾" – 1" wide beads 12" o.c. of OlyBond 500 Adhesive Fastener. Please refer to Roofing Application Standard RAS 117 for insulation attachment. Insulation listed as base layer only shall be used only as base layers with a second layer of approved top layer insulation installed as the final membrane substrate.**

| | |
|---|---|
| **Membrane:** | UltraPly TPO (MD) adhered to insulation using UltraPly Bonding Adhesive (MD) applied to both the substrate and the bottom side of the roof cover for a combined rate of 65 ft$^2$/gal (1.6 m$^2$/L) |
| **Maximum Design Pressure:** | **-120 psf** (See General Limitation #9) |

| | |
|---|---|
| **Membrane Type:** | Single Ply, Thermoplastic, TPO |
| **Deck Type 7I:** | Recover, Insulated |
| **Deck Description:** | Steel/concrete/lwc/cwf/gypsum/wood |
| **System Type A(5):** | One or more layers of insulation adhered with approved adhesive, membrane fully adhered |

**All General and System Limitations apply.**

One or more layers of the following insulations:

| Base Insulation Layer | Fastener Density/ft$^2$ | Fastener Type |
|---|---|---|
| **ACFoam II, H-Shield, ISO 95+GL**<br>Minimum 1.5" thick | N/A | N/A |

**Note: All insulation shall be adhered to the deck in ¾" – 1" wide beads 12" o.c. of OlyBond 500 Adhesive Fastener. Please refer to Roofing Application Standard RAS 117 for insulation attachment. Insulation listed as base layer only shall be used only as base layers with a second layer of approved top layer insulation installed as the final membrane substrate.**

| | |
|---|---|
| **Membrane:** | UltraPly TPO (MD) adhered to insulation using UltraPly Bonding Adhesive (MD) applied to both the substrate and the bottom side of the roof cover for a combined rate of 65 ft$^2$/gal (1.6 m$^2$/L) |
| **Maximum Design Pressure:** | **-120 psf** (See General Limitation #9) |

| | |
|---|---|
| **Membrane Type:** | Single Ply, Thermoplastic, TPO |
| **Deck Type 7I:** | Recover, Insulated |
| **Deck Description:** | Steel/concrete/lwc/cwf/gypsum/wood |
| **System Type A(6):** | One or more layers of insulation adhered with approved adhesive, membrane fully adhered |

**All General and System Limitations apply.**

One or more layers of the following insulations:

| **Base Insulation Layer** | **Fastener Density/ft$^2$** | **Fastener Type** |
|---|---|---|
| **(Optional) ACFoam II, H-Shield, ISO 95+GL**<br>Minimum 1.5" thick | N/A | N/A |

| **Top Insulation Layer** | **Fastener Density/ft$^2$** | **Fastener Type** |
|---|---|---|
| **DensDeck, DensDeck Prime**<br>Minimum 0.25" thick | N/A | N/A |

**Note: All insulation shall be adhered to the deck in ¾" – 1" wide beads 12" o.c. of OlyBond 500 Adhesive Fastener. Please refer to Roofing Application Standard RAS 117 for insulation attachment. Insulation listed as base layer only shall be used only as base layers with a second layer of approved top layer insulation installed as the final membrane substrate.**

| | |
|---|---|
| **Membrane:** | UltraPly TPO (MD) adhered to insulation using UltraPly Bonding Adhesive (MD) applied to both the substrate and the bottom side of the roof cover for a combined rate of 65 ft$^2$/gal (1.6 m$^2$/L) |
| **Maximum Design Pressure:** | **-120 psf** (See General Limitation #9) |

| | |
|---|---|
| **Membrane Type:** | Single Ply, Thermoplastic, TPO |
| **Deck Type 7I:** | Recover |
| **Deck Description:** | Steel/concrete/lwc/cwf/gypsum/wood |
| **System Type A(7):** | One or more layers of insulation adhered with approved adhesive, membrane fully adhered |

**All General and System Limitations apply.**

One or more layers of the following insulations:

| **Base Insulation Layer** | **Fastener Density/ft$^2$** | **Fastener Type** |
|---|---|---|
| **ENRGY 3**<br>Minimum 1.5" thick | N/A | N/A |

| **Top Insulation Layer** | **Fastener Density/ft$^2$** | **Fastener Type** |
|---|---|---|
| **DensDeck, DensDeck Prime**<br>Minimum 0.25" thick | N/A | N/A |

**Note: All insulation shall be adhered to the deck in ¾" – 1" wide beads 12" o.c. of OlyBond 500 Adhesive Fastener. Please refer to Roofing Application Standard RAS 117 for insulation attachment. Insulation listed as base layer only shall be used only as base layers with a second layer of approved top layer insulation installed as the final membrane substrate.**

| | |
|---|---|
| **Membrane:** | UltraPly TPO (MD) adhered to insulation using UltraPly Bonding Adhesive (MD) applied to both the substrate and the bottom side of the roof cover for a combined rate of 65 ft$^2$/gal (1.6 m$^2$/L) |
| **Maximum Design Pressure:** | **-120 psf** (See General Limitation #9) |

| | |
|---|---|
| **Membrane Type:** | Single Ply, Thermoplastic, TPO |
| **Deck Type 7I:** | Recover |
| **Deck Description:** | Steel/concrete/lwc/cwf/gypsum/wood |
| **System Type A(8):** | One or more layers of insulation adhered with approved adhesive, membrane fully adhered |

**All General and System Limitations apply.**

One or more layers of the following insulations:

| **Base Insulation Layer** | **Fastener Density/ft$^2$** | **Fastener Type** |
|---|---|---|
| **ISO 95+ GL**<br>Minimum 1.5" thick | N/A | N/A |

| **Top Insulation Layer** | **Fastener Density/ft$^2$** | **Fastener Type** |
|---|---|---|
| **High Density Wood Fiberboard**<br>Minimum 0.5" thick | N/A | N/A |

**Note: All insulation shall be adhered to the deck in ¾" – 1" wide beads 12" o.c. of OlyBond 500 Adhesive Fastener. Please refer to Roofing Application Standard RAS 117 for insulation attachment. Insulation listed as base layer only shall be used only as base layers with a second layer of approved top layer insulation installed as the final membrane substrate.**

| | |
|---|---|
| **Membrane:** | UltraPly TPO (MD) adhered to insulation using UltraPly Bonding Adhesive (MD) applied to both the substrate and the bottom side of the roof cover for a combined rate of 65 ft$^2$/gal (1.6 m$^2$/L) |
| **Maximum Design Pressure:** | **-120 psf** (See General Limitation #9) |

| | |
|---|---|
| **Membrane Type:** | Single Ply, Thermoplastic, TPO |
| **Deck Type 7I:** | Recover |
| **Deck Description:** | Steel/concrete/lwc/cwf/gypsum/wood |
| **System Type A(9):** | One or more layers of insulation adhered with approved adhesive, membrane fully adhered |

**All General and System Limitations apply.**

One or more layers of the following insulations:

| **Base Insulation Layer** | **Fastener Density/ft$^2$** | **Fastener Type** |
|---|---|---|
| **Foamular 250**<br>Minimum 1.0" thick | N/A | N/A |

| **Top Insulation Layer** | **Fastener Density/ft$^2$** | **Fastener Type** |
|---|---|---|
| **DensDeck, DensDeck Prime**<br>Minimum 0.25" thick | N/A | N/A |

**Note: All insulation shall be adhered to the deck in ¾" – 1" wide beads 12" o.c. of OlyBond 500 Adhesive Fastener. Please refer to Roofing Application Standard RAS 117 for insulation attachment. Insulation listed as base layer only shall be used only as base layers with a second layer of approved top layer insulation installed as the final membrane substrate.**

| | |
|---|---|
| **Membrane:** | UltraPly TPO (MD) adhered to insulation using UltraPly Bonding Adhesive (MD) applied to both the substrate and the bottom side of the roof cover for a combined rate of 65 ft$^2$/gal (1.6 m$^2$/L) |
| **Maximum Design Pressure:** | **-120 psf** (See General Limitation #9) |

**Membrane Type:** Single Ply, Thermoplastic, TPO

**Deck Type 7I:** Recover, Insulated

**Deck Description:** Steel/concrete/lwc/cwf/gypsum/wood

**System Type A(10):** One or more layers of insulation adhered with approved adhesive, membrane fully adhered

**All General and System Limitations apply.**

One or more layers of the following insulations:

| Insulation Layer | Fastener Density/ft$^2$ | Fastener Type |
|---|---|---|
| **ACFoam II, H-Shield, ISO 95+GL**<br>Minimum 1.5" thick | N/A | N/A |
| **High Density Wood Fiberboard**<br>Minimum 0.5" thick | N/A | N/A |
| **DensDeck, DensDeck Prime**<br>Minimum 0.25" thick | N/A | N/A |

**Note: All insulation shall be adhered to the deck in ¾" – 1" wide beads 12" o.c. of OlyBond 500 Adhesive Fastener. Please refer to Roofing Application Standard RAS 117 for insulation attachment. Insulation listed as base layer only shall be used only as base layers with a second layer of approved top layer insulation installed as the final membrane substrate.**

**Membrane:** UltraPly TPO (MD) adhered to insulation using UltraPly Bonding Adhesive (MD) applied to both the substrate and the bottom side of the roof cover for a combined rate of 65 ft$^2$/gal (1.6 m$^2$/L)

**Maximum Design Pressure:** **-120 psf** (See General Limitation #9)

| | |
|---|---|
| **Membrane Type:** | Single Ply, Thermoplastic, TPO |
| **Deck Type 7I:** | Recover, Insulated |
| **Deck Description:** | Steel/concrete/lwc/cwf/gypsum/wood |
| **System Type A(11):** | One or more layers of insulation adhered with approved adhesive, membrane fully adhered |

**All General and System Limitations apply.**

One or more layers of the following insulations:

| Insulation Layer | Insulation Fasteners (Table 3) | Fastener Density/ft$^2$ |
|---|---|---|
| **ACFoam II, Multi-Max, ENRGY 3, H-Shield**<br>Minimum 1.5" thick | N/A | N/A |
| **DensDeck, DensDeck Prime**<br>Minimum 0.25" thick | N/A | N/A |

**Note: All insulation shall be adhered to the deck in ½" to ¾" wide beads 12" o.c. of Firestone ISO Twin Pack or Weather-Tite One Step Foamable Adhesive. Please refer to Roofing Application Standard RAS 117 for insulation attachment. Insulation listed as base layer only shall be used only as base layers with a second layer of approved top layer insulation installed as the final membrane substrate.**

| | |
|---|---|
| **Vapor Retarder:** | (Optional) Any UL or FM approved asphaltic vapor retarder may be installed over the deck or the base layer of insulation |
| **Membrane:** | UltraPly TPO (MD) adhered to insulation using UltraPly Bonding Adhesive (MD) applied to both the substrate and the bottom side of the roof cover for a combined rate of 65 ft$^2$/gal (1.6 m$^2$/L) |
| **Maximum Design Pressure:** | **-157.5 psf** (See General Limitation #9) |

| | |
|---|---|
| **Membrane Type:** | Single Ply, Thermoplastic, TPO |
| **Deck Type 7I:** | Recover, Insulated |
| **Deck Description:** | Steel/concrete/lwc/cwf/gypsum/wood |
| **System Type A(12):** | One or more layers of insulation adhered with approved adhesive, membrane fully adhered |

**All General and System Limitations apply.**

One or more layers of the following insulations:

| **Base Insulation Layer** | **Insulation Fasteners (Table 3)** | **Fastener Density/ft$^2$** |
|---|---|---|
| **ACFoam II, Multi-Max, ENRGY 3, H-Shield, ISO 95+GL**<br>Minimum 1.5" thick | N/A | N/A |

| **Top Insulation Layer** | **Insulation Fasteners (Table 3)** | **Fastener Density/ft$^2$** |
|---|---|---|
| **High Density Wood Fiber**<br>Minimum 0.5" thick | N/A | N/A |

**Note: All insulation shall be adhered to the deck in ½" to ¾" wide beads 12" o.c. of Firestone ISO Twin Pack or Weathertite One Step Foamable Adhesive. Please refer to Roofing Application Standard RAS 117 for insulation attachment. Insulation listed as base layer only shall be used only as base layers with a second layer of approved top layer insulation installed as the final membrane substrate.**

| | |
|---|---|
| **Vapor Retarder:** | (Optional) Any UL or FM approved asphaltic vapor retarder may be installed over the deck or the base layer of insulation |
| **Membrane:** | UltraPly TPO (MD) adhered to insulation using UltraPly Bonding Adhesive (MD) applied to both the substrate and the bottom side of the roof cover for a combined rate of 65 ft$^2$/gal (1.6 m$^2$/L) |
| **Maximum Design Pressure:** | **-127.5 psf** (See General Limitation #9) |

| | |
|---|---|
| **Membrane Type:** | Single Ply, Thermoplastic, TPO |
| **Deck Type 7I:** | Recover |
| **Deck Description:** | Concrete |
| **System Type A(13):** | One or more layers of insulation adhered with approved adhesive, membrane fully adhered |

**All General and System Limitations apply.**

One or more layers of the following insulations:

| Insulation Layer | Fastener Density/ft$^2$ | Fastener Type |
|---|---|---|
| **(Optional) ACFoam II, ACFoam III, ISO 95+ (M-Plus), ISO 95+GL, Multi-Max FA** | | |
| Minimum 1.5" thick | N/A | N/A |
| **DensDeck, DensDeck Prime** | | |
| Minimum 0.5" thick | N/A | N/A |

**Note: All insulation shall be adhered to the deck in 3" – 3.5" wide ribbons of TITESET, spaced 12" o.c. Please refer to Roofing Application Standard RAS 117 for insulation attachment. Insulation listed as base layer only shall be used only as base layers with a second layer of approved top layer insulation installed as the final membrane substrate.**

| | |
|---|---|
| **Membrane:** | UltraPly TPO (MD) adhered to insulation using UltraPly Bonding Adhesive (MD) applied to both the substrate and the bottom side of the roof cover for a combined rate of 65 ft$^2$/gal (1.6 m$^2$/L) |
| **Maximum Design Pressure:** | **-202.5 psf** (See General Limitation #9) |

**Membrane Type:** Single Ply, Thermoplastic, TPO

**Deck Type 7I** Recover

**Deck Description** Steel/Concrete

**System Type C(1):** Membrane fully adhered over mechanically fastened insulation.

**All General and System Limitations apply.**

| Insulation for Base Layer (Optional) | Fastener Density $ft^2$ | Fastener Type |
|---|---|---|
| **ACFoam II (flat or tapered)** | | |
| Minimum: 1.3" thick | N/A | N/A |
| **H-Shield (flat or tapered)** | | |
| Minimum: 1.4" thick | N/A | N/A |
| **ACFoam Composite (flat or tapered), Multi-Max FA, Thermaroof Composite** | | |
| Minimum: 1.5" thick | N/A | N/A |
| **H-Shield-WF** | | |
| Minimum: 1.9" thick | N/A | N/A |
| **High Density Fiberboard** | | |
| Minimum: ½" thick | N/A | N/A |

| Insulation Top Layer | Fastener Density $ft^2$ | Fastener Type |
|---|---|---|
| **ACFoam II** | | |
| Minimum: 1.5" thick | 1:2 | See approved fasteners in Table 3 |
| Minimum: 2.0" thick | 1:4 | See approved fasteners in Table 3 |
| **DensDeck** | | |
| Minimum: ¼" thick | 1:1.8 | See approved fasteners in Table 3 |

**Note: All layers shall be simultaneously fastened; see top layer below for fasteners and density. Insulation panels listed are minimum sizes and dimensions; if larger panels are used, the number of fasteners shall be increased maintaining the same fastener density. Please refer to Roofing Application Standard RAS 117 for insulation attachment.**

**Membrane:** UltraPly TPO (MD) adhered to insulation using UltraPly Bonding Adhesive (MD) applied at 30 $ft^2$/gal (0.7 $m^2$/L) to both the substrate and the bottom side of the roof cover for a combined rate of 60 $ft^2$/gal (1.5 $m^2$/L)

**Maximum Design Pressure:** **-45 psf;** (See General Limitation #9)

**Membrane Type:** Single Ply, Thermoplastic, TPO

**Deck Type 7I:** Recover, Insulated,

**Deck Description:** Concrete

**System Type C(2):** Membrane fully adhered over mechanically fastened insulation.

**All General and System Limitations apply.**

**One of the following insulations.**

| Insulation Bottom Layer | Fastener Density $ft^2$ | Fastener Type |
|---|---|---|
| **Any approved insulation** Minimum: 0.25" thick | N/A | N/A |

| Insulation Top Layer | Fastener Density $ft^2$ | Fastener Type |
|---|---|---|
| **ACFoam II** Minimum: 1.5" thick | 1:1.78 | Firestone Steel Insulation Plates; Firestone AP Fastener |
| **ACFoam II** Minimum: 2.0" thick | 1:1.78 | Firestone Steel Insulation Plates; Firestone AP Fastener |

**Note: All layers shall be simultaneously fastened; see top or base layer for fasteners and density. Insulation panels listed are minimum sizes and dimensions; if larger panels are used, the number of fasteners shall be increased maintaining the same fastener density. Please refer to Roofing Application Standard RAS 117 for insulation attachment.**

**Membrane:** UltraPly TPO (MD) adhered to insulation using UltraPly Bonding Adhesive (MD) applied to both the substrate and the bottom side of the roof cover for a combined rate of 65 $ft^2$ /gal (1.6 $m^2$/L)

**Maximum Design Pressure:** **-52.5 psf; {for 1.5" insulation}** (See General Limitation #7)
**-60 psf; {for 2" insulation}** (See General Limitation #7)

**Membrane Type:** Single Ply, Thermoplastic, TPO

**Deck Type 7I** Recover

**Deck Description** Steel/Concrete/Lightweight Concrete/ Cementitious Wood Fiber/Gypsum

**System Type D(1):** Membrane attached over preliminary fastened insulation

**All General and System Limitations apply.**

| Insulation for Base or Top Layer | Fastener Density $ft^2$ | Fastener Type |
|---|---|---|
| **ACFoam II (flat or tapered)** Minimum: 1.3" thick | N/A | N/A |
| **H-Shield (flat or tapered)** Minimum: 1.4" thick | N/A | N/A |
| **ACFoam Composite (flat or tapered), Multi-Max FA, Thermaroof Composite** Minimum: 1.5" thick | N/A | N/A |
| **H-Shield-WF** Minimum: 1.9" thick | N/A | N/A |
| **High Density Fiberboard** Minimum: ½" thick | N/A | N/A |

**Note: All insulation shall have preliminary attachment prior to installation of the roofing membrane at a minimum application of two fasteners per board for insulation boards having no dimension greater than 4 ft, and four fasteners for any insulation having no dimension greater than 8 ft.**

**Membrane:** UltraPly TPO (MD) attached to deck as follows:

**Fastening #1:** **Minimum Grade 33 Steel Deck Only:** Firestone 2" Metal Plate and AP Fasteners or Firestone 2" Metal Seam Plate and Olympic #14 Heavy Duty Screws, spaced at max 6 in o.c. within the minimum 4.5 in (114 mm) wide laps, which are spaced at max 70.5 in (1791 mm) o.c. and sealed with a minimum 1.5 in (38 mm) heat weld.

**Maximum Design: -45 psf.**

**Fastening #2:** **Minimum Grade 80 Steel Deck only:** SFS Intec Extra Load Fastener screws spaced at max 12 in (305 mm) o.c. through Firestone Metal Batten Strip, which are placed within the minimum 4.5 in (114 mm) wide laps, which are spaced at max 70 in (1778 mm) o.c. and sealed with a min 1.5 in wide heat weld placed on both sides of the batten.

**Maximum Design Pressure: -45 psf.**

**Fastening #3:** **Minimum Grade 80 Steel Deck only:** Firestone TPO Plates and Firestone HD Fastener or Olympic XHD 2-3/8" barbed plates and Olympics XHD screws spaced at 12 in. (305 mm) o.c. within the minimum 4.5 in (114 mm) wide laps, which are spaced at 70 in. (1778 mm) o.c. and sealed with a minimum 1.5 in (38 mm) heat weld.

**Maximum Design Pressure: - 45 psf**

**Fastening #4:** **Minimum Grade 80 Steel Deck Only:** Firestone HD Fasteners and Firestone HD Seam Plates or Firestone HD Fasteners and Firestone TPO Plates or Olympic XHD screws and XHD plates spaced at maximum 12 in. (352 mm) o.c. within the minimum 6 in (150 mm) wide laps, which are spaced at maximum 90 in (2285 mm) o.c. and sealed with a minimum 1.75 in (45 mm) heat weld placed on the outside edge of the lap.

**Maximum Design Pressure: -45 psf**

**Fastening #5:** **Minimum Grade 33 Steel Deck Only:** Firestone HD Fasteners and Firestone HD Seam Plates or Firestone HD Fasteners and Firestone TPO Plates or Olympic XHD screws and XHD plates spaced at maximum 6 in. (150 mm) o.c. within the minimum 6 in (150 mm) wide laps, which are spaced at maximum 114 in. (2895 mm) o.c. and sealed with a minimum 1.75 in (45 mm) heat weld placed on the outside edge of the lap.

**Maximum Design Pressure: -45 psf**

**Fastening #6:** **Minimum Grade 80 Steel Deck Only:** Firestone HD Fasteners and Firestone HD Seam Plates or Olympic XHD screws and XHD plates spaced at 12 in. (305 mm) o.c. within the minimum 5 in (127 mm) wide laps, which are spaced at 70 in (1778 mm) o.c. and sealed with a minimum 2 in (51 mm) wide heat weld placed on the outside edge of the lap.

**Maximum Design Pressure: -45 psf**

**Fastening #7:** **Minimum Grade 33 Steel Deck Only:** Firestone HD Fasteners and Firestone Polymer Batten Strip. Screws are spaced at maximum 12 in (305 mm) o.c. within the minimum 4.5 in (114 mm) wide laps, which are spaced at maximum 140.5 in (3,568 mm) o.c. and sealed with a minimum 1.5 in (40 mm) wide heat weld placed on the outside edge of the batten strip and a minimum 1.0 in (25 mm) wide heat weld placed on the inside edge of the batten strip.

**Maximum Design Pressure: -45 psf**

**Fastening #8:** **Minimum Grade 80 Steel Deck Only:** Firestone HD Fasteners spaced max 6 in. (152 mm) o.c. through Firestone Metal Batten Strip. The batten and fasteners are placed within the min 4.5 in. (114 mm) wide laps, which are spaced at max 70.25 in (1784 mm) o.c. and sealed with a min. 0.75 in (19 mm) wide heat weld on the inside of the lap and a min 1 in. (25 mm) wide heat weld on the outside of the lap.

**Maximum Design Pressure: -75 psf**

**Fastening #9:** **Minimum Grade 80 Steel Deck Only:** Firestone HD Fasteners spaced max 12 in. (305 mm) o.c. through Firestone Metal Batten Strip. The batten and fasteners are placed within the min 4.5 in. (114 mm) wide laps, which are spaced at max 70.25 in (1784 mm) o.c. and sealed with a min. 0.75 in (19 mm) wide heat weld on the inside of the lap and a min 1 in. (25 mm) wide heat weld on the outside of the lap.

**Maximum Design Pressure: -52.5 psf.**

**Fastening #10:** **Minimum Grade 80 Steel Deck Only:** Firestone HD Fasteners spaced max 6 in. (152 mm) o.c. through Firestone Metal Batten Strip. The batten and fasteners are placed within the min. 4.5 in. (114 mm) wide laps, which are spaced at max 142.5 in. (3620 mm) o.c. and sealed with a min.1 in. (25 mm) wide heat weld on the inside of the lap and a min 1 in. (25 mm) wide heat weld on the outside of the lap.

**Maximum Design Pressure: -52.5 psf.**

**Fastening #11:** **Minimum Grade 80 Steel Deck Only**: Firestone HD Fasteners and Firestone Polymer Batten Strip. Screws are spaced at maximum 6 in (152 mm) o.c. within the minimum 5 in (127 mm) wide laps, which are spaced at maximum 144 in (3658 mm) o.c. and sealed with a minimum 1.5 in (40 mm) wide heat weld placed on the outside edge of the batten strip.

**Maximum Design Pressure: -52.5 psf.**

**Fastening #12:** **Min. 2,500 psi Concrete Deck Only:** Firestone HD Fasteners and Firestone Polymer Batten Strip. Screws are spaced at maximum 12 in (305 mm) o.c. within the minimum 4.5 in (114 mm) wide laps, which are spaced at maximum 144 in (3658 mm) o.c. and sealed with a minimum 1.25 in (32 mm) wide heat weld placed on each side of the batten strip.

**Maximum Design Pressure: -45 psf**

**Fastening #13:** **Min. 2,500 psi Concrete Deck Only.** Firestone HD Fasteners and Firestone Polymer Batten Strip. Screws are spaced at maximum 6 in (152 mm) o.c. within the minimum 5 in (127 mm) wide laps, which are spaced at maximum 144 in (3,658 mm) o.c. and sealed with a minimum 1.5 in (40 mm) wide heat weld placed on the outside edge of the batten strip.

**Maximum Design Pressure: -60 psf**

**Fastening #14:** Approved Lightweight concrete Deck cast over Steel or Concrete Only: Fasteners installed through lightweight concrete to steel deck. UltraPly TPO* membrane secured with Firestone HD Fasteners spaced max 6" o.c. through the Firestone Polymer Batten Strip. The batten strip and fasteners are placed within the min. 4.5" wide laps are spaced at max 143.5" o.c. and sealed with a min 0.75" wide heat weld on the inside of the lap and a min. 1" wide heat weld on the outside of the lap.

**Maximum Design Pressure: -90 psf**

**Fastening #15:** Cementitious wood Fiber or Poured Gypsum Deck Only: N.T.B Magnum Fasteners with 2 in (51 mm) head spaced at max 6 in (1152 mm) o.c. within the minimum 4.5 in (114 mm) wide laps, which are spaced at max 57 in (1448 mm) o.c. and sealed with a minimum 1.5 in (38 mm) heat weld. Fasteners shall have minimum 2 in (51 mm) embedment.

**Maximum Design Pressure: -45 psf.**

**Maximum Design Pressure:** **See Fastening Options for Specific Deck Type**

**Membrane Type:** Single Ply, Thermoplastic, TPO

**Deck Type 7I:** Recover, Insulated

**Deck Description:** steel

**System Type D(2):** Membrane attached over preliminary fastened insulation

**All General and System Limitations apply.**

**Deck:** 18-22 ga., 1.5 in (38mm) deep, ASTM A653 or A1008 Grade 80 steel deck secured to 0.25 in (6mm) structural supports spaced a maximum 6 ft o.c. with Buildex Teks 4 or Teks 5 fasteners spaced max. 6 in o.c.

**Barrier:** (Optional) Minimum $^5/_8$" gypsum board or ¼" DensDeck, loose laid

One or more layers of any of the following insulation:

| Insulation Layer | Fastener Density ft$^2$ | Fastener Type |
|---|---|---|
| **Any approved Polyisocyanurate** Minimum: 1.0" thick | N/A | N/A |

**Note: All insulation shall be preliminary attachment prior to the installation of the roofing membrane at a minimum application rate of two fasteners per board for insulation boards having no dimensions greater than 4 ft., and four fasteners for any insulation having no dimension greater than 8 ft.**

**Membrane:** UltraPly TPO (MD) attached to deck as follows:

**Fastening #1:** Firestone Polymer Batten Strip and Firestone HD Plus Fasteners spaced maximum 6 in. o.c. within min. 4.5 in. wide laps. Laps are spaced at maximum 115 in. o.c. and sealed with a minimum 1.5 in. wide heat weld on the inside and outside edge of the lap.

**Maximum Design Pressure: -52.5 psf (See General Limitation #7)**

**Fastening #2:** Firestone HD Seam Plate and Firestone HD Fasteners spaced maximum 6 in. o.c. within minimum 6 in. wide lap. Laps are spaced at maximum 144 in. o.c. and sealed with minimum 1.75 in. wide heat weld on the outside edge of the lap.

**Maximum Design Pressure: -45 psf (See General Limitation #7)**

**Fastening #3:** Firestone 3" HD Plus Seam Plate and Firestone HD Plus Fasteners spaced maximum 12 in. o.c. within minimum 6 in. wide laps. Laps are spaced maximum 114 in. o.c. and sealed with minimum 1.75 in. wide heat weld on the outside edge of the lap.

**Maximum Design Pressure: -45 psf (See General Limitation #7)**

**Maximum Design Pressure:** **See Membrane Fastening Options Above**

**Membrane Type:** Single Ply, Thermoplastic, TPO

**Deck Type 7I:** Recover, Insulated

**Deck Description:** steel

**System Type D(3):** Membrane attached over preliminary fastened insulation

**All General and System Limitations apply.**

**Barrier:** (Optional) Minimum $^5/_8$" gypsum board or ¼" DensDeck, loose laid

One or more layers of any of the following insulation:

| Insulation Layer | Fastener Density ft$^2$ | Fastener Type |
|---|---|---|
| **Any approved Polyisocyanurate** | | |
| Minimum: 1.0" thick | N/A | N/A |

**Note: All insulation shall be preliminary attachment prior to the installation of the roofing membrane at a minimum application rate of two fasteners per board for insulation boards having no dimensions greater than 4 ft., and four fasteners for any insulation having no dimension greater than 8 ft.**

**Membrane:** UltraPly TPO (MD) attached to deck as follows:

**Fastening #1:** Firestone 3" HD Plus Seam Plates and Firestone HD Plus Fasteners spaced maximum 6 in. o.c. within minimum 6 in. wide laps. Laps are spaced maximum 144 in. o.c. and sealed with a minimum 1.75 in. wide heat weld located on the outside edge of the lap.

**Maximum Design Pressure: -45 psf (See General Limitation #7)**

**Fastening #2:** Firestone 2-3/8" SXHD Plates and Firestone SXHD Plus Fasteners spaced 6 in. o.c. within minimum 6 in. wide lap. Laps are spaced at maximum 144 in. o.c. and sealed with minimum 1.75 in. wide heat weld on the outside edge of the lap.

**Maximum Design Pressure: -45 psf (See General Limitation #7)**

**Fastening #3:** Firestone 3" HD Plus Seam Plates and Firestone HD Plus Fasteners spaced maximum 12 in. o.c. within minimum 6 in. wide laps. Laps are spaced maximum 90 in. o.c. and sealed with a minimum 1.75 in. wide heat weld located on the outside edge of the lap.

**Maximum Design Pressure: -45 psf (See General Limitation #7)**

**Maximum Design Pressure:** **See Membrane Fastening Options Above**

**Membrane Type:** Single Ply, Thermoplastic, TPO

**Deck Type 7I:** Recover, Insulated

**Deck Description:** steel

**System Type D(4):** Membrane attached over preliminary fastened insulation

**All General and System Limitations apply.**

**Deck:** 18-22 ga., 1.5 in (38mm) deep, ASTM A653 or A1008 Grade 80 steel deck secured to 0.25 in (6mm) structural supports spaced a maximum 6 ft o.c. with Buildex Teks 4 or Teks 5 fasteners spaced max. 6 in o.c.

**Barrier:** (Optional) Minimum $^5/_8$" gypsum board or ¼" DensDeck, loose laid

One or more layers of any of the following insulation:

| Insulation Layer | Fastener Density $ft^2$ | Fastener Type |
|---|---|---|
| **Any approved Polyisocyanurate** Minimum: 1.0" thick | N/A | N/A |

**Note: All insulation shall be preliminary attachment prior to the installation of the roofing membrane at a minimum application rate of two fasteners per board for insulation boards having no dimensions greater than 4 ft., and four fasteners for any insulation having no dimension greater than 8 ft.**

**Membrane:** UltraPly TPO (MD) attached to deck as follows:

**Fastening #1:** Firestone Polymer Batten Strip and Firestone HD Fasteners spaced maximum 6 in. o.c. within minimum 4.5 in. wide laps. Laps are spaced maximum 69.5 in. o.c. and sealed with a min 1.0 in. wide inside edge heat weld and a min. 1.25 in. wide outside edge heat weld.

**Maximum Design Pressure: -90 psf (See General Limitation #7)**

**Fastening #2:** Firestone Polymer Batten Strip and Firestone HD Fasteners spaced maximum 6 in. o.c. within minimum 6 in. wide laps. Laps are spaced maximum 114 in. o.c. and sealed with a min 1.0 in. wide inside edge heat weld and a min. 1.25 in. wide outside edge heat weld.

**Maximum Design Pressure: -60 psf (See General Limitation #7)**

**Maximum Design Pressure:** **See Membrane Fastening Options Above**

**Membrane Type:** Single Ply, Thermoplastic, TPO

**Deck Type7I:** Recover, Insulated

**Deck Description:** Steel

**System Type D(5):** Membrane attached over preliminary fastened insulation

**All General and System Limitations apply.**

**Barrier:** (Optional) Minimum $^5/_8$" gypsum board or ¼" DensDeck, loose laid

One or more layers of any of the following insulation:

| Insulation Layer | Fastener Density ft$^2$ | Fastener Type |
|---|---|---|
| **Any approved insulation** | | |
| Minimum: 0.25" thick | N/A | N/A |

**Note: All insulation shall be preliminary attachment prior to the installation of the roofing membrane at a minimum application rate of two fasteners per board for insulation boards having no dimensions greater than 4 ft., and four fasteners for any insulation having no dimension greater than 8 ft.**

**Membrane:** Min. 0.070 in. thick UltraPly TPO (MD) attached to deck as follows:

**Fastening #1:** Firestone Polymer Batten Strip and Firestone HD Fasteners spaced maximum 6 in. o.c. within min. 6 in. wide laps. Laps are spaced at maximum 69 in. o.c. and sealed with a minimum 1.0 in. wide inside edge heat weld and a minimum 1.5 in. wide outside edge heat weld.

**Maximum Design Pressure: -75 psf (See General Limitation #7)**

**Fastening #2:** Firestone HD Seam Plates and Firestone HD Fasteners spaced maximum 6 in. o.c. within minimum 6 in. wide lap. Laps are spaced at maximum 90 in. o.c. and sealed with minimum 1.5 in. wide heat weld on the outside edge of the lap. An intermediate row Firestone Polymer Batten Strip and Firestone HD Fasteners spaced maximum 6 in. o.c. Intermediate row is centered between lap rows and covered with a 5 in. wide cover strip with minimum 1.5 in. wide heat welds on each side.

**Maximum Design Pressure: -97.5 psf (See General Limitation #7)**

**Fastening #3:** Firestone HD Seam Plates and Firestone HD Fasteners spaced maximum 6 in. o.c. within minimum 6 in. wide lap. Laps are spaced at maximum 69 in. o.c. and sealed with minimum 1.5 in. wide heat weld on the outside edge of the lap.

**Maximum Design Pressure: -82.5 psf (See General Limitation #7)**

**Maximum Design Pressure:** **See Membrane Fastening Options Above**

**Membrane Type:** Single Ply, Thermoplastic, TPO

**Deck Type 7I:** Recover, Insulated

**Deck Description:** steel

**System Type D(6):** Membrane attached over preliminary fastened insulation

**All General and System Limitations apply.**

**Barrier:** (Optional) Minimum $^5/_8$" gypsum board or ¼" DensDeck, loose laid

One or more layers of any of the following insulation:

| Insulation Layer | Fastener Density ft$^2$ | Fastener Type |
|---|---|---|
| **Any approve insulation** | | |
| Minimum: 0.25" thick | N/A | N/A |

**Note: All insulation shall be preliminary attachment prior to the installation of the roofing membrane at a minimum application rate of two fasteners per board for insulation boards having no dimensions greater than 4 ft., and four fasteners for any insulation having no dimension greater than 8 ft.**

**Membrane:** UltraPly TPO (MD) attached to deck as follows:

**Fastening #1:** Firestone 3" HD Plus Seam Plates and Firestone HD Plus Fasteners spaced maximum 6 in. o.c. within min. 6 in. wide laps. Laps are spaced at maximum 90 in. o.c. and sealed with a minimum 1.5 in. wide heat weld on outside edge.

**Maximum Design Pressure:** **-67.5 psf** (See General Limitation #7)

**Membrane Type:** Single Ply, Thermoplastic, TPO

**Deck Type 7I:** Recover, Insulated

**Deck Description:** steel

**System Type D(7):** Membrane attached over preliminary fastened insulation

**All General and System Limitations apply.**

**Deck:** 18-22 ga., 1.5 in (38mm) deep, ASTM A653 or A1008 Grade 80 steel deck secured to 0.25 in (6mm) structural supports spaced a maximum 6 ft o.c. with Buildex Teks 4 or Teks 5 fasteners spaced max. 6 in o.c.

**Barrier:** (Optional) Minimum $^5/_8$" gypsum board or ¼" DensDeck, loose laid

One or more layers of any of the following insulation:

| Insulation Layer | Fastener Density ft$^2$ | Fastener Type |
|---|---|---|
| **Any approved insulation** | | |
| Minimum: 0.25" thick | N/A | N/A |

**Note: All insulation shall be preliminary attachment prior to the installation of the roofing membrane at a minimum application rate of two fasteners per board for insulation boards having no dimensions greater than 4 ft., and four fasteners for any insulation having no dimension greater than 8 ft.**

**Membrane:** Min. 0.070 in. thick UltraPly TPO (MD) attached to deck as follows:

**Fastening #1:** Firestone 3" HD Plus Seam Plates and Firestone HD Plus Fasteners spaced maximum 12 in. o.c. within minimum 6 in. wide lap. Laps are spaced maximum 69.75 in. o.c. and sealed with a minimum 1.5 in. wide heat weld on outside edge of lap.

**Maximum Design Pressure: -52.5 psf (See General Limitation #7)**

**Fastening #2:** Firestone HD Seam Plates and Firestone HD Fasteners or Firestone 3" HD Plus Seam Plates and Firestone HD Plus Fasteners spaced maximum 6 in. o.c. within minimum 6 in. wide laps. Laps are spaced maximum 69.75 in. o.c. and sealed with minimum 1.5 in. heat weld on outside edge of lap.

**Maximum Design Pressure: -75 psf (See General Limitation #7)**

**Fastening #3:** Firestone HD Seam Plates and Firestone HD Fasteners spaced maximum 6 in. o.c. within minimum 6 in. wide laps. Laps are spaced maximum 42 in. o.c. and sealed with minimum 1.5 in. heat weld on outside edge of lap.

**Maximum Design Pressure: -45 psf (See General Limitation #7)**

**Fastening #4:** Firestone HD Seam Plates and Firestone HD Plus Fasteners spaced maximum 6 in. o.c. within minimum 6 in. wide laps. Laps are spaced maximum 90 in. o.c. and sealed with minimum 1.5 in. heat weld on outside edge of lap.

**Maximum Design Pressure: -82.5 psf (See General Limitation #7)**

**Maximum Design Pressure:** **See Membrane Fastening Options Above**

**Membrane Type:** Single Ply, Thermoplastic, TPO

**Deck Type 7I:** Recover, Insulated

**Deck Description:** steel

**System Type D(8):** Membrane attached over preliminary fastened insulation

**All General and System Limitations apply.**

**Deck:** 18-22 ga., 1.5 in (38mm) deep, ASTM A653 or A1008 Grade 80 steel deck secured to 0.25 in (6mm) structural supports spaced a maximum 6 ft o.c. with Buildex Teks 4 or Teks 5 fasteners spaced max. 6 in o.c.

**Barrier:** (Optional) Minimum $^5/_8$" gypsum board or ¼" DensDeck, loose laid

One or more layers of any of the following insulation:

| Insulation Layer | Fastener Density ft$^2$ | Fastener Type |
|---|---|---|
| **Any approved insulation** | | |
| Minimum: 0.25" thick | N/A | N/A |

**Note: All insulation shall be preliminary attachment prior to the installation of the roofing membrane at a minimum application rate of two fasteners per board for insulation boards having no dimensions greater than 4 ft., and four fasteners for any insulation having no dimension greater than 8 ft.**

**Membrane:** Min. 0.045 in. thick UltraPly TPO (MD) attached to deck as follows:

Firestone 3" HD Plus Seam Plates and Firestone HD Plus Fasteners spaced maximum 6 in. o.c. within minimum 6 in. wide lap. Laps are spaced maximum 90 in. o.c. and sealed with a minimum 1.5 in. wide heat weld on outside edge of lap.

**Maximum Design Pressure:** **-67.5 psf** (See General Limitation #7)

## RECOVER SYSTEM LIMITATIONS:

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

## GENERAL LIMITATIONS:

1. Fire classification is not part of this acceptance; refer to a current Approved Roofing Materials Directory for fire ratings of this product.
2. Insulation may be installed in multiple layers. The first layer shall be attached in compliance with Product Control Approval guidelines. All other layers shall be adhered in a full mopping of approved asphalt applied within the EVT range and at a rate of 20-40 lbs./sq., or mechanically attached using the fastening pattern of the top layer
3. All standard panel sizes are acceptable for mechanical attachment. When applied in approved asphalt, panel size shall be 4' x 4' maximum.
4. An overlay and/or recovery board insulation panel is required on all applications over closed cell foam insulations when the base sheet is fully mopped. If no recovery board is used the base sheet shall be applied using spot mopping with approved asphalt, 12" diameter circles, 24" o.c.; or strip mopped 8" ribbons in three rows, one at each side lap and one down the center of the sheet allowing a continuous area of ventilation. Encircling of the strips is not acceptable. A 6" break shall be placed every 12' in each ribbon to allow cross ventilation. Asphalt application of either system shall be at a minimum rate of 12 lbs./sq.
   **Note: Spot attached systems shall be limited to a maximum design pressure of -45 psf.**
5. Fastener spacing for insulation attachment is based on a Minimum Characteristic Force (F') value of 275 lbf., as tested in compliance with Testing Application Standard TAS 105. If the fastener value, as field-tested, are below 275 lbf. Insulation attachment shall not be acceptable.
6. Fastener spacing for mechanical attachment of anchor/base sheet or membrane attachment is based on a minimum fastener resistance value in conjunction with the maximum design value listed within a specific system. Should the fastener resistance be less than that required, as determined by the Building Official, a revised fastener spacing, prepared, signed and sealed by a Florida registered Professional Engineer, Registered Architect, or Registered Roof Consultant may be submitted. Said revised fastener spacing shall utilize the withdrawal resistance value taken from Testing Application Standards TAS 105 and calculations in compliance with Roofing Application Standard RAS 117.
7. Perimeter and corner areas shall comply with the enhanced uplift pressure requirements of these areas. Fastener densities shall be increased for both insulation and base sheet as calculated in compliance with Roofing Application Standard RAS 117 and or RAS 137. Calculations prepared, signed and sealed by a Florida registered Professional Engineer, Registered Architect, or Registered Roof Consultant **(When this limitation is specifically referred within this NOA, General Limitation #9 will not be applicable.)**
8. All attachment and sizing of perimeter nailers, metal profile, and/or flashing termination designs shall conform to Roofing Application Standard RAS 111 and applicable wind load requirements.
9. The maximum designed pressure limitation listed shall be applicable to all roof pressure zones (i.e. field, perimeters, and corners). Neither rational analysis, nor extrapolation shall be permitted for enhanced fastening at enhanced pressure zones (i.e. perimeters, extended corners and corners). **(When this limitation is specifically referred within this NOA, General Limitation #7 will not be applicable.)**

# END OF THIS ACCEPTANCE