

**APPLICATION INSTRUCTIONS
FIRESTONE ULTRAPLY TPO
BALLASTED ROOFING SYSTEM
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APPLICATION INSTRUCTIONS FIRESTONE ULTRAPLY TPO BALLASTED ROOFING SYSTEM

2.01.1 GENERAL

This section of Firestone's Technical Manual is intended as a specification on how to install the Firestone UltraPly TPO Ballasted System. Reference to the Design Section, Technical Information Sheets (T.I.S.), Application Instructions and other sections of Firestone's Technical Specifications is necessary to assure that the finished roof system is installed in compliance with Firestone requirements.

2.02.1 SUBMITTALS

A. **Submit Request for Projects that are Beyond the Scope of this Specification:**

When the proposed project parameters fall outside of this specification, submit the project parameters including but not limited to: building height, deck type, parapet height, roof edge type, openings in walls, etc.

B. **Submit Pre-Installation Notice and Associated Drawings:**

Submit for review by Firestone's Technical Services Department the Pre-Installation Notice (PIN) and associated drawings showing details that do not conform to this specification, a minimum of 14 days prior to project start-up.

C. **Submit Pull-out Tests Results (When Required):**

1. Submit a complete listing of the pullout tests and the corresponding pullout values signed by both the representative conducting the pullout tests and the Firestone Licensed Applicator verifying accuracy.
2. Submit a roof drawing showing the locations where the pullout tests were performed.

D. **Submit Request For Inspection:**

After completion of the roof system, submit to Firestone the Request for Inspection (RFI) and Approved Roof Drawing (ARD) showing all pertinent information including location of splices, penetrations, dimensions, building height and edge conditions. An inspection will be subsequently scheduled (if a system warranty is requested) and completed by a Firestone Field Technician to determine compliance with Firestone's specifications and details. Areas found not to be in conformance with Firestone's specifications will be documented by the Field Technician and must be corrected by the applicator prior to issuance of the requested warranty.

E. **Submit Completed Repairs For Warranty Form:**

Upon completion of repairs, sign and submit to Firestone Building Products the Completed Repairs for Warranty (CRFW) form within 60 days of inspection.

2.03.1 JOB SITE CONSIDERATIONS (CAUTIONS AND WARNINGS)

- A. Keep all adhesives, sealants and cleaning materials away from **ALL** ignition sources (i.e., torches, flames, fire, sparks, etc.).
- B. **Consult container labels and Material Safety Data Sheets** for specific safety instructions for all products used on the project.
- C. All bonding, splicing, and sealing surfaces must be free of dirt, moisture, and any other contaminants.

- D. When the When the outside temperature is below 40 °F (4.44 °C), certain combinations of temperature and humidity may cause condensation on the surface of the Firestone UltraPly TPO Bonding Adhesive. If this condition occurs, do not mate the surfaces. When the outside temperature is below 40 °F (4.44 °C), certain combinations of temperature and humidity may cause condensation on the surface of the Firestone UltraPly TPO Bonding Adhesive. If this condition occurs, do not mate the surfaces. When the ambient air-conditions no longer cause condensation, apply additional Firestone UltraPly TPO Bonding Adhesive and proceed.
- E. If Firestone Water Based Bonding Adhesive is used, temperature must be 40 °F (4.44 °C) and rising for the material to perform as designed.
- F. Do not use open flame sources (i.e., propane torches, etc.) to expedite drying of adhesives, sealants, etc. Allow to air dry only.
- G. Do not thin or modify any Firestone material.
- H. Deliver materials to job site in their original containers as labeled by the manufacturer.
- I. Follow Firestone's directions for protection of materials prior to and during installation. Do not use materials that have been damaged to the point that they will not perform as specified.
- J. Care should be used when installing fasteners to avoid possible conduits and other piping in and under the deck.
- K. Fumes from adhesive solvents may be drawn into the building during installation, through rooftop intakes. Refer to the Firestone Technical Information Sheet "Recommended Guidelines for Application of Roofing Materials to an Occupied Building" in this manual for specific guidelines.
- L. Store the Firestone UltraPly TPO Membrane in the original undisturbed plastic wrap in a cool shaded area and cover with light-colored, breathable tarpaulins, in a manner to protect it from damage. Firestone UltraPly TPO Membrane that has been exposed to the elements for approximately 7 days must be prepared with Firestone SW-100 (Splice Wash) prior to hot air welding.
- M. Firestone UltraPly TPO is a reflective membrane. Adequate UV eye protection is necessary during installation.
- N. Do not use oil base or bituminous base roof cement with Firestone UltraPly TPO Membrane.
- O. Contact Firestone Technical Services for procedures when installing the Firestone UltraPly TPO Membrane during temperatures less than 40 °F (4.44 °C).

2.04.1 ROOF SUBSTRATE PREPARATION

A. Correct Substrate Defects:

1. Bring defects to the attention of the general contractor in writing to be corrected before work commences.
2. If a general contractor is not involved the Firestone Licensed Applicator is responsible for correcting improper conditions affecting the roofing installation.
3. For reroofing applications only: remove existing roof system components as specified by the project designer. If unspecified detrimental components are discovered during installation, they should be brought to the attention of the project designer for corrective action under provisions for unanticipated additional work.
4. The Building Owner or Owner's Representative is responsible for ensuring that all wet insulation and/or wet substrate has been removed in a re-roofing application. The best diagnostic technique is by taking and evaluating a series of roof cuts. There are three other techniques that are currently available to make this determination by indirect means: nuclear moisture detection, infrared thermography and electric capacitance. These techniques provide measurements of factors that can be associated with the presence of moisture.

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5. Good roofing practice requires a complete tear-off to the structural deck or an independent moisture survey with core cuts to identify all wet insulation and/or wet substrate that must be removed prior to roofing.
- B. Remove Moisture:**
Ponded water, snow, frost and/or ice, present in more than trace amounts, must be removed from the work surface prior to installing the UltraPly TPO Ballasted System.
 - C. Prepare Final Surface:**
Acceptable substrates to which the UltraPly TPO Ballasted System is installed must be properly prepared prior to membrane installation. The surface must be relatively even, clean, dry, smooth, free of sharp edges, fins, loose or foreign materials, oil, grease and other materials that may damage the membrane. All roughened surfaces that could cause damage to the membrane
 - D. For existing Single-Ply membranes,** if the membrane is not removed, it must be cut into maximum 10' x 10' (3.1 x 3.1 m) sections. All flashing at the perimeter, roof drains and roof penetrations must be removed.
 - E. Fill Voids:**
All surface voids, of the immediate substrate, greater than 1/4" (6.4 mm) wide must be properly filled with an acceptable fill material.
 - F. Install Vapor Retarder (When Specified):**
Install a vapor retarder as specified by the project designer. See this section in the Design Guide of this manual.

2.05.1 WOOD NAILER LOCATION AND INSTALLATION

Wood nailers must be installed as specified by the project designer or as noted in Firestone Details and the System Design Guide. Install wood nailers as follows:

- A. Position Wood Nailer:**
Total wood nailer height should match the total thickness of insulation being used, and should be installed with a 1/8" (3.2 mm) gap between each length and each change of direction.
- B. Secure Wood Nailer:**
Wood nailers must be firmly fastened to the deck. Mechanically fasten wood nailers to resist a force of 200 lbf. per lineal foot (0.9 kN). Refer to attachment requirements as specified by the project designer.
- C. Taper Wood Nailer:**
The wood nailer must be tapered (if applicable) so that it will always be flush at the point of contact with the insulation (refer to Firestone Details).
- D. Chemical Treating of Wood Nailer:**
Chemical treating for fire resistance or other purposes (other than pressure treating for rot resistance, i.e. "Wolmanized" or "Osiose K-33") may affect the performance of the Firestone UltraPly TPO Membrane and accessories. Consult Firestone Technical Services Department regarding compatibility.
- E. Work by Others:**
Make these specifications and details available when nailers are to be installed by others. Work that compromises the integrity of the system may jeopardize the warranty for the entire project.

2.06.1 INSULATION INSTALLATION

- A. Install Insulation:**
Install only as much insulation as can be covered with roofing membrane and completed 's work or before the onset of inclement weather.

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B. Fit Insulation:

Neatly fit insulation to all penetrations, projections, and nailers. Insulation shall be loosely fitted, with gaps greater than 1/4" (6.4 mm) being filled with acceptable insulation. Under no circumstances shall the membrane be left unsupported over a space greater than 1/4" (6.4 mm). Tapered or feathered insulation shall be installed around roof drains so as to provide proper slope for drainage.

C. DO NOT ATTACH INSULATION BENEATH A BALLASTED SYSTEM

D. Stagger Insulation Joints:

When installing multiple layers of insulation, all joints between layers should be staggered.

2.07.1 MEMBRANE INSTALLATION

A. Place Membrane and Allow to relax:

Place membrane panel over the substrate in its final position. Allow membrane to relax one-half hour prior to any seaming or flashing. The UltraPly TPO Ballasted System shall be installed so that the seams do not impede the flow of water.

B. Loose Lay the Membrane:

Make sure the sheet is placed in its final position allowing for a minimum 2" (51 mm) seam.

Note: The sheet should lay smooth so as to minimize the formation of wrinkles during and after installation.

<p>WHEN INSTALLING A SYSTEM FOR A 20-YEAR WARRANTY, .060 GAUGE FIRESTONE TPO MEMBRANE IS REQUIRED.</p>

2.08.1 BALLAST INSTALLATION

A. Spread Ballast:

The ballast shall be spread over the completed Firestone UltraPly TPO System at the rate specified by the project designer but never less than 10 lb (4.5 kg)/sq. ft. using ASTM #4 stone. Refer to the System Design Guide of this manual for Ballast type and size requirements. Ballast must be spread over the membrane using soft rubber tired ballast buggies. Spread ballast around penetrations by hand.

B. Protect Membrane and Insulation at Ballast Loading Areas:

At areas where ballast is loaded, protect the membrane and underlying insulation using insulation and/or plywood over an additional layer of Firestone UltraPly TPO membrane. Remove and replace all materials damaged from ballasting operation.

C. Distribute Ballast Around Walkway Pads:

Any ballast displaced by a walkway should be distributed around the pad, to maintain the specified average ballast rate.

D. Ballast Quality

Ballast must contain no more than four-percent fines and no more than four-percent contractor's responsibility to monitor all ballast deliveries for conformance.

NOTE: Orient Firestone UltraPly TPO panels such that the exposed (cut) edges of the membrane are used as the bottom panel in splices whenever possible. If cut edges are exposed, they must be sealed with Firestone UltraPly TPO Cut Edge Sealant or Firestone UltraPly TPO General Purpose Sealant.

2.09.1 MEMBRANE WELDING

A. Clean the Lap Splice Area:

Using a clean white cotton rag dampened with Firestone SW-100 (Splice Wash), thoroughly clean an area on both sheets at least 6 inches (15.24 cm) wide if seam area has become contaminated with dirt, debris, moisture, etc. Membrane left exposed for more than 12 hours must be cleaned prior to any welding activity.

B. Hot Air Weld Lap Splices:

1. Horizontal field splices:

Whenever possible, all field splices on the horizontal surface (including flashing) should be completed using an automatic heat welder that has been designed for hot air welding of thermoplastic membranes. (Refer to the welding equipment requirements in the Technical Information Sheets for minimum requirements. For specifics, consult the welder manufacturer's data sheets.)

2. Vertical field splices:

Hand held welders can only be used on vertical welds or where an automatic welder is not practical or cannot be used.

3. Equipment and Test splice requirements:

The air intake, temperature and speed of the machine must be adjusted to provide proper seam strength. An ample power supply must be provided to all heat welding equipment. A generator, which is dedicated to the heat welding equipment, must be used on all installations. Refer to the welding and generator equipment requirements in Technical Information Section of this manual, for minimum requirements. For specifics, consult the welder manufacturer's data sheets. When weather conditions vary, adjustments to the welding machine must be made. It is recommended that this be done using spare material before beginning the finished product sheet. In addition, there must be destructive tests performed daily and at the beginning and every time there is an interruption in the welding process (i.e. Power failure, welder shut down, job site conditions change and after lunch). There should be periodic checks (including at the start of each day) to verify good peel strength.

4. Seam width requirements:

Seams made with the automatic welder must be a minimum of 1-1/2" (38.1 mm) wide. Seams made with hand welders must be a minimum of 2" (50.8 mm) wide. Use silicone hand rollers to assure proper mating of surfaces as hand heat welding proceeds.

5. Seam inspection:

Probe all completed welds using a slotted screwdriver or dull cotter pin puller type tool to verify seam integrity daily. Do not probe welds until they have had time to cool. Any welds found to be insufficiently welded need to be repaired on a daily basis.

6. T-Joint Patches:

T-joint patches must be installed at all intersections of field seams. Refer to Lap Splice Detail Section of this manual.

7. Cut Edge Sealing:

All cut edges with scrim exposed must be sealed with Firestone UltraPly TPO Cut Edge Sealant or Firestone UltraPly TPO General Purpose Sealant.

NOTE: SOLVENT WELDING IS NOT ACCEPTABLE

2.10.1 MEMBRANE SECUREMENT (BASE TIE-IN) LOCATION AND INSTALLATION

A. Provide Membrane Securement:

Secure the membrane (base tie-in) at all locations where the membrane ends or goes through an angle change greater than 1" (25.4 mm) in 12" (304.8 mm) (i.e., roof edges, curbs, interior walls, etc.).

B. Install Firestone UltraPly TPO 2 3/8" Barbed Seam Plates as shown in Firestone Details:

1. Mechanically fasten Firestone 2 3/8" Barbed Seam Plates with Firestone Fasteners in accordance with Firestone Details.
2. Refer to the Firestone System Design Guide or Firestone Technical Information Sheets in this manual to determine the applicable fastener and the associated penetration requirements for the specific substrate conditions.

OR

C. Fasten Firestone UltraPly TPO Coated Metal into Wood Nailers as Shown in Firestone Details:

1. Mechanically fasten Firestone UltraPly TPO-Coated Metal to supporting wood nailer in accordance with Firestone Details.
2. Heat weld membrane to Firestone UltraPly TPO Coated Metal flashing. Seams made with an automatic welder must be a minimum of 1-1/2" (38.1 mm) wide. Seams made with hand welders must be a minimum of 2" (51 mm) wide.

D. Install Firestone Reinforced EPDM Perimeter Fastening Strip (RPF):

1. Install the Firestone RPF Strip in accordance with this specification, the Firestone Technical Information Sheets, and applicable Firestone Details that are a part of this manual.

E. Apply QuickPrime Plus to Splice Area:

1. Stir the Firestone TPO QuickPrime Plus thoroughly before and during use. Dip the Firestone TPO QuickScrubber or Firestone TPO QuickScrubber Plus into the bucket of TPO Firestone QuickPrime Plus, keeping the Firestone TPO QuickScrubber or TPO Firestone QuickScrubber Plus flat. Apply the Firestone TPO QuickPrime Plus using long back and forth type strokes with pressure along the length of the splicing area.
2. Apply Firestone TPO QuickPrime Plus to the surface of the Firestone TPO Membrane in the area to be mated with the Firestone RPF Strip and allow the Firestone TPO QuickPrime Plus to flash-off. Change the scrub pad every 200' (61 m) or when the pad will no longer hold the proper amount of Firestone TPO QuickPrime Plus. Additional scrubbing is required at areas that may have become contaminated.

WHEN INSTALLING A SYSTEM FOR A 20-YEAR WARRANTY, FIRESTONE 2 3/8" BARBED SEAM PLATES AND HD FASTENERS ARE REQUIRED FOR MEMBRANE SECUREMENT. THE SECUREMENT RATE IS 6" O.C. MINIMUM.

2.12.1 FLASHING - PENETRATIONS

A. General:

1. Remove all loose existing flashing (i.e., lead, bituminous materials, mastic, etc.).
2. Flash all penetrations passing through the membrane.
3. The flashing seal must be made directly to the penetration.

B. Pipes, Round Supports, etc.:

1. Flash pipes with Firestone UltraPly TPO Pre-Molded Pipe Flashing where their installation is practical.

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2. Refer to the Firestone Technical Information Sheet for maximum and minimum pipe diameters that can be successfully flashed with Firestone UltraPly TPO Pre-Molded Pipe Flashing.
3. Firestone UltraPly TPO Unsupported Flashing is only to be used at inside and outside corners, "T" joints and field wrapped pipe boots and NOT to be used as a general purpose flashing.

C. Roof Drains:

These specifications apply for installation of cast iron drains only. For all other drain types contact Firestone Technical Services Department.

1. Remove all existing flashing (including lead flashing), roofing materials and cement from the existing drain in preparation for membrane and Firestone Water Block Seal.
2. Provide a clean even finish on the mating surfaces between the clamping ring and the drain bowl.
3. Install tapered insulation with suitable bonding surfaces around the drain to provide a smooth transition from the roof surface to the drain. Slope into drain can not be greater than 1" in 12" (25.4 mm by 304.8 mm).
4. Position the membrane, then cut a hole for the roof drain to allow a 1/2" (12.7 mm) minimum and 3/4" (19.1 mm) maximum inside the clamping ring.
5. Make round holes in the membrane to align with clamping bolts (a paper punch may be used). Do not cut the membrane back to the bolt holes.
6. Place Firestone Water Block Seal on the clamping ring seat flange below the membrane (use a minimum of one half of a 10 oz. (295.7 cc) tube for a 10" (254.0 mm) drain).
7. Install the roof drain clamping ring and clamping bolts. Tighten the clamping bolts to achieve constant compression.

D. Pipe Clusters and Unusual Shaped Penetrations:

1. Fabricate Firestone UltraPly TPO-Coated Metal penetration pockets to allow a minimum clearance of 1" (25.4 mm) between the penetration(s) and all sides.
2. Secure penetration pockets and flash per Firestone details
3. Fill penetration pockets with Firestone Pourable Sealer, so as to shed water. Firestone Pourable Sealer must be a minimum of 2" (51 mm) deep.

E. Hot Pipes:

Protect the Firestone UltraPly TPO components from direct contact with steam or heat sources when the in-service temperature is in excess of 140 °F (60 °C). In all such cases flash to an intermediate "cool" sleeve.

F. Scuppers:

1. Remove existing scupper and provide a new Firestone UltraPly TPO-coated metal scupper sleeve.
2. Secure scupper to the structure.
3. Flash in accordance with Firestone Details.

G. Expansion Joints:

Where required, install expansion joints in accordance with Firestone details.

WHEN INSTALLING A SYSTEM FOR A 20-YEAR WARRANTY, REFER TO THE 20-YEAR SYSTEM DETAILS, WHICH ARE A PART OF THIS MANUAL.

2.12.1 FLASHING - WALLS, PARAPETS, MECHANICAL EQUIPMENT CURBS, SKYLIGHTS, ETC.

A. General:

Using the largest pieces of continuous Firestone UltraPly TPO Membrane practical, flash all walls, parapets, curbs, etc., to the height as specified by the project designer. Where applicable, Firestone UltraPly TPO Coated Metal may be utilized.

B. Evaluate Substrate:

The following substrates require an overlayment of 5/8" (15.9 mm) exterior grade or "Wolmanized" plywood mechanically fastened in accordance with project designer's requirements.

1. Interior Gypsum board
2. Stucco
3. Cobblestone
4. Textured masonry
5. Corrugated metal panels
6. Other uneven substrates

C. Existing Flashing:

All loose existing flashing must be removed.

D. Attach flashing to the wall surface first:

Apply Firestone UltraPly TPO Bonding Adhesive or Firestone Water-based Bonding Adhesive at about the same time to both the membrane flashing and the surface to which it is being bonded so as to allow approximately the same drying time. Apply Firestone UltraPly TPO Bonding Adhesive by rolling the adhesive on to the mating surfaces evenly, avoiding globs or puddles.

E. Apply Firestone TPO Bonding Adhesive at Specified Coverage Rate:

Apply Firestone TPO Bonding Adhesive at the approximate rate as specified in the Firestone Technical Information Sheets of this manual for the specific adhesive product. Note: Coverage rate will differ with various substrates and/or climatic conditions.

F. Test Firestone TPO Bonding Adhesive for Readiness:

Allow Firestone TPO Bonding Adhesive to flash off until tacky. Touch the Bonding Adhesive surface with a clean, dry finger to be certain that the adhesive does not stick or string. As you are touching the adhesive, pushing straight down to check for stringing, also push forward on the adhesive at an angle to ensure that the adhesive is ready throughout its thickness. If either motion exposes wet or stringy adhesive when the finger is lifted, then it is not ready for mating. Flash off time will vary depending on ambient air conditions. This is especially true for water-based adhesive products.

Note: Firestone Water-based Bonding Adhesive will change appearance from opaque to nearly transparent, indicating it is ready for mating.

G. Roll Membrane Flashing up the Vertical:

Roll the flashing into the adhesive evenly and carefully so as to minimize wrinkles.

H. Broom the Membrane Flashing:

To ensure proper contact, compress the flashing to the substrate with a stiff push broom.

I. Complete splice to roof membrane:

Complete the splice between membrane flashing and the main roof sheet by hot air welding. Provide lap splices in accordance with Firestone details.

J. Provide Termination:

Provide termination directly to the vertical substrate as shown in Firestone Details.

K. Provide Intermediate Attachment:

Intermediate attachment is required at 36" (91.44 cm) on center vertically in accordance with Firestone Details unless:

1. The wall surface is smooth without noticeable high spots or depressions (i.e., plywood, poured or precast concrete, or hollow core block or masonry walls where mortar joints are flush with masonry surface),

AND

2. Termination is provided in accordance with Detail U-T-1, U-T-2, U-T-6, or U-T-7

WHEN INSTALLING A SYSTEM FOR A 20-YEAR WARRANTY, REFER TO THE 20-YEAR SYSTEM DETAILS, WHICH ARE A PART OF THIS MANUAL.

2.13.1 FLASHING - GRAVEL STOPS OR ROOF EDGE METALS

A. Flash all gravel stops or roof edges as outlined in Firestone Details.

B. When using Firestone TPO QuickSeam Flashing:

1. Stir the Firestone TPO QuickPrime Plus thoroughly before and during use. Dip the Firestone TPO QuickScrubber or Firestone TPO QuickScrubber Plus into the bucket of TPO Firestone QuickPrime Plus, keeping the Firestone TPO QuickScrubber or Firestone TPO QuickScrubber Plus flat. Apply the Firestone TPO QuickPrime Plus using long back and forth type strokes with pressure along the length of the splicing area.
2. Apply Firestone TPO QuickPrime Plus to the surface of the Firestone TPO Membrane in the area to be mated with the Firestone TPO QuickSeam Flashing and allow the Firestone TPO QuickPrime Plus to flash-off. Change the scrub pad every 200' (61 m) or when the pad will no longer hold the proper amount of Firestone TPO QuickPrime Plus. Additional scrubbing is required at areas that may have become contaminated.

WHEN INSTALLING A SYSTEM FOR A 20-YEAR WARRANTY, REFER TO THE 20-YEAR SYSTEM DETAILS, WHICH ARE A PART OF THIS MANUAL.

2.14.1 MEMBRANE REPAIR

A. Repair a Puncture in the Membrane:

Repair a puncture in the Firestone UltraPly TPO Membrane with Firestone UltraPly TPO Membrane. The repair must extend a minimum of 2" (50.8 mm) beyond the boundary of the affected area in all directions. Round all corners of the repair piece. (Example: A pinhole will require a minimum 4" x 4" (101.6 mm x 101.6 mm) patch.)

B. Clean the Membrane:

When repairing Firestone UltraPly TPO Membrane that has been in service for some time, it is necessary to remove accumulated field dirt. Proper membrane preparation is made by scrubbing the membrane with a scrub brush and warm soapy water, then rinsing with clear water and drying with clean cotton cloths. (For membrane with a significant accumulation of dirt, cleaning with acetone and a clean cotton cloth may be required.) Firestone SW-100 may then be used.

C. Install Splice:

Refer to Section 2.08 for splicing procedures.

2.15.1 TEMPORARY CLOSURE (NOT WARRANTED BY FIRESTONE)

Temporary closures to ensure that moisture does not damage any completed section of the new roofing system are the responsibility of the roofing contractor. Completion of flashing, termination's, and temporary closures should be completed as required to provide a watertight condition. Any material contaminated by a temporary closure must be cut out and discarded prior to resumption of installation.

2.16.1 ROOF WALKWAYS

Install walkways as specified by the project designer in accordance with Firestone requirements. Walkways may consist of 30" (762 mm) wide Firestone UltraPly TPO Walkway material. Heat weld the edges of the walkway material to the Firestone UltraPly TPO Membrane using the welding procedures stated in Section 2.08.

2.17.1 SHEET METAL WORK

- A.** For specific installation instructions for the Firestone EdgeGard System, refer to the Technical Information Section of this manual.
- B.** For all other sheet metal work, not supplied by Firestone, refer to fabrication and installation requirements specified by the project designer.

2.18.1 WARRANTY

- A.** It is the owner's responsibility to expose the membrane in the event that warranty service is required when access is impaired. Such impairment includes, but is not limited to:
 - 1. Design features, such as window washer systems, which require the installation of traffic surface units in excess of 80 pounds (36.3 kg) per unit.
 - 2. Any equipment, ornamentation, building service units and other roof top surfacing materials that are not defined as part of this membrane assembly.
 - 3. Intricately placed or multicolored ballast configurations.
 - 4. Individual pavers utilized as ballast which weigh more than 80 pounds (36.3 kg) per unit, unless otherwise required by Firestone for wind uplift resistance.
 - 5. Interlocking paver systems that utilize mechanical clips, strapping, adhesive, etc.
 - 6. Rooftop equipment that does not provide Firestone with reasonable access to the membrane.
 - 7. Severely ponded water, snow and other unrelated materials.

2.19.1 CLEAN-UP

If required by the specifier to ensure the aesthetics of the Firestone UltraPly TPO Membrane, (i.e. hand prints, footprints, general traffic grime, industrial pollutants and environmental dirt), the membrane may be cleaned by scrubbing with soapy (non-abrasive soap) water and rinsing the area completely with clean water. Firestone SW-100 can also be used sparingly to clean the membrane.

END OF SECTION