



Between the World  
and the Weather  
Since 1928

# APPLICATION INSTRUCTIONS

## Ram Tough 250 SM

### GENERAL:

**These instructions are intended as a general guide for the proper application of the Ram Tough 250 SM (Single membrane) System.**

### SCOPE:

These instructions provide an overview for a single layer of unreinforced Ram Tough 250 (RT 250), including Ram Primer, Ram Flash 327 HDR uncured neoprene reinforcement, Poly•Felt 125 VP flashing reinforcement, and incidental heating and application equipment.

### PRECAUTIONS AND SAFETY:

All workers should familiarize themselves with container labels, SDS data sheets, application instructions, their employer's safety program, and the N.R.C.A. Safety Program particulars before commencing work.

Ram Primer and RT 250 require adequate ventilation during application. Apply only in wide-open areas; avoid breathing primer/surface conditioner vapors or melter fumes.

Ram Primer contains petroleum distillates and is a combustible liquid; keep away from sparks, heat and open flames. If ingested, do not induce vomiting; consult a physician immediately. If eye contact occurs, flush with water for several minutes and consult a physician immediately.

RT 250 is also combustible with a flash point in excess of 500°F. When heating RT 250, use a double wall air or an oil-jacketed melter specifically designed for heating rubberized asphalt materials. Do not expose hot RT 250 to an open flame, sparks, lit cigarettes, or other ignition sources. Specific protective clothing is required by OSHA regulations when applying hot RT 250 to prevent burns.

### RELATED WORK BY OTHERS:

Concrete should be cured for 28 days by means of water, burlap or polyethylene sheet. Do not use liquid curing compounds or calcium chlorides unless approved in writing by the Barrett Company and the curing compound manufacturer.

Do not apply RT 250 over concrete of less than 2500 PSI or concrete incorporating lightweight aggregates, unless approved in writing by Barrett and the concrete manufacturer.

Metal pan decks must be vented.



Between the World  
and the Weather  
Since 1928

All surfaces to be waterproofed must be free of grease, oil, laitance, loose aggregate, form release, curing compounds, dirt, and other contaminants. Concrete surfaces shall be free of excessive roughness and have a clean, dry surface. Honeycombs, voids, cracks, and pockmarks should be patched with non-shrinking grout applied with a bonding agent.

Vertical surfaces with form voids or pockmarks should be repaired by packing after repair of honeycombed areas. Surface must be free of all loose mortar and concrete laitance. All tie-ends on foundation walls must be cut off flush with the wall surface and repaired with a non-shrinking grout and a bonding agent.

Metalwork must be in place, securely attached and accurately fitted. It is very important that the metal be cleaned of all process oils with a solvent cleaner and that it be free of rust and other contaminants. Wire brush to a bright metal finish prior to priming.

Reglets should be in place prior to starting.

#### SURFACE INSPECTION:

Prior to commencing work, the contractor should inspect all application surfaces of work. The waterproofing manufacturer, Architect and General Contractor shall be notified of unacceptable conditions in writing. Necessary repairs shall be made prior to contractor commencing work. No work shall be undertaken until all unacceptable conditions are addressed. It is critical that inspection takes place prior to dispatching work crews to the project site.

#### ENVIRONMENTAL CONDITIONS:

The waterproofing installation may take place when the ambient temperature is above 0°F. Special application procedures shall be followed below 32°F; consult Barrett. All surfaces to be waterproofed must be thoroughly dry at the commencement of any work.

#### HEATING EQUIPMENT:

Use double-jacketed, hot air or oil bath kettles with mechanical agitation, specifically designed for rubberized asphalt materials. Melter must be capable of maintaining material temperature at 375°F to 400°F and an oil-bath temperature of 500°F to 550°F. Consult kettle manufacturer for specific information. Kettle shall be similar to the Crafcro Ram E-Z Pour Melting Kettle, manufactured by Crafcro Manufacturing Co., Phoenix, AZ.

#### HEATING RT 250:

The melter must be operated by a skilled operator thoroughly familiar with the equipment. Check heat transfer oil level daily before starting burners. Allow sufficient space for thermal expansion. Replace heat transfer oil as recommended by melter manufacturer for maximum efficiency and safety.



Between the World  
and the Weather  
Since 1928

Melter must be free of foreign materials. Begin melter warm-up one to two hours prior to material installation, cold weather start-up will take longer. Carefully start-up melter burners and add 7-8 cubes of RT 250 cut into quarters. Discard the outer cardboard wrapper and recycle. The inner polyethylene wrapper may be added with material. When material is molten, start agitator drive motor. Add RT 250 cubes, cut in half, sufficient to maintain melter at a minimum of 3/4 capacity. Replace material throughout the day as it is withdrawn from the melter. Each full cube is equal to about three and a half fluid gallons, approximately 1 pail.

Maintain oil-bath at approximately 500°F to 550°F in wintertime and material temperature at 375°F to 400°F, with constant agitation. Do not overheat RT 250. Overheating will cause RT 250 to cross-link and line the walls of the kettle, adversely affecting the material's properties and the melter's performance. Discard all overheated materials off site in conformance with applicable environmental regulations. It is also important not to hold RT 250 material at elevated temperatures for prolonged periods of time as this will also cause degradation. A target of maximum four hours under heat should be adhered to.

Alternate between flashing work and open-field work allowing the melter to "catch-up" from high output usage on open-field areas.

### PREPARATORY WORK:

#### 1. Projections

Exposed metal projections and surfaces shall be cleaned with a power wire brush and a solvent wash and then primed with Ram Primer and allowed to dry tack-free. Install a 1-inch "cant" of RT 250 to extend from the primed metal an inch or two on to the deck. Allow the hot RT 250 to cool somewhat and tool into place with a trowel. Re-coat and install Ram Pipe Boot or install primed sheet metal sleeve flashing.

#### 2. Flashings

Install base flashing assembly of RT 250 and Ram Flash 327 HDR elastomeric sheeting wherever the deck meets a vertical surface or change in plane (such as parapet wall, column, roof curb etc.). The Architect should determine the flashing height. The minimum required height is 8 inches above the waterline and maximum height is 20 inches. Prime the area to the specified height and a minimum of 10 inches onto the deck with Ram Primer. Allow to dry tack-free. Use masking tape and paper as required avoiding staining of adjacent surfaces. Take precautions to avoid wind-carried primer overspray from damaging adjacent surfaces.

Bond vertical laps in the neoprene sheet a minimum of 6 inches in width with 1/8 inch thickness (125 mils) of hot RT 250. Apply 1/8 inch of RT 250 a minimum of 8 inches to the horizontal plane and 8 inches on the vertical plane of the wall or curb and immediately lay the sheet into the material on the horizontal surface first and embedded **TIGHT** into the cove, followed by application of the sheet up the vertical



Between the World  
and the Weather  
Since 1928

surfaces, all while the material is still hot. Sheeting must be fully adhered a minimum of 6 inches on the vertical and free of wrinkles or fish-mouths and 100 percent tightly embedded.

The neoprene must be tightly pressed into the cove area. Neoprene flashing with void space below it is unacceptable and must be cut and re-flashed.

No “bridging” between the vertical and the flat horizontal deck is acceptable.

When flashing sheet is set, install extruded termination bar, fastened a minimum of 8 inches on center. Using a hand roller, trowel or squeegee as necessary, apply 3/16 inch thickness (180 mils) of RT 250 over the entire assembly and sealing off the top of the flashing the same day, without fail!

Depending on project specifics, Ram 306 Granular, polyethylene and metal flashing or Ram Ultra Coating will be the final wear surface.

### 3. Cracks

Treat cracks less than 1/16 inch in width by priming with Ram Primer 5 inches to either side of the crack. As soon as the primer has dried tack-free, apply a 1/8 inch thickness of RT 250 on each side of the crack and install a 6 inch wide piece of Poly•Felt 125 VP reinforcement into the hot RT 250.

Treat cracks 1/16 inch to 1/4 inch by priming with Ram Primer 8 inches to either side of the crack. As soon as Ram Primer has dried tack-free, apply a 1/8 inch thickness of RT 250 and embed a 6-inch wide Ram Flash 327 HDR neoprene into hot RT 250. The sheet must extend 3 inches to either side of crack and be free of fish-mouths

### 4. Cold Joints and Construction Joints

At cold joints and construction joints, remove any pre-molded joint filler to a minimum depth of 1/2 inch. Prime 8 inches to both sides of the joint with Ram Primer and allow to dry tack-free. Apply 1/8 inch thickness of RT 250 to one side of the joint, a minimum 6 inches in width. Immediately embed one-half of a 6 inch width of Ram Flash 327 HDR while material is hot. Embed the other half of the sheet likewise on the other side of the joint. The sheet must be fully adhered and free of wrinkles and fish-mouths.

### 5. Expansion Joints

Apply Ram Primer 18 inches on each side of the joint. Allow to dry tack-free.



Between the World  
and the Weather  
Since 1928

Select the Ram Flash 327 HDR size that, upon final installation, will provide a minimum 12 inch width of sheeting bonded to each side of the joint. If necessary, join the lengths of sheeting to equal the length of the joint (rolls are 100 feet long), allowing a minimum 6 inches for each end-lap. Overlap each end-lap a minimum 6 inches and adhere to each other with 1/8 inch thickness hot RT 250 or approved bonding adhesive prior to installing in the joint so as to have one continuous length of neoprene.

Adhere the Ram Flash 327 HDR to one side of the joint with hot RT 250. Loop the sheet down into the joint to a depth equal to 1-1/2 times the joint opening at maximum anticipated movement, (i.e. 2 inch joint requires 3 inch deep loop), or as indicated by the drawings. Adhere the Ram Flash 327 HDR to the other side of the joint in hot RT 250.

Coat the entire assembly with 1/8 inch (125 mils) of hot RT 250 and fill the loop flush with the deck with RT 250.

Install a 2 inch diameter (or as recommended) closed-cell polyurethane foam rod into the joint so it is protruding upward an inch or more. Install second continuous sheet, wider than the first sheet, of Ram Flash 327 HDR in hot RT 250 and extend the neoprene loosely laid over the foam rod being careful not to touch the foam rod with the hot RT 250. Overcoat the flat portion of the neoprene with RT 250. Do not coat the "bulb" over the foam rod except at seams.

Always consult your Barrett representative or Barrett Tech Services for specific design requirements or questions concerning proper installation.

## FULL MEMBRANE INSTALLATION:

### 1. Ram Primer Application

Substrates must be free of dust, debris, rust, oil, laitance, and other contaminants. Deck shall be cleaned with power blower or a well-filtered air compressor just prior to Ram Primer installation. (CAUTION: Unfiltered air compressors often blow out oil and moisture condensation, which will act as a bond breaker.)

Apply Ram Primer at a rate of 200-600 square feet per gallon, depending on the roughness and porosity of the concrete. Ram Primer should be applied by a Hudson type garden sprayer. Mask all adjoining surfaces and avoid overspray. Avoid high wind applications unless adequate precautions are instituted. Avoid breathing fumes, spray vapors, or otherwise allowing material to come in contact with respiratory system or exposed skin.



Between the World  
and the Weather  
Since 1928

Apply Ram Primer to all surfaces to receive RT 250. Overlap all previously primed areas with fresh Ram Primer. Ram Primer must be allowed to dry tack-free before applying RT 250. Drying time will vary depending on the temperature and sunlight.

Ram Primer should present a non-uniform mottled brown appearance. Do not prime more than will be covered in the same day. Re-prime all areas, which have been contaminated by dust or debris.

Clean equipment with Xylol or similar solvent cleaner.

## 2. RT 250 Application

The preparatory work to all surfaces, cracks, joints, flashings, etc..., must be completed as outlined and the primed areas must be allowed to dry to a tack-free condition before the RT 250 membrane is installed.

Draw material from melter in pails. RT 250 may be poured into place and spread evenly with a smooth edge squeegee or roller mop, such as manufactured by American Associated Company, Inc., Atlanta, Georgia. Do not use any notched squeegees, Do not allow the material to cool before spreading because of rapid thermoplastic set.

Alternatively, a 20 to 30 gallon "mop cart" type container may be used in lieu of pails. Fill hot RT 250 into mop cart from the melter and dump material in the application area. Use a squeegee or hot roller mops to spread the material. Several passes may be required with a roller, but a more uniform thickness may be obtained. The roller mop method is preferred for foundation walls.

Apply the RT 250 an average of 3/16 inch thickness (180 mils) with an absolute minimum of 150mil thickness to the substrate.

Perform adhesion test and thickness test once every hour. Do not proceed if inadequate adhesion is evident. If inadequate thickness is a problem, reduce melter temperature and, using a chalk line, grid out the deck in 8 foot x 8 foot grids. Two 5 gallon buckets (with net 4 gallons of material each) used per grid area should provide adequate coverage under normal conditions. One-pound RT 250 equals 155 mils on a perfectly flat surface; one gallon RT 250 weighs approximately 10 lbs.

If the material "pinholes" the deck is probably too wet to proceed and may need a sealer or additional curing time. Contact Barrett Tech Services before continuing work.



Between the World  
and the Weather  
Since 1928

### FLOOD TESTING:

It is recommended that prior to installation of protection board or insulation, the completed membrane installation or sections thereof should be tested with 2 inches of standing water for 48 hours. Any leaks must be repaired and the area retested. This test is a requirement with many warranty applications.

### ELECTRIC VECTOR MAP (EVM) TESTING:

EVM tests the integrity of the membrane with either a low-voltage method or a high voltage method that creates an electrical potential difference between a non-conductive membrane surface and conductive structural deck or substrate, which is grounded. An electric field is created by applying water on the membrane surface in the low voltage method and using the water as a conductive medium. A breach in the membrane creates a vector point (ground fault connection), which can then be located and measured by a certified EVM technician.

EVM tests are required on Greenroof•Roofscapes® applications and are encouraged in lieu of flood testing.

### PROTECTION COURSE:

Following the quality control tests, an approved protection course material such as Ram 201, Ram 203, or Ram 200 protection course is laid to protect the membrane from backfilling operations, traffic of subsequent trades, etc. and act as a separation barrier for the insulation, if any. Overlap side-laps by 2 inches and provide 6-inch end-laps. Butt joints are not acceptable. Use RT 250 as adhesive as required to prevent wind blow-off. Protection course may be also laid up in hot RT 250 unless specifications direct otherwise. Do not leave adhered protection course exposed for more than 14 days.

On protected membrane assemblies where the insulation is to be installed immediately following the membrane application, install a 6-mil layer of polyethylene sheet over the RT 250, overlapping seams by 12 inches to prevent the insulation from sticking to the membrane. Follow up with insulation, filter fabric, and ballast.