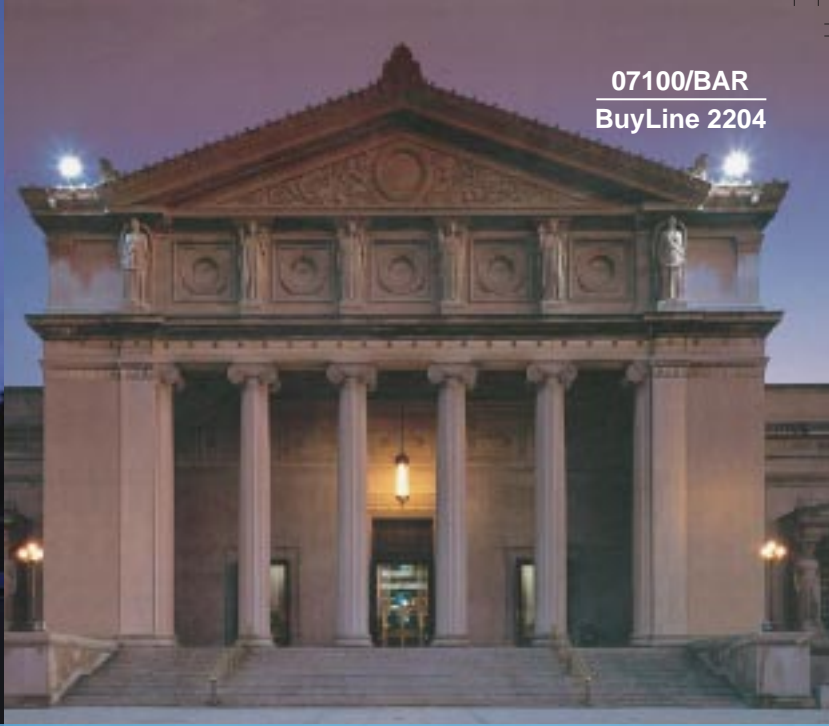


07100/BAR  
BuyLine 2204



*Barrett*

**Ram-Tough 250**  
Rubberized Asphalt Membrane

**MONUMENTAL  
WATERPROOFING**

*The longest-life, most trouble-free  
roofing and waterproofing  
system available*



## The Cover Story



1. **Lincoln Memorial, Washington, D.C.** Reroofed with RAM TOUGH 250 DM PMR plaza roof with slate pavers. One of the four venerable crown jewels of the capitol plaza, it was chosen as the NRCA Gold Circle Award winner. The RAM system was chosen for its advantages over alternate roofing systems and its proven track record. Project Architects: Einhorn, Yaffee, Prescott, P.C.; Roofing Engineer: Seal Engineering, Inc.
2. **The Museum of Science and Industry in Chicago** is one of the nation's oldest, largest and most comprehensive museums of technology. It captivates more than two million visitors a year. RAM TOUGH 250 DM was used on the 1998 plaza expansion and parking deck structure adjacent to the original structure. Project Architects: A. Epstein & Sons International, Inc.
3. **United States Bullion Depository, Ft. Knox, Kentucky** was reroofed with RAM TOUGH 250 DM PMR protected membrane roof system. RAM TOUGH was chosen by the Department of the Treasury based upon the dependable and time-proven performance RAM TOUGH 250 has provided the government on hundreds of important projects. Architect: Bernard Johnson Young Inc.
4. **The White House, Washington, D.C.** required rehabilitation of the underground tunnel network's waterproofing. RAM TOUGH 250 was chosen for the high reliability, fast installation and low odor emissions. Architects: General Services Administration, White House Special Projects Office; Consultants: Sverdrup Corp. & Anadac.
5. **Jefferson Memorial, Washington, D.C.**, reroofed with RAM TOUGH 250 DM PMR Plaza roof, is the third of the four capitol plaza crown jewels to be roofed with rubberized asphalt membrane. The RAM TOUGH system provides watertight integrity after two single ply failures and a worn out coal tar BUR system. Project Architects: Einhorn, Yaffee, Prescott, P.C.; Roofing Engineer: Seal Engineering, Inc.
6. **Hilton Paris Casino in Las Vegas** has a 200,000 ft.<sup>2</sup> plaza over the main casino area. The RAM TOUGH 250 DM PMR waterproofing system assures leak-free performance over revenue producing gaming tables. Design Architects: Bergman, Walls & Youngblood, Ltd.; Executive Architect: Leidenfrost/Horowitz and Assoc.; Consulting Architects: MBH Architects; Waterproofing and Roofing Engineer: Seal Engineering, Inc.

# Barrett

## Ram-Tough 250

### Rubberized Asphalt Membrane

*The Uncompromising, Tough, Flexible Membrane That Delivers Design Flexibility, Durability and A Single-Source System Warranty*

## A Fluid-Applied Rubber Membrane

A thermoplastic material, Ram-Tough 250 is a rubberized asphalt membrane which forms a completely monolithic, waterproof system without seams or joints. It exhibits excellent adhesion characteristics to almost any sound horizontal or vertical surface. Water cannot get under or through it. Ram-Tough is a hot-applied rubber membrane that seals difficult flashing conditions, and remains flexible for its lifetime.

Ram-Tough 250 is composed of SBS rubber polymers, specially refined unoxidized asphalts and a mineral filler. It is melted on the jobsite, spread on the deck and walls in 90 mil thickness, reinforced with polyester fabric and overcoated with 125 mils of Ram-Tough 250, 215 mil total thickness. It instantly sets up to a custom-fit seamless, reinforced modified bitumen rubber sheet.

## Ram-Tough 250 Advantages

- Hot jobsite application forms a monolithic, elastic, joint-free membrane with triple reinforced flashings.
- Retains low temperature elastic flexibility throughout its life.
- 215 mils of protection (180 mils with the SM system)—provides 300–600% greater material thickness than competitive elasto-plastics.
- Excellent self-healing cold flow properties under many conditions.
- 100% solids—no solvents, no urethanes, no mixing, no on-site cure failures and no shrinking.
- Can be applied in cold weather (to 0° F) on frost-free surface.
- Flexible—bridges cracks to 1/16”.
- Tenacious adhesion eliminates water migration under the membrane.
- Fast, one coat application can be protected and open to other trades in minutes.
- Polyester reinforcement provides extra strength and security to membrane.
- Proven on thousands of applications.
- Odor mask formulation available.
- Vertical or horizontal application.
- Unaffected by rain, snow or frost immediately after application.
- No solvents—minimizes fire hazards and worker health hazards associated with rubber sheets.
- Applied only by Ram-Tough Approved Contractors.

## Ram-Tough 250 Uses

Roofing and reroofing systems, foundations, plaza and parking decks, tunnels, water treatment plants, greenroof-roofscapes and planter waterproofing systems are among the many Ram-Tough 250 applications for concrete and wood surfaces.

## Design and Installation Notes

- Ram-Tough 250 must be protected from heavy loading aggressive damage with an appropriate overlay, although it may be exposed to foot and light traffic immediately after cooling when dusted with cement or covered with protection course.
- Ram-Tough 250 is not designed to perform as a permanently exposed surface and should be protected. Insulation, special coatings, cap sheets and Barrett Roofscapes® plaza/promenade wear surfaces are among the many options available.
- Ram-Tough 250 should not be used in direct contact with coal tar pitch products or over wax base curing compounds.
- Ram-Tough 250 should not be applied to wet, frosted, oily, dusty or otherwise contaminated surfaces.
- Ram-Tough 250 is formulated to perform under a variety of climatic conditions. Barrett Specifications are universally established for all climates encountered in North America.

## Product Availability and Costs

Barrett Ram-Tough 250 is competitively priced with four ply built-up and single ply roof membranes. Barrett Ram-Tough 250 is a premium system without extraordinary price premium.

Contact Barrett at 800-647-0100 for:

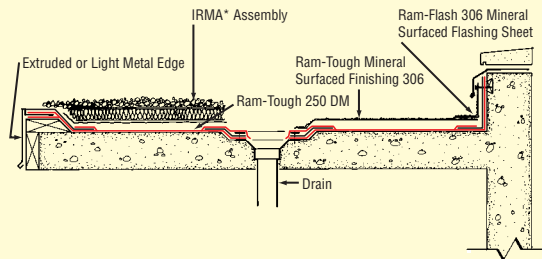
- local representative
- area distributors
- approved contractors
- technical assistance
- additional product information.

## System Warranty Information

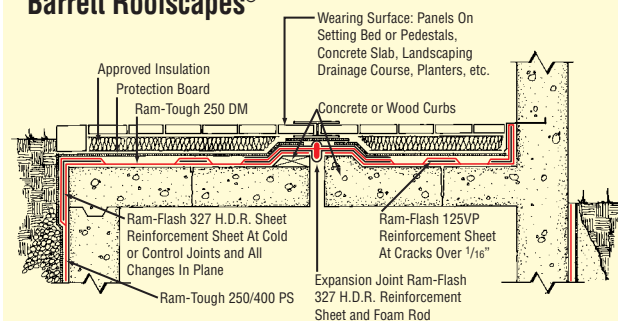
Barrett Company will warrant Barrett specification applications to remain watertight for ten and fifteen years along with insulation values, pedestal and paver performance and other related components. You can specify Barrett—the first name in commercial roofing—with complete confidence. Call or write to us for complete details.

## Ram-Tough 250 Typical Details

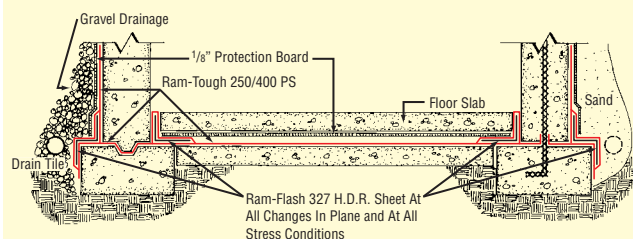
### Roof Decks



### Plaza/Promenade Decks Barrett Roofscapes®



### Subgrade Waterproofing



# RECOMMENDED SPECIFICATIONS FOR RAM-TOUGH 250 DM PROTECTED MEMBRANE ROOF SYSTEM (PMR) ON CONCRETE DECKS

**1.0 GENERAL:** The general conditions, special conditions, applicable portions of Division 1, and requirements for general contractors and subtrades form part of this specification.

**1.1 SCOPE:** Work includes supplying all materials, labor and equipment to complete installation of the PMR System for the following areas: (specify)

**1.2 QUALIFICATIONS:** The Roofing System shall be installed only by an Approved Applicator of the Barrett Company. Roof membrane and reinforcing sheet shall be supplied by the same firm to insure single-source responsibility. Materials supplied for installation may be tested by an independent laboratory to guarantee compliance with published physical properties. All materials shall be of U.S. origin and American made.

**1.3 DELIVERY AND STORAGE:** Deliver and store materials undamaged in original containers with manufacturer's labels and seals intact.

**1.4 PROTECTION:** No protection from weather is necessary for RAM-TOUGH 250 but temporary protection is required to prevent damage to membrane by mechanical gouging, scraping, spilling of oil or solvents or excessive heat.

**1.5 CONDITION OF SURFACE:** Concrete surfaces shall be wood float finish or ACI301-11.7.3. All concrete shall have cured for a minimum of 28 days. All surfaces shall be dry, clean, firm and free from laitance, frost, dust, dirt, oil, unapproved curing compounds or other foreign matter detrimental to performance of the roof membrane. Contractor shall certify no wax base curing compounds have been used. Before commencing work of this section, examine all areas and report in writing to the architect and general contractor any conditions which will adversely affect successful roofing. Do not begin work until these conditions have been corrected. Voids, cracks, holes, and other damaged surfaces shall be repaired by the trades involved. Repair materials must be compatible with the RAM-TOUGH Membrane.

**1.6 EXPANSION JOINTS:** Expansion joints shall be sharply formed and free of broken edges or loose aggregate and completely free of preformed joint fillers, sealants, or back-up materials to a depth which is at least twice the width of the joint. Curb expansion joints at each side of the joint, either by integrally forming with the slab or securely fastening wood strips to deck. Chamfered all exposed edges.

**1.7 SLOPE:** Adequate slope to roof deck drains is advisable in accordance with good drainage practices.

**1.8 SYSTEMS WARRANTY:** Supplier of the Roofing System shall furnish its standard Fifteen Year Systems Warranty.

**2.0 PRODUCTS:** Roofing System shall be Barrett RAM-TOUGH 250•DM Protected Membrane Assembly (PMR) by the Barrett Co., Inc.

**2.1 ROOF MEMBRANE** shall be RAM-TOUGH 250 Flexible Membrane supplied in 35 lb. units, meeting manufacturer's specifications, ready for melting and application.

**2.2 SURFACE CONDITIONER** shall be RAM-TOUGH Primer conforming to ASTM-D-41-70 or approved equal.

**2.3 REINFORCING SHEET** for use over all deck areas shall be POLY•FELT 125 VP spunbond polyester, 1.5 oz./Sq. yd., with heat resistant resin binder.

**2.4 REINFORCING SHEET** for use on cracks greater than 1/8" and over expansion joints and other stress conditions shall be RAM-FLASH 327HDR neoprene flashing, 60 mils thick.

**2.5 REINFORCING SHEET** for use at permanently exposed conditions shall be RAM-FLASH 306 Rubberized Asphalt Sheet with granular surface.

**2.6 PROTECTION SHEET** shall be RAM-TOUGH 203 Protection Course.

**2.7 INSULATION** shall be closed cell foam board type with approved filter fabric, approved by the insulation manufacturer for inverted roofing applications.

**2.8 AGGREGATE BALLAST** shall be in accordance with the insulation manufacturer's recommendations and shall provide protection for the roof insulation and resist insulation buoyancy.

**3.0 EXECUTION:** Apply the RAM-TOUGH DM System as indicated on the drawings and specified herein, unless otherwise indicated, all within strict conformance with Barrett's application manual and requirements.

**3.1 SURFACE CONDITIONER:** Prior to application of Membrane, apply surface conditioner as a fine spray at a rate of approximately 1 gallon per 300–600 square feet. Allow to dry tack free.

**3.2 APPLICATION:** Cakes of membrane shall be melted in an approved doubleshell melter under continuous agitation until the material can be drawn free flowing and lump-free at a temperature of approximately 350° F. Membrane shall be applied evenly at a rate to provide a continuous coating not less than 90 mils.

While hot, embed POLY•FELT reinforcement with 2" side laps and 8" head laps. Broom in place. Cover POLY•FELT with second application of RAM-TOUGH 250 to minimum of 125 mils thickness the same day.

**3.3 FLASHING:** Carry roof membrane and reinforcement up junctions of horizontal deck and vertical surfaces, as indicated on drawings. For parapets, curbs, roof edges, etc. use POLY•FELT 125 VP flashing, with Standard RAM-FLASH 306 granular sheet with termination bar and counter flashing. A minimum height of 8 inches is required. For drains and other penetrations or changes in plane, use RAM-FLASH 327HDR neoprene and RAM 250 Membrane as shown on the drawings.

**3.4 EXPANSION JOINTS:** Over expansion joints up to 2" in width with a designed total movement of 50% or less, RAM-TOUGH 327HDR flashing shall be placed over the joint as shown on the drawings and embedded into a coating of Membrane minimum 1/8" thickness. The sheet shall be looped into the joint 1 1/2 times the joint width at maximum opening and extend at least 8" onto the deck on each side of the joint. The sheet shall be covered and the loop filled with RAM Membrane. Install 2" foam backer rod and cover with 24" wide neoprene sheet set in hot RAM TOUCH 250 and overcoated.

**3.6 SEPARATION SHEET:** After completion of Flood Test, apply protection sheet lapping the joints slightly to insure complete coverage. Use additional RAM 250 as adhesive if required.

**3.7 INSULATION:** Apply insulation, filter fabric and ballast in accordance with insulation manufacturer's recommendations.

## PHYSICAL PROPERTIES—DESCRIPTIVE DATA

*Ram-Tough 250 Meets Or Exceeds All CGSB-37-GP-50 Specifications*

PROPERTIES	TEST METHOD	TEST REQUIREMENT	TEST RESULTS	COMMENTS
Softening Point	ASTM-D-36		83° C (181° F)	
Solids Content	CGSB-37-GP-50	100%	100%	Pass
Ratio of toughness to peak load	CGSB-37-GP-50	Min. 0.040	Min. 0.059	Pass
Low temperature crack bridging capability	CGSB-37-GP-50	No cracking No adhesion loss No splitting	No cracking No adhesion loss No splitting	Pass
Toughness, J	CGSB-37-GP-50	Min. 5.5	11.7	Pass
Penetration 0.1 mm	CGSB-37-GP-50	Max. 110 @ 25° C (77° F)	80 @ 25° C	Pass
		Max. 200 @ 50° C (122° F)	155 @ 50° C	Pass
Flow, mm	CGSB-37-GP-50	Max. 3 @ 60° C (140° F)	0.05 @ 60° C	Pass
Flash Point	CGSB-37-GP-50 ASTM-D-92	Min. 260° C (500° F)	327° C (620° F)	Pass
Water resistance 50° C for 4 days	CGSB-37-GP-50 ASTM-D-92	No delamination No blistering No emulsification No deterioration No pinholes	No delamination No blistering No emulsification No deterioration No pinholes	Pass
Adhesion	CGSB-37-GP-50	Min. 1	1.2	Pass
Viscosity	CGSB-37-GP-50	Min. 2, Max. 15	4 sec.	Pass
Water vapor permeability	CGSB-37-GP-50	Max. 1.7	0.18	Pass
Water absorption	CGSB-37-GP-50	Min. 0.18	.22	Pass
Low temperature flexibility & adhesion	CGSB-37-GP-50	No cracking No delamination No adhesion loss	No cracking No delamination No adhesion loss	Pass
Heat stability	CGSB-37-GP-50	Aged samples; no change in viscosity, penetration, flow or low temp flexibility.	After aged, no change in viscosity, penetration, flow or low temp flexibility.	Pass



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barrett033@aol.com



### OTHER QUALITY PRODUCTS & SERVICES AVAILABLE FROM THE BARRETT COMPANY

- RAM-TOUGH Elastomeric BUR Systems
- Barrett Specification Reroof Systems
- Barrett "Roofscape"— Usable Roof Space
- Highway Membrane For Bridge and Parking Decks
- Thermography Services
- Construction Management and Direct Contract Services For Reroofing Projects