



Legacy report on the 1997 *Uniform Building Code*™

**DIVISION: 07 00 00 — THERMAL AND MOISTURE PROTECTION**

**Section: 07 56 00 — Fluid-applied Roofing**

**CONKLIN ROOF COATING SYSTEMS**

**CONKLIN COMPANY, INC.**

**1.0 SUBJECT**

Benchmark® and Benchply Roof Coating Systems

**2.0 DESCRIPTION**

**2.1 General:**

**2.1.1 Benchmark:** The Benchmark roof coating system is a fluid-applied acrylic latex elastomeric system designed for use on maximum 2-inch-thick spray-in-place polyurethane foam insulation, and on steel roof panels having a protective coating and complying with the code or an ICC-ES evaluation report. The coating system consists of a blue-colored base coat and a white-colored topcoat. Dry finished coating thickness is 27 mils.

**2.1.2 Benchply:** The Benchply roof coating system is a fluid-applied membrane system consisting of Benchmark acrylic latex base coat reinforced with a woven polyester fabric and Benchmark topcoat. The system is intended for application over maximum 2-inch-thick polyisocyanurate foam insulation board or structural concrete roof decks. Dry finished coating thickness is 38 mils.

**2.1.3 Insulation:** Insulation must be classified by Underwriters Laboratories Inc. and approved by Factory Mutual for roofing applications. Foam plastic insulation is as specifically recognized in this report and must be recognized in an ICC-ES evaluation report as complying with the ICC-ES Acceptance Criteria for Foam Plastic Insulation (AC12) dated June 2006.

**2.1.4 Polyester Mat:** The mat is woven polyester fabric, yarn denier 70, construction 28 by 30 per square inch, fabric thickness 0.024 inches.

**2.1.5 Foil:** Three-inch-wide, 0.001-inch-thick aluminum foil.

**2.2 Classifications:**

Fire classification of Benchmark and Benchply systems are detailed in Table 1.

**2.3 Application:**

**2.3.1 Benchmark Roof Covering:** The substrate to be sprayed shall be free of grease, oil, loose particles,

moisture and other foreign matter. All roof openings, valleys and junctures of the roof and vertical surfaces shall be flashed according to UBC Sections 1508 and 1509. A prime coat is permitted to be applied to protect the prepared substrate and to increase adhesion. Foam is applied in compliance with Conklin Company's published instructions. Application of Benchmark coatings is done within 72 hours of foam application. Surface temperatures for application range from 40°F. to 120°F. For further information, refer to Table 1 and manufacturer's installation instructions.

**2.3.2 Benchply Roof-covering System:** All surface debris, loose gravel, grease, dirt and other contaminants shall be removed from the substrate before applying the Benchply roof-covering system. All roof openings, valleys and junctures of the roof and vertical surfaces are flashed according to UBC Sections 1508 and 1509. All insulation materials are mechanically fastened to the deck using screw and plate combinations noted in Table 2. Fastener density is as required to achieve the FM I-60 or I-90 wind-uplift requirements, depending on the wind requirements of the area involved. Surface temperature for application of Benchply coating is between 40°F. and 120°F.

**2.4 Wind Uplift:**

The Benchmark system applied to sprayed-in-place polyurethane foam is limited to areas with a maximum basic wind speed of 100 miles per hour on buildings a maximum of 100 feet in height, in Exposure C areas. The Benchmark system noted in Section 2.1.1, applied directly to steel roof panels, maintains the wind uplift rating of the steel roof panels.

The uninsulated Benchply system applied directly to structural concrete is limited to areas with a maximum basic wind speed of 100 miles per hour on buildings a maximum of 100 feet in height, in Exposure C areas.

Perimeter flashing, detailed in Figure 1, is limited to areas with a maximum basic wind speed of 80 miles per hour on buildings a maximum of 40 feet in height, in Exposure C areas. Flashing requires minimum 2-by-6 wood nailers anchored to concrete or masonry using 1/2-inch-diameter (12.7 mm) bolts spaced four feet (1219 mm) on center; two feet (610 mm) on center at corners; and up to eight feet (2438 mm) away from corners. To fasten nailers to steel, 3/4-inch-diameter (19.1 mm) steel bolts are required; No. 10 screws, in two rows, spaced 24 inches (610 mm) on center, may be used to attach nailers to steel deck. For nailer attachments to

wood,  $\frac{1}{4}$ -inch-diameter (6.4 mm) lag screws in two staggered rows, spaced 24 inches (610 mm) on center, are required at corners; eight feet (2438 mm) away from the corner, spacing is reduced to 12 inches (305 mm) on center. The metal flashing shall be minimum No. 26 gage [0.0179 inch (0.45 mm) base-metal thickness] galvanized or stainless steel. The hook strip shall be minimum No. 24 gage [0.0239 inch (0.6 mm)]. Flashing ends shall be lapped 2 inches (51 mm) and set in plastic roofing cement or covered with a 4-inch-wide (102 mm) plate. The flashing is fastened to the nailer using minimum  $1\frac{1}{4}$ -inch-long (35 mm), deformed shank, galvanized steel roofing nails with minimum  $\frac{3}{16}$ -inch-diameter (4.8 mm) heads, 1 inch (25 mm) from the edge, at 4 inches (102 mm) on center. The hook strip is attached to wood using nails or  $\frac{3}{4}$ -inch-long (19.1 mm), No. 8 wood screws at 16 inches (406 mm) on center. For concrete or masonry parapet walls, flashing is set in a masonry joint or attached using anchors rated at 200 pounds (890 N) tension, penetrating a minimum of 1 inch (25 mm), at 36 inches (914 mm) on center.

For areas with basic wind speeds in excess of 80 miles per hour and for buildings taller than 40 feet, specific details and calculations on the flashing system relating to the building in question must be submitted to the local building official for approval.

The insulated Benchply systems are limited to wind speeds detailed in Table 2 when installed in accordance with this report. Maximum height above grade for the roof covering is 40 feet in Exposure C areas. Insulation and roof-covering fastener density must be doubled at perimeters and corners of the roof. The width of this increased fastener density must comply with UBC Table 16-H.

## 2.5 Identification:

**2.5.1** Products bear a label indicating product name, the Conklin Company, Inc., name and address, and the evaluation report number (ER-5203).

The edge or face of each piece of foam plastic bears the label of an approved agency containing the manufacturer's identification, model number, serial number and information describing the product's performance characteristics. In the case of spray-applied foam plastics, such information is located on the containers of spray components.

**2.5.2** The report holder's contact information is the following:

**CONKLIN COMPANY, INC.  
551 VALLEY PARK DRIVE  
SHAKOPEE, MINNESOTA 55379  
(800) 888-8338**

## 3.0 EVIDENCE SUBMITTED

Data in accordance with the Acceptance Criteria for Membrane Roof-covering Systems (AC75) dated June 2003, reports of tests in accordance with FM Standard 4470, a quality control manual and product information.

## 4.0 FINDINGS

**That the Conklin Roof Coating Systems described in this report comply with the 1997 *Uniform Building Code*<sup>TM</sup>, subject to the following conditions:**

- 4.1 The system installation complies with this report and manufacturer's instructions.**
- 4.2 Roof-covering systems are installed by applicators approved by Conklin Company.**
- 4.3 Where moderate or heavy foot traffic occurs, such as for maintenance of equipment, roof coverings shall be adequately protected to prevent rupture or wearing of the surface.**
- 4.4 Wind design requirements noted in Section 2.4 are followed.**
- 4.5 Materials are produced in Shakopee, Minnesota, under a quality control program with inspections by ICC-ES.**

TABLE 1—BENCH MARK AND BENCHPLY ROOF COVERING

SYSTEM NO./FIRE CLASSIFICATION	IDENTIFICATION	SUBSTRATE	INSULATION	BASE COAT (gal./100 sq.ft.)	TOP COAT (gal./100 sq.ft.)	SURFACING	MAXIMUM ROOF SLOPE (in./hor.ft.)
1/ Class A	Benchmark	Noncombustible	(Optional) Stepan Foam 9300 Series; Premium Polymers Texthane 233 Series; Foam Enterprises FE-302, FE-303 or FE-314; 1 to 2 inches thick	Benchmark base coat at 1.5	Benchmark top coat at 1.5	(Optional) No. 11 roofing granules at 50 lbs. per 100 sq. ft.	2:12
2/ Class C	Benchmark	Minimum <sup>15</sup> 3/32-inch-thick plywood <sup>1</sup>	None	Benchmark base coat at 1.5	Benchmark top coat at 1.5	No. 11 roofing granules at 50 lbs. per 100 sq. ft.	1/4:12
3/ Class A	Benchply	Noncombustible	Manville Fesco-Foam; Atlas Energy ACFoam I or ACFoam II; 2 inches maximum; mechanically fastened to deck <sup>3</sup>	Benchmark base coat at 1.5 with polyester mat embedded in wet coating; Second coat at 0.5	Benchmark top coat at 1.5	(Optional) No. 11 roofing granules at 50 lbs. per 100 sq. ft.	1 1/2:12
4/ Class A	Benchply	Minimum <sup>1</sup> 1/2-inch-thick plywood <sup>2</sup>	Manville Fesco-Foam; Atlas Energy ACFoam I or ACFoam II; 2 inches maximum; mechanically fastened to deck <sup>3</sup>	Benchmark base coat at 1.5 with polyester mat embedded in wet coating; Second coat at 0.5	Benchmark top coat at 1.5	No. 11 roofing granules at 50 lbs. per 100 sq. ft.	1/2:12
5/ Class A	Benchply	Minimum <sup>1</sup> 1/2-inch-thick plywood <sup>2</sup> or Noncombustible	Perlite, 1-inch-thick, mechanically fastened, plus Atlas Energy ACFoam I or ACFoam II, 1-inch-thick, mechanically fastened to deck <sup>3</sup>	Benchmark base coat at 1.5 with polyester mat embedded in wet coating; Second coat at 0.5	Benchmark top coat at 1.5	(Optional) No. 11 roofing granules at 50 lbs. per 100 sq. ft.	1:12
6/ Class A	Benchmark	Noncombustible	Burtin BUC 124-3.0; Foam Enterprises FE 303-2.5; Gaco Western Polyfoam 275; IPI Isofoam SS-1570-3.0; North Carolina Foam NCFI 591-2.8; Polythane Systems OSI-SH200-3.0; Resin Technology RT-2031-3.0; SWD Urethane SWD 525-3.0; Urethane Technologies UT 5100-2.7	Benchmark base coat at 1.5	Benchmark top coat at 1.5	(Optional) No. 11 roofing granules at 50 lbs. per 100 sq. ft.	2:12
7/ Class A	Benchply	Noncombustible	None	Benchmark base coat at 1.5 with polyester mat embedded in wet coating; second coat at 0.5	Benchmark top coat at 1.5	(Optional) No. 11 roofing granules at 50 lbs. per 100 sq. ft.	2:12

<sup>1</sup>A 4-inch-wide strip of polyester fabric is embedded into a wet strip of base coat and centered over all plywood joints.

<sup>2</sup>Deck joints are covered with double layer of aluminum foil with a total thickness of 2 mil and width of 3 inches. Foil is stapled at 12 inches on center along both edges.

<sup>3</sup>Insulation joints are caulked with KWIK KAULK. A 4-inch strip of fabric, centered over the insulation joints, is embedded into a wet strip of Benchmark base coat.

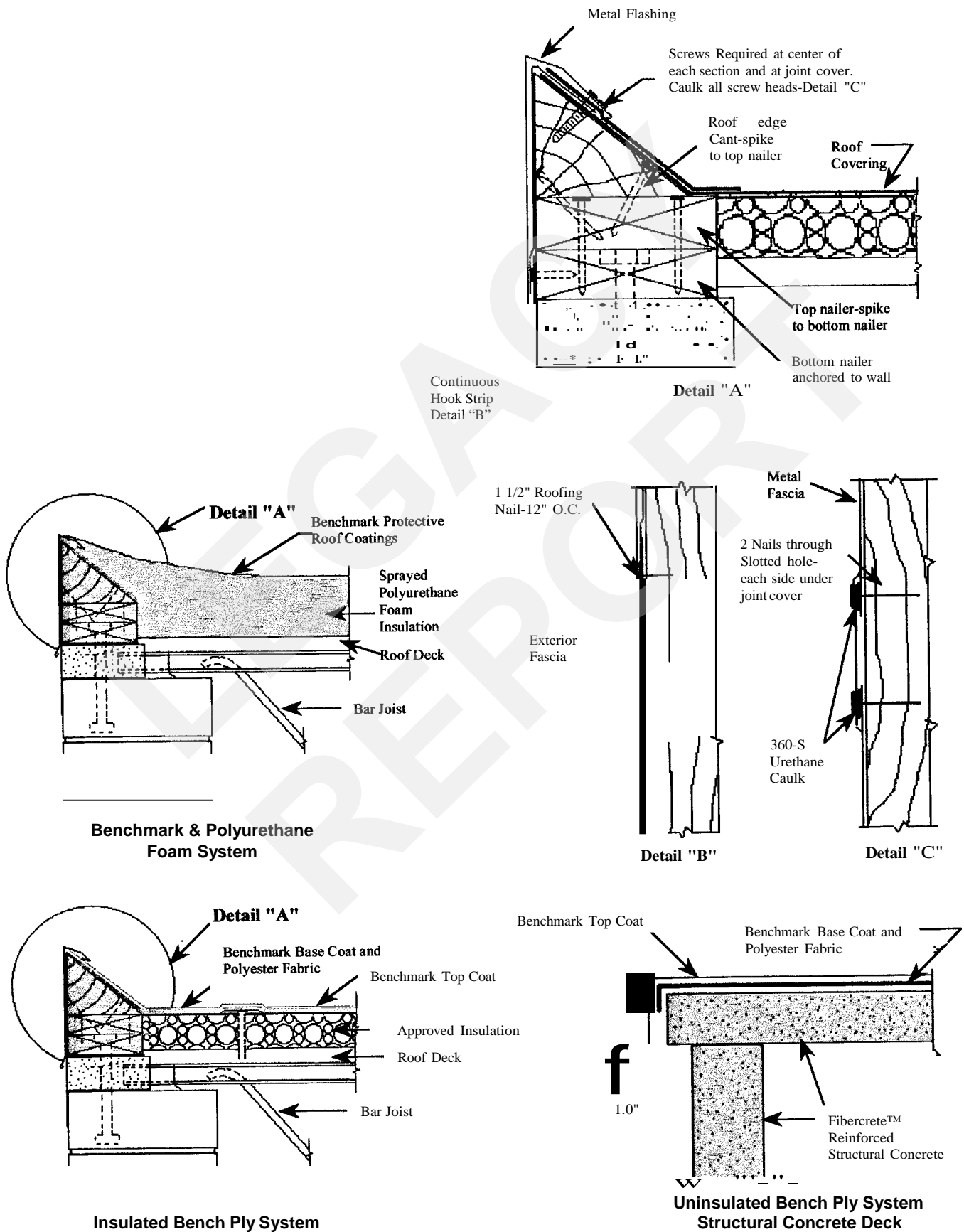
TABLE 2—INSULATION FASTENERS FOR BENCHPLY

FASTENER				MAXIMUM BASIC WIND SPEED (mph) <sup>2</sup> EXPOSURE C	INSULATION	
Type of Roof Deck	Type	Penetration (minimum)	Fastener Density (square feet per fastener)		Type	Minimum Thickness (inches)
Steel, No. 18-22 gage	No. 12 or No. 14 screw by Tru-Fast with 3-inch-diameter steel plate	Through steel and beyond 1/2 inch	3	70	Atlas Energy AC Foam I	1.3
			3	80		
			4	70	Atlas Energy AC Foam II	1.5
			2.67	80		
Concrete, normal- weight, minimum 3,000 psi compressive strength	No. 14 screw by Tru-Fast with 3-inch-diameter steel plate	1 inch	3	70	Atlas Energy AC Foam I	1.3
			3	80		
			4	70	Atlas Energy AC Foam II	1.5
			2.67	80		
Plywood, 1/2 inch minimum thickness <sup>4</sup>	No. 12 or No. 14 screw by Tru-Fast with 3-inch-diameter steel plate	Through plywood and beyond 1/2 inch	4	70	Atlas Energy AC Foam I	1.3

<sup>1</sup>Fastener density is doubled at roof corners and perimeters as defined in Note 4, U.B.C. Table 16-H.

<sup>2</sup>Maximum roof covering above grade is 40 feet.

<sup>3</sup>Plywood deck must comply with UBC Section 2602.5.3.



Roof edge for the approved systems perimeter material shall be equal but not limited to Econosnap®, TerminEdge™ or Permasnap roof edge system as manufactured by the W.P. Hickman Company  
 Perimeter flashing system shall carry an F>M> 1-90approval. Additional system details available from supplier

FIGURE 1