PRI ASPHALT TECHNOLOGIES

Laboratory Report

Report for: Gutter Topper LTD
605 E. Ohio Pike
Amelia, OH 45102

Date: March 15, 2002

Attention: A. M. Ianelli

Purpose: The purpose of this project was to determine the resistance of Gutter Topper® leaf and debris gutter protection system to clogging with a mix of naturally occurring debris as well as to determine the load bearing capabilities of the installed system.

Materials: The Gutter Topper product sampling was conducted by Brian Hall, a representative of PRI Asphalt Technologies, Inc. The sampling was conducted in accordance with ICBO AC85 on October 18, 2000, at the Gutter Topper factory located at 605 E. Ohio Pike Amelia, Ohio 45102. Two boxes of Gutter Topper were selected from pallets and initialed; one box was shipped to PRI Asphalt Technologies, Inc. Tampa, FL 33610. The second box was retained at the factory to be shipped if additional test materials were required.

Test Methods: Non-standard test methods, developed by Gutter Topper, LTD and PRI Asphalt Technologies, Inc., were used to test the performance and durability of Gutter Topper leaf and debris gutter protection system. The test conditions and methods were developed to facilitate reproducible tests and to simulate normal conditions which occur in most areas of the United States. The tests were quantified and designed to test functionality and durability of a gutter cover product.

1. Test Deck Description

The 48 square foot test deck was constructed to be 8 feet wide at the ridge and 6 feet from ridge to eave. The roof pitch was 2 inches in 12 inches. The test deck was constructed with 8 inch of fascia and 12 inches of soffit. A 5-inch wide by 3-1/4 inch deep, painted 0.029 aluminum gutter was installed at the 8-foot eave. The gutter brackets supporting the gutter were placed 24 inches on center. Gutter and mounting hardware was purchased at a local distributor and installed per the manufactures installation instructions.

The Gutter Topper was installed per the manufactures installation instructions. It was fastened to the gutter with painted ¼ x ½ inch hex head corrosion resistant sheet metal screws placed 12 inches on center where the Gutter Topper contacted the outside edge of the gutter. The Gutter Topper test sample was fastened to the roof by lifting the second course of shingles and placing #8 x 1 inch flat head corrosion resistant screws 12 inches on center through the unit and into the deck. The Gutter Topper end terminations (caps) were fastened to the Gutter Topper with three, ¼ x ½ inch hex head corrosion resistant sheet metal screws at each termination. The Gutter Topper test sample incorporated an end lap joint and gutter end terminations. See Figure 1.

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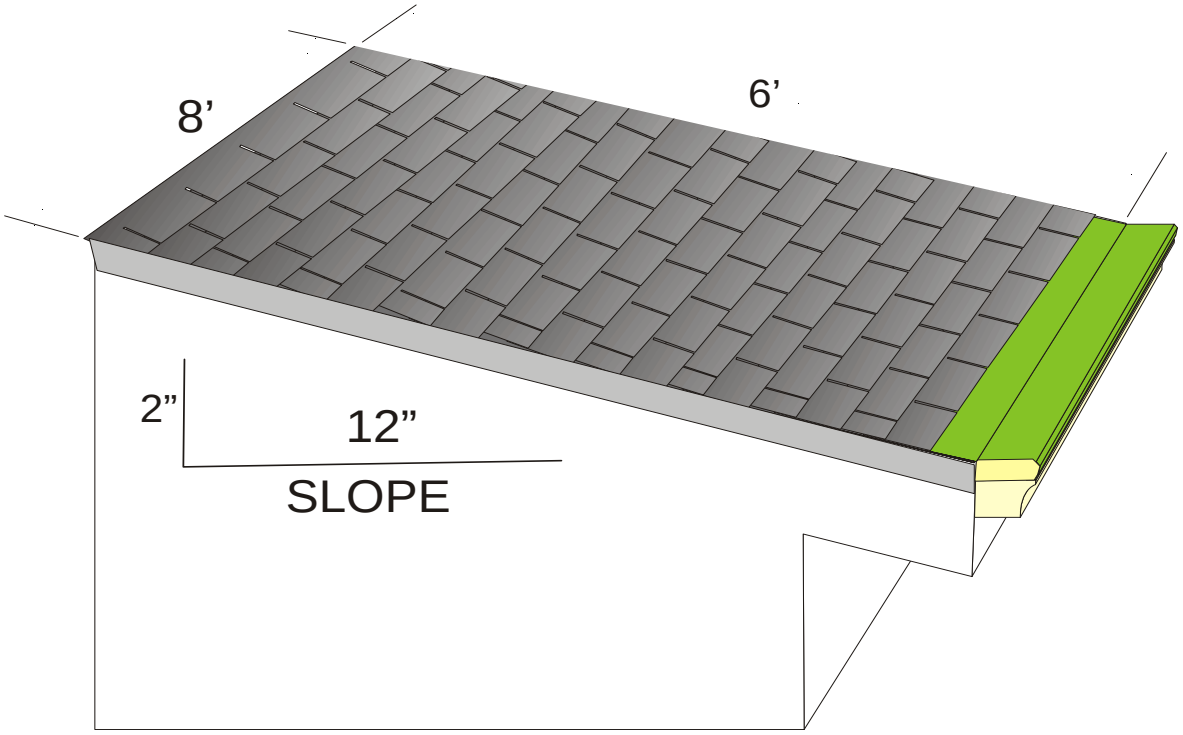
Figure 1

Test Deck



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2. Test Debris Description and Quantification

Approximately ten pounds of typical roof debris was collected and hand mixed in a large wheelbarrow. A sample was removed from the mix and sieved to remove the fine debris. The material which did not pass a ½" sieve was sorted by type of material**.** The fractions were weighed and the weights recorded. The components of the debris were recombined and dried in an oven at 180°F to a constant weight to determine the moisture content.

Material	Description of size		Weight In grams	Percentage of mix
Leaves	Largest dimension between	1" and 9" inches	138.4 g	10%
Bark	Ranging in width between Ranging in length between	1/4 and 1 inch 1/4 and 4 inches	230.3 g	17%
Twigs	Ranging in diameter between Ranging in length between	1/16 and 1/2 inch 1-1/2 and 14 inches	232.7 g	17%
Pine Needles	Ranging in length between	1-1/2 and 10 inches	219.2 g	16%
Mix of leaves, bark, twigs, and pine needles.		Passing 1/2" sive	540.2 g	40%
Debris mix moisture content	12%	Total weight	1360.8 g 3 lbs.	100%

3. Dry Debris Trapping Test (See video)

The objective of this test was to determine if the gutter cover product would retain any dry debris passing over it in a normal wind blow off environment.

Dry Debris was gently blown from roof as follows:

An electric leaf blower supplying 25 mph wind at 12 feet from nozzle was used as the simulated wind source. The blow off wind speed was determined by operating the leaf blower and measuring the resultant air velocity at a distance of 12 feet from the nozzle. A Dwyer No. 16D (Catalog No. 1223/16) U-tube equipped with a Dwyer pitot tube, Catalog No. 160-18, was used to measure air velocity pressure in inches of water and then converted to MPH. The pitot tube measurement indicated 0.3 inches of water column, which equates to 25 MPH.

Test conditions: Air temperature 71 °F Wind: still.

Three pounds of the debris mix, at 12% moisture, was uniformly applied to the test deck. Debris blow off was accomplished with the leaf blower held 12 feet from the ridge of the test deck and aimed down slope towards the gutter cover being tested. Sweep deck until debris is removed. After completing the blow off, the Gutter Topper unit was examined for debris.

Results: No debris was found in the Gutter Topper cover or in the gutter.

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5. Load bearing capability (See video and photographs)

The load bearing capabilities of the installed system was determined by applying weight to a 3 inch by 4 inch block of wood placed with the 4 inch dimension at and parallel to the outside edge of the gutter cover and centered between the gutter brackets. Loading was applied to the block until either the gutter cover openings closed due to deflection or the supporting gutter deflected, deflection and return values were measured and recorded.

Results:

Gutter Topper	Load lbs.	Load, Pounds per lineal foot	Load, Pounds per square foot psf	Deflection, inches	Recovery from deflection
INITIAL LOADING	50	150	600	0.375	100%
MAXIMUM LOAD	100	300	1200	0.525	95%

(Could not completely close water entry opening, the supporting gutter deflected leaving a 1/8" opening.)

Signed: Gary H Griswold
Testing Services Manager

Date: 3/15/2002

Approved: Donald C. Portfolio
Vice President

Date: 3/15/2002

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PHOTOGRAPHS

Test Debris Description and Quantification

Test Debris Quantification

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Dry Debris Trapping Test

After Dry Debris Trapping Test

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Load bearing capability

Load Bearing Capability Setup

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Load bearing Capability

Load bearing Capability at Maximum Load

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