



**Jim D. Koontz & Associates, Inc.**  
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August 24, 2011

Mr. Mike Evans  
Bartile Roofs, Inc.  
725 North 1000 West  
Centerville, UT 84014

Tel: 801-295-3443 Ext. 105  
Fax: 801-295-3485  
Email: mevans@bartile.com

Re: Hail Resistance Testing  
Wind Testing  
JDK 60-48-1

Dear Mr. Evans:

Per the April 18, 2011 proposal with terms and conditions forwarded to your office, **Exhibit No. 1**, Jim D. Koontz & Associates, Inc. has tested four different panels of tile roofing supplied by your firm for both hail and wind resistance.

The tile provided included:

- Legendary Split Timber - Ultra-Lite Weight
- New England Slate - Ultra-Lite Weight
- Legendary Split Timber - Standard Weight
- BARTILE Split Timber

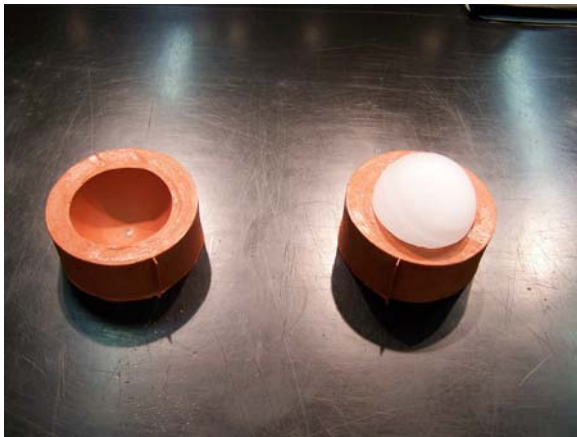
Technical literature from Bartile for the tile tested is included as **Exhibit No. 2**. The Bartile products have been evaluated by the International Code Council. Documentation from the International Code Council is included as **Exhibit No. 3**.

The target samples were initially constructed and impacted with ice spheres per National Bureau of Standards Procedure 23, **Exhibit No. 4**. This procedure involves building target samples as depicted in laboratory photographs 1-7. The



Laboratory Photograph 3

samples were mounted in a vertical position and sprayed with water at 40°F. The samples were impacted with ice spheres that ranged from 1.75 to 3.00 inches in diameter. A typical hail mold used in testing is depicted in laboratory photograph 8.



Laboratory Photograph 8



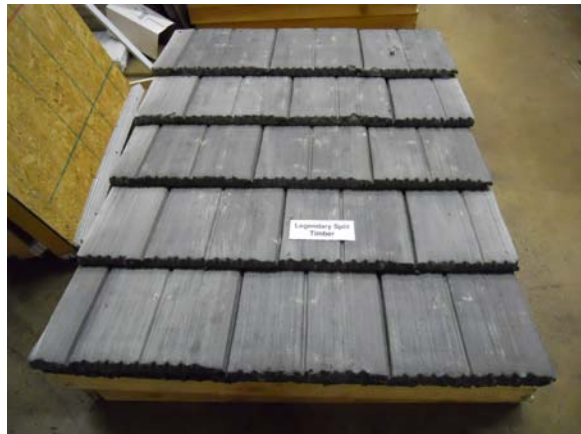
Laboratory Photograph 14

A pneumatic launcher utilized for the testing is depicted in laboratory photograph 9. Tile initially impacted with ice spheres 2.00 inches in diameter did not fail, with the exception of the New England Slate - Ultra-Lite Weight, as depicted in laboratory photographs 10-13. The tile were tested to failure (i.e. tile breakage) as shown in laboratory photographs 14-16.

Targets were then constructed for wind testing as shown in laboratory photographs 17-22. Both hurricane clips and RT-600 adhesive were used in the construction of the targets as depicted in laboratory photographs 23-24. The hurricane clips were utilized at perimeter edge locations.



Laboratory Photograph 21



Laboratory Photograph 22

The tile targets were tested in accordance with ASTM D3161 procedures, **Exhibit No. 5**. This procedure involves placing the target at a slight angle in front of a fan and testing at various wind speeds. The testing is depicted in laboratory photographs 25-38.



Laboratory Photograph 31



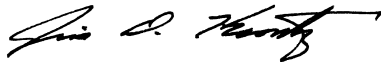
Laboratory Photograph 38

For a summary of laboratory testing, refer to **Exhibit No. 6**. Portions of the laboratory testing were videotaped and are included on separate CDs accompanying this report.

The sample remnants have been retained. The remnants will be discarded in 30 days unless otherwise directed in writing by your office.

If you have any questions, please call.

Sincerely,



Jim D. Koontz, PE, RRC  
President

JDK/sw