TENSILE BOND STRENGTH OF 60 MILS LIQUID BOOT® VAPOR BARRIER TO CONCRETE

EXECUTIVE SUMMARY
A series of flatwise tensile bond strength laboratory tests were conducted on samples of CETCO LIQUID BOOT® 60 mils vapor barrier and concrete. The results showed an average maximum load of 80 lbs and an average tensile/bond strength of 7 psi. All failures were seen within the specimen and not at the bonded seam.

OBJECTIVE
The objective of this experiment is to test the tensile bond strength of LIQUID BOOT® 60 mils vapor barrier to concrete.

PROCEDURE
Samples were submitted to the lab of 6” × 12” × 1 ½” thick concrete blocks covered with 60 mil thick LIQUID BOOT® vapor barrier and BASEFABRIC™ geotextile. The samples were prepared by first spraying LIQUID BOOT® vapor barrier onto BASEFABRIC™ geotextile and allowed to cure. The concrete was then poured over LIQUID BOOT® vapor barrier with BASEFABRIC™ geotextile backing.

A flatwise tensile bond strength test was performed on the specimen under the procedure of ASTM C 297-94. To begin the test, five 3-inch square steel plates were adhered to the top surface of the specimen. The membrane was then cut along the steel plates through to the concrete surface resulting in a specimen test area of 9 square inches. The LIQUID BOOT® vapor barrier/BASEFABRIC™ geotextile specimens were partially separated from the concrete block a length of 1 inch and individually secured to an Instron UTM (Universal Testing Machine) with the ‘flap’ in one grip, the concrete block affixed to the other grip and pulled in tension at a constant rate of crosshead separation of 0.02 inches per minute until failure.

RESULTS AND DISCUSSION

<table>
<thead>
<tr>
<th>SPECIMEN NUMBER</th>
<th>MAXIMUM LOAD (LBS)</th>
<th>TENSILE/BOND STRENGTH (PSI)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>93</td>
<td>10</td>
</tr>
<tr>
<td>2</td>
<td>84</td>
<td>9</td>
</tr>
<tr>
<td>3</td>
<td>57</td>
<td>6</td>
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<tr>
<td>4</td>
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<tr>
<td>5</td>
<td>92</td>
<td>10</td>
</tr>
<tr>
<td>AVERAGE:</td>
<td><strong>80</strong></td>
<td><strong>7</strong></td>
</tr>
</tbody>
</table>

All five specimens tested resulted in 100% cohesive failure within the membrane. Failures were not seen at the bonded area.

ATTACHMENT


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CLIENT: LBI TECHNOLOGIES INC.  
1001 S. Linwood Avenue  
Santa Ana, CA 92705  
Attn: James Wang

Test Report No: 94760-R3  
Date: September 21, 2004

SAMPLE ID: The following test material was submitted and identified by the Client:

Flatwise tensile bond strength samples consisting of eight, 6-inch by 12-inch by 1¼-inch thick concrete blocks with 60 mil thick Liquid Boot® with Geotextile applied to one surface.

DATE OF RECEIPT: Entered into SGS U.S. Testing Company sample tracking system on April 28, 2004 and was assigned Sample Tracking Number 37863.


TEST RESULTS: See pages 2.

Prepared By

Larry Burner  
Project Engineer

Signed for and on behalf of  
SGS U.S. Testing Company Inc.

Greg Wrona  
Manager Hardlines

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