

**Report No. WMEL 08-024  
Test Evaluation of Deck Board Product**

**Prepared**

**for**

**TM&I  
27013 Pacific Hwy. S. #179  
Des Moines, WA 98198**

**By**

**Wood Materials and Engineering Laboratory  
Washington State University  
July 25, 2008**



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**Introduction**

The Wood Materials and Engineering Laboratory (WMEL), (IAS – TL246) at Washington State University in Pullman, WA, performed screw head pull-through tests on one deck board product received from AERT at the request of TM&I, Inc. The deck board product was a contoured solid rectangular cross-section with slightly rounded corners approximately 5 ½ inches wide and one and one-eighth inch thick with a kerf down each side of the deck board approximately at the midline. The WMEL received the deck board material on May 30, 2008. There was a witness mark on each piece received (Figure 1).



**Figure 1. Deck board product shown with sampling demarcation.**

## Test Materials

AERT submitted the deck board product as identified above. The submitted test boards were approximately 21 inches long. The test boards were conditioned at 70° F and 50% relative humidity (RH) for at least 40 hours prior to testing. The weight and the dimensions of all specimens were measured and recorded prior to testing

## Test Methods and Results

### Direct Screw Pull-Through

Direct screw pull-through testing was performed according to the guidelines of the ASTM D1037-99 standard. All specimens were conditioned and tested at 70°F, 50% relative humidity.

The direct screw pull-through was conducted using a ballistic screw provided by the client. The screw had an average shank diameter of 0.125 inches and an average head diameter of 0.268 inches. The screws were inserted using a ballistic screw gun, also provided by the client, without the use of any predrilled lead hole. The rate of crosshead motion was 0.06 in/min. Ten specimens were cut to three inches in length and using the nominal deck board width. The screws were inserted using the ballistic screw gun immediately prior to testing (Figure 2). The average maximum load was 581.4 pounds and the coefficient of variation was 8.05%. Failure occurred with the screw heads pulling through approximately one-eighth inch of the thickness of the deck board. The load carrying capacity is shown in Table 1. The allowable fastener capacity shown in Table 1 is simply the average maximum capacity divided by 3.0.

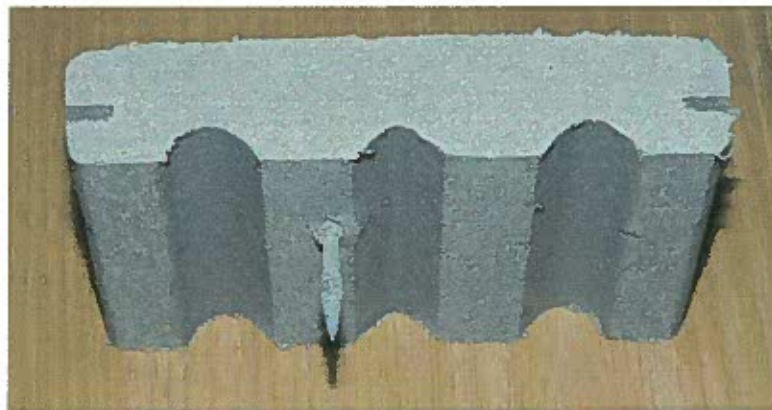


Figure 2. Typical Screw head pull through specimen.

Table 1. Screw pull-through capacity

Specimen ID	Specimen Thickness (in)	Maximum Load (lbf)
1	1.181	571.8
2	1.177	580.7
3	1.189	542.8
4	1.185	481.9
5	1.176	585
6	1.198	618.8
7	1.197	561.3
8	1.194	640.5
9	1.174	598.9
10	1.187	632.5
<b>Average</b>	<b>1.186</b>	<b>581.4</b>
<b>COV</b>	<b>0.73%</b>	<b>8.05%</b>
<b>Allowable Pull-Through Capacity</b>		<b>193.8</b>

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