

Reference No TP1971

7 January 2011

Dear Madam

RE: Use of Hybrideck Wood/Plastic Composite Solid Profile Heavy Decking on observation platforms.

You have asked BRANZ to assess whether the above decking will be able to resist a 5 kPa live load and (separately) a 1.8 kN point load. The deck boards were measured as 140 mm wide and 24.3 mm thick.

BRANZ has examined the above board and concluded that it would not lose significant structural strength when exposed to the elements in the proposed use for 15 years.

BRANZ tested four boards as per Section D of AS 1859:1980 for flexural tension load on the flat face and four boards for flexural tension load on the indented face. This enabled the modulus of rupture for each of the eight test specimens to be determined. The Coefficient of Variation in each of the two groups of four specimens did not exceed 2.7%. The minimum value of test modulus of rupture from the eight tests was then reduced by a factor of 1/1.15 to give a design modulus of rupture. This assumed a 5% Coefficient of Variation of structural characteristics for four samples (determined from Table B1 of AS/NZS 1170.0:2002).

BRANZ assumed that the deck boards would be supported at a maximum of 450 mm centres and would span across three supports. (Thus, single spans of 450 mm are unacceptable.)

To determine the ultimate limit state demand load, the live loads of either 5 kPa or 1.8 kN were factored by 1.5 as per NZS 1170.0:2002.

For the two load cases examined, the design level flexural capacity of the boards was determined by reducing the calculated design strength by a strength reduction factor $\phi = 0.8$, and by a load duration factor $K1 = 0.8$ as per NZS 3603:1993.

Based on the above parameters, and conservatively assuming that the point live load was entirely taken by a single board, (i.e., no load sharing), it was found that the determined capacity of the decking was 6.2 times the ultimate limit state demand load for the 5 kPa live load and 1.46 times for the 1.8 kN live load.

In addition, BRANZ applied a point load of 1.8 kN onto four test planks which were simply supported over a span of 450 mm. The 1.8 kN load was applied to a 20 mm diameter loading tool similar to the test procedure specified in AS 1859:1980 Section J3. The load was held for 60 seconds. On removal of the load the indentation was barely detectable and less than 0.5 mm deep in each of the four tests.


SJT


GJB

Conclusion

A Hybrideck Wood/Plastic Composite Solid Profile Heavy Decking having boards 140 mm wide by 24.3 mm thick on an observation platform can safely carry a serviceability load of 5 kPa live load or a 1.8 kN point load after the deck has been exposed to the elements for a period of 15 years, provided the deck span does not exceed 450 mm and the deck boards span three or more supports.

Yours faithfully



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Graeme J Beattie
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(Reviewer)