

Yarsley

Technical Centre

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DESIGN, DEVELOPMENT AND TESTING

Approval Nos. MOD IINY01 CAA A1/462/55
DOE Supervisory Scheme for Fire Test Laboratories

OFIC (GB) Limited.
16 Hanover Square,
LONDON. W1R 9AJ.

Our ref

Your ref

Date 22nd October 1981

For the attention of Mr. C. Watson

REPORT NO. D70817/1

WIND SUCTION TESTS ON ONDULINE PANELS

SUMMARY

An area of Onduline panels, 6 foot wide by 12 foot long, has been subjected to dead weight loads to determine the suction failure load. Failure occurred at a load of 1560 N/m^2 .

1. INTRODUCTION

This investigation was authorised by your letter of 2nd April 1981.

2. MATERIALS EXAMINED

Onduline panels, coloured black, were supplied by yourselves, as were the fixing nails which were approximately $2\frac{1}{2}$ inches long with plastics heads.

3. EXPERIMENTAL

3.1 Construction of Framework

The framework consisted of 3 inch by 3 inch timbers, three timbers 13 feet long were laid parallel at 3 foot centres. Six 6 foot purlins were then laid across these at right angles at 2 foot centres and nailed firmly.

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3.2 Fixing the Onduline Sheets

Six sheets were selected at random for test. Three were used whole, but two more were cut in half transversely and the further two were cut into quarters. Two half sheets and two quarter sheets were first laid at one end with approximately 1 foot overlapping the end of the frame and then the three full sheets were laid so that the longitudinal joints in the whole sheets were midway between those in the half sheets. The rig was completed by two half sheets and two quarter sheets at the further end. The overlap was of course approximately 7 inches, as dictated by the spacing of the purlins.

3.3 Nailing the Sheets

At overlaps in the sheets, a nail was applied into the top of every corrugation. At intermediate purlins the sheets were nailed at alternate ridges.

3.4 Loading the Sheets

The test rig was turned over with the wooden frame uppermost and this was supported on suitable blocks, approximately 6 inches from the floor. Dead weights loads were applied in increments of 5 lb/ft^2 until 15 lb/ft^2 was achieved and then in 4.5 lb/ft^2 intervals until failure occurred.

4. RESULTS

Under a uniformly distributed load of 32.5 lb/ft^2 , there was no sign of distress, undue deformation or failure of the roof. Under a load of 37 lb/ft^2 , deformation of the corrugations occurred followed by pull-through of the nails on the intermediate purlins, ie. where the sheets were nailed at alternate ridges.

5. CONCLUSIONS

1. The sample was far better than the 7 lb/ft^2 which was the specified level for wind resistance.

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2. A pressure of 37 lb/ft^2 corresponds to the direct suction produced by a wind speed of 120 mph.

REPORTED BY 

P.H. NICE

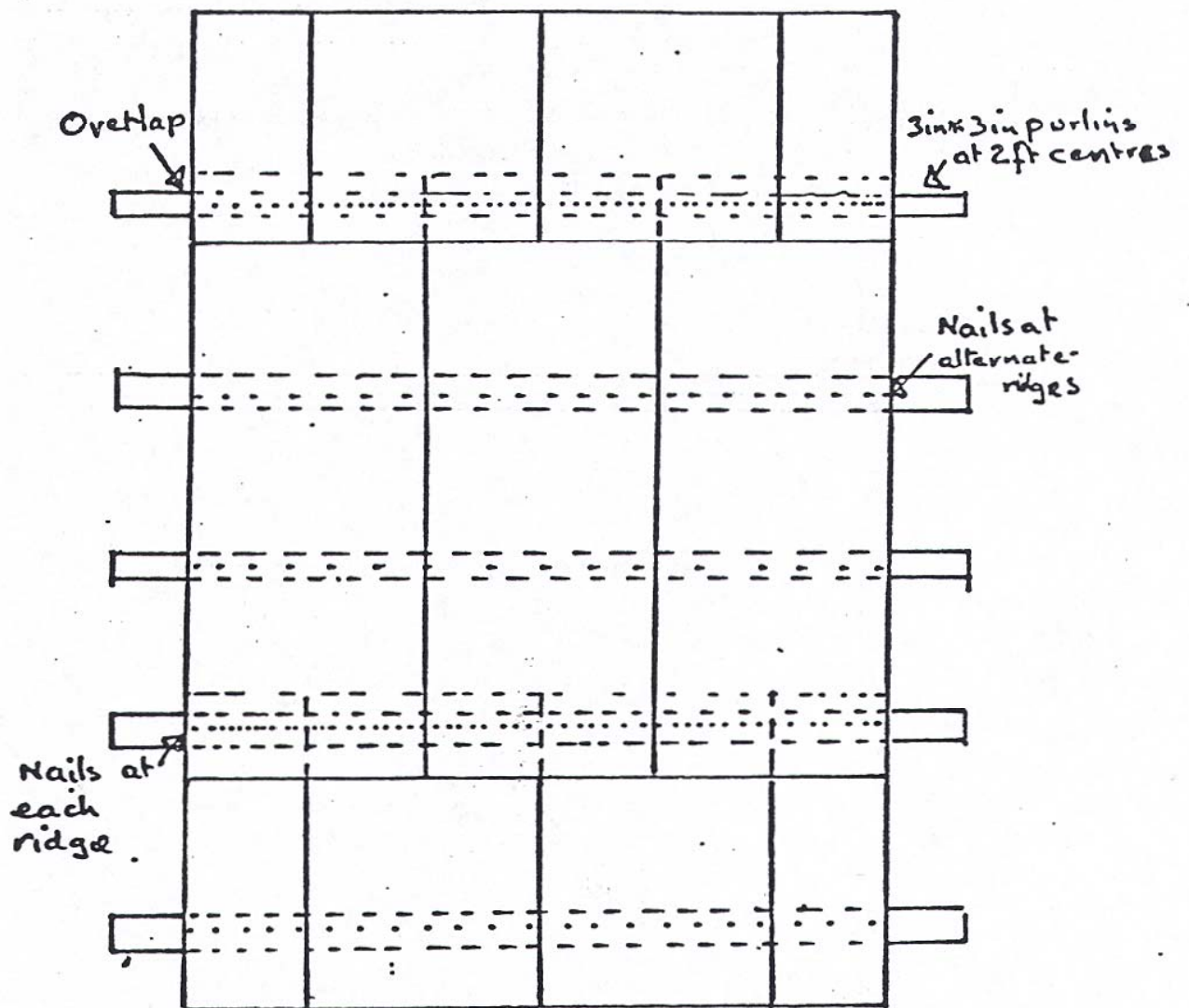
Test Development Dept.

AUTHORISED BY 

D.B.S. BERRY

Divisional Manager

sfn



Arrangement of roof sheets for Load Testing