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TECHNICAL NOTE

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PREPARED BY A.T. Hansen CHECKED BY APPROVED BY R.F.L.

PREPARED FOR General Information (re: D.B.R. Project) DATE April 1955

SUBJECT

Summary of a Search for Information on the Performance of Asphalt Shingles in Relation to the Width of Roof Boards.

A library search has shown that there is little published data on the performance of asphalt shingles in relation to the width of roof sheathing boards. The only direct reference to laboratory work is in an article published by the Asphalt Roofing Industry Bureau entitled, "Plain Facts About Buckled Asphalt Shingles". This article describes a demonstration in which buckling of shingles, including metal shingles, was produced by varying the moisture content of the sheathing upon which the shingles were laid. In addition, photographs of buckled shingles on roofs having asphalt shingles are shown and the condition attributed to shrinkage or expansion of the roof sheathing. The width of the sheathing boards are not given.

The following references to roof board widths were noted:

1. Backgrounds for Roof Coverings

British Standard Code of Practice CP(1050), CP(B)932, Sect. 312, p. 15.
"The use of roof boards wider than 7 inches is not recommended".

Note: This reference is general and may apply to any roof covering.

2. Asphalt Prepared Rolled Roofings and Shingles

U.S. Dept. of Commerce Report BMS 70, 1941, p. 25.
"Roof Deck - Roof boards should not be less than 7/8" thick, of uniform thickness and not more than 8" wide. Tongued and grooved boards 6" wide are preferable but square cut boards are satisfactory if they are laid close together and fastened securely."

3. Layman's Manual for Self Help

Housing Construction in Alaska, Final Report, Sept. 1, 1952.

Co-operative Report of the University of Minnesota Engineering Experiment Station and Housing and Home Finance Agency, p. 128.
"Roof: Materials - No. 3 common 7/8" square edged Douglas fir boards, 8" maximum width."
Note: Again, the limitation of width apparently applies to all roof coverings.

4. How to Avoid Buckled Shingles

Practical Builder, v.16, n.10, Oct. 1951, pp.135-8.
Philip Carey Manufacturing Co., Cincinnati, Ohio.
This article gives an explanation of how varying moisture content of the roof boards produces buckling in asphalt shingles.

"Shrinkage of Sheathing - When sheathing shrinks, the worst buckling effects occur in those courses where both rows of shingle nails come in the same board... with 6" sheathing, usually measuring about 5-5/8, and shingles laid with 5" exposure, this normally occurs about every eighth or ninth course of shingles, the buckled course usually following the same board part way or even all the way across the roof. With 8" sheathing, these rows of buckles follow a similar pattern except that the interval is generally 3 or 4 courses of shingles. With 10" or 12" sheathing, nearly every shingle course may show buckling."

Listed as one of the preventions of buckling due to shrinkage is: "Sheathing boards should not be over 6" wide." This article also includes an explanation of how swelling of roof boards may cause buckling. Diagrams are also included to further clarify the explanation of buckling as described in the article.

5. Plain Facts about Buckled Asphalt Shingles

Distributed by The Asphalt Roofing Industry Bureau.
Data in the brochure compiled by the research staff of the Philip Carey Co. (The information contained is similar to that of No. 4.) Several photographs are included showing buckling of asphalt shingles on existing roofs attributed to shrinkage and swelling of roof boards. Mention was made of a simple laboratory demonstration to produce buckling in a laboratory (mentioned in introductory paragraph of this Note).

6. Manufacture, Selection, and Application of Asphalt Roofing and Siding Products (1952).

Asphalt Roofing Industry Bureau, p.21.
"Deck construction and Repair - Wood decks should be made from well seasoned tongue and groove sheathing,

not over 6" nominal width. Wider boards will shrink in width under some circumstances enough to buckle any roofing material that may be applied to them."

7. Methods of Roof Deck Construction and Repair

American Builder, Feb. 1949, p.226.
"...The first step in construction of a wood deck for asphalt roofing is to choose fully seasoned tongue and groove sheathing or shiplap in narrow or medium widths. Wider boards will sometimes shrink enough to buckle any flexible roofing fastened to them." An accompanying sketch shows 1" x 6" matched sheathing as a roof deck.