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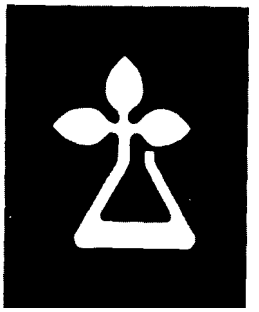

U. S. FOREST SERVICE
RESEARCH NOTE
FPL–088
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HOW TO MAKE A LAMINATED DIVING BOARD[1]

By

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U.S. Department of Agriculture

The Forest Products Laboratory has developed a laminated diving board that has shown excellent performance characteristics. This board has given long, economical service under the severe moisture hazards and heavy service conditions such as found at public swimming places. The adhesive used is of the fully waterproof synthetic–resin type, which requires no protection from moisture. The board is made from narrow strips of seasoned lumber and is fully equivalent to the premium–quality one–piece boards made from selected wide and thick stock.

Experimental diving boards made with the waterproof resin glues showed no appreciable weakening of joints during the life of the boards. The phenol resin glues originally tested by the Forest Products Laboratory and recommended, however, usually require elevated temperatures and kiln equipment for setting the glue. Boards joined with these glues, therefore, can be made only by manufacturers with such equipment. More recently resorcinol and phenol–resorcinol glues have become available that can be cured at room temperatures when used on softwood species and held under pressure for an adequate period of time.

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[1] This Research Note was previously issued as Forest Products Laboratory Technical Note No. 244, under the same title, originally dated 1940 and revised in 1958.

The instructions and drawings presented in this research note give the essentials for construction of a diving board. Deserving of special attention are the suggestions for protective matting and for the fulcrum or tup.

The laminations could be of nominal 1- or 2–inch stock and are tapered in width from 3 inches at the inshore end of the board to 1–3/8 inches at the outboard end, as indicated by the drawing. Suitable pieces can be conveniently cut by diagonally ripping 2 by 6's. Bolts should not be used to hold the laminations together. If the gluing job is properly done, bolts will not be needed and will, in fact, weaken the board.

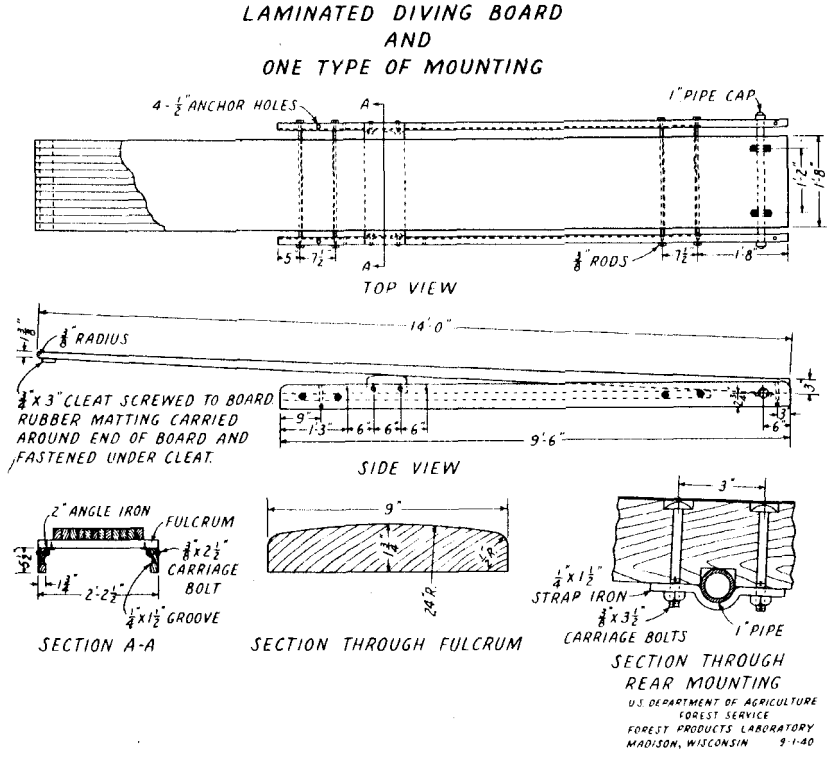
Clamps should be applied on the edges of the board to hold the laminations together throughout the length of the board at a pressure of about 150 pounds per square inch while the glue is setting. Clamps should also be applied bearing on top and bottom surfaces to prevent bowing and misalinement of the laminations, which would necessitate excessive dressing off of irregularities.

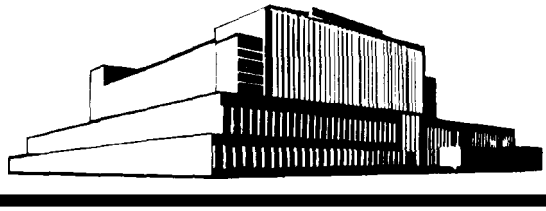
The matting, which covers the top surface, edges, and ends, can be glued to the board with a rubber–base adhesive. This matting may be either a low–grade rubber–type, which characteristically has a high percentage of fiber and tar, or one that consists largely of pure rubber, as do the better qualities of mattings. The function of the matting is to keep moisture from the board and thereby prevent serious cupping. fibber–covered boards have been used without further covering, but more satisfactory service is obtained when the usual type of coco matting is applied over the rubber. The slipping hazard is much less on coco matting than on rubber. If only selected flat–grain lumber is used, so that a truly edge–grain surface is obtained in the laminated board, the shrinkage and swelling in the width of the board will be held to a minimum and the board will remain flatter. In a carefully made board of this type the rubber matting might be omitted, and coco matting alone should be adequate.

The broad, slightly rounded fulcrum shown in the drawing lengthens the service life of the diving board. The common practice of using a 2–inch pipe crosswise of the board for a fulcrum creates almost a knife–edge line of bearing for the board and applies concentrated shock loads to an extremely limited area of wood fiber. The broad fulcrum distributes this load over a much wider area and reduces the chance of failure of the board at the fulcrum. The entire board can be shifted with respect to the location of the fulcrum to suit the desire of users.

Southern yellow pine was used in the experimental boards, but the system of construction described above is applicable to other species, Small knots are permissible in the laminations except in the top edge and for 2 feet either way from the center of its length.

No investigation has been made to determine whether the features developed for improving the service and lengthening the life of diving boards are patented. No assurance can, therefore, be given that others have not developed them inde–pendently and hold patents that cover them in whole or in part.





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