TECHNICAL NOTE NUMBER 244

FOREST PRODUCTS LABORATORY
MADISON, WISCONSIN

UNITED STATES FOREST SERVICE
AUGUST 1940

HOW TO MAKE A LAMINATED DIVING BOARD

The Forest Products Laboratory has developed two types of laminated diving boards that have shown pleasing performance characteristics and long economical service under the severe moisture hazards and heavy service conditions found at public swimming places. One type, made with phenolic or other resin glue, requires no protection from moisture. The other, made with casein glue, requires that the joints be protected by rubber matting. Both boards, made from narrow strips of seasoned lumber, are intended as a substitute for comparatively costly one-piece boards made from selected wide and thick stock.

Experimental diving boards made with the water-proof resin glues showed no appreciable weakening of joints during the life of the boards. Synthetic-resin glues, however, require kiln equipment for setting the glue. Boards joined with these glues, therefore, can be made only by manufacturers with such equipment. Necessary details of the operations with synthetic resin glues can be obtained from the Forest Products Laboratory.

Good boards of the second type referred to above can be made with cold setting casein glue by any wood shop. One board of this type gave 5 years' service at a public beach where conditions limited the service of boards previously installed to less than 1 year, meanwhile performing to the satisfaction of professional divers as well as the general public. The instructions and drawings presented in this technical note give the essentials for construction of a similar board. Deserving of special attention are the suggestions for gluing, for protective

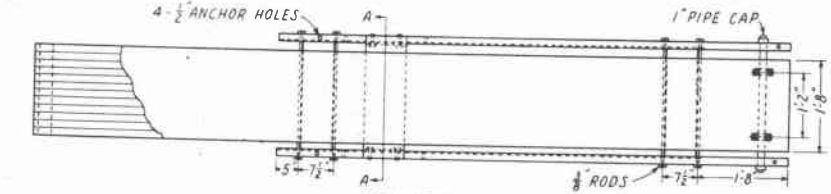
matting, and for the fulcrum or tup.

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

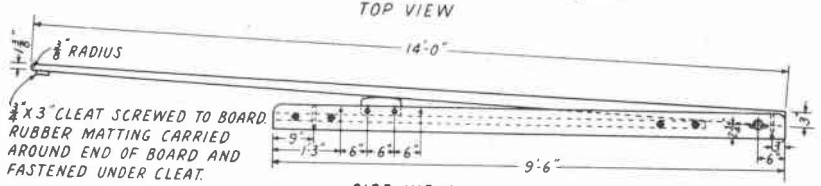
Clamps should be applied on the edges of the board to hold the laminations together throughout the length of the board at a pressure of about 150 pounds per square inch while the glue is setting. Clamps should also be applied bearing on top and bottom surfaces to prevent bowing and misalignment of the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

The matting, which covers the top surface, edges, and ends, should be casein-glued to the board. This matting should be a low-grade type of rubber matting, which characteristically has a high percentage of fiber and tar. That type of matting is preferable to matting made more nearly of pure rubber, as the better quality of mattings are hard to glue to the board and tend to separate from the board in large "blisters." The function of the matting is to keep moisture from the board and protect the glue joints from water. Failure to perform this function will result in opening of the glue joints and early failure of board. Rubber-covered boards have been used without further covering, but a 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.

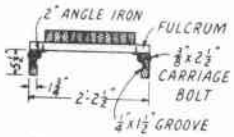
LAMINATED DIVING BOARD
AND
ONE TYPE OF MOUNTING



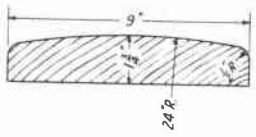
TOP VIEW



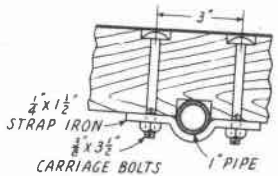
SIDE VIEW



SECTION A-A



SECTION THROUGH FULCRUM



SECTION THROUGH REAR MOUNTING

U.S. DEPARTMENT OF AGRICULTURE
FOREST SERVICE
FOREST PRODUCTS LABORATORY
MADISON, WISCONSIN 9-1-40

The broad, slightly rounded fulcrum contributes greatly to the length of service of the diving board. The common practice of using a 2-inch pipe crosswise of the board for a fulcrum, offers a line of bearing for the board which is practically a knife edge 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 is a safeguard against 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 2 feet of length on either side of the center of 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 independently and hold patents that cover them in whole or in part.