OPEN FORUM
PROBLEMS AND SOLUTIONS

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Reuse of Existing Forms

Q1: Can existing forms be reused or does every new precasting job require the manufacture of fresh forms?

A1: The answer to this question, of course, depends on the type of application the form is intended for. In the case of standard products, the same forms can be reused over and over again. (Note that some double-tee forms have been in constant use for more than 30 years!)

When a complex product shape is requested, frequently the only recourse is to manufacture brand new forms. In between, however, there is a wide range of possibilities. In most cases (and for economic reasons), it is prudent for the design engineer or precaster to ask the form manufacturer for an engineering evaluation as to whether the existing forms can be modified for reuse.

One good example of form reuse is the stadium tread and riser form. These forms are typically self-stressing and designed to cast single, double or triple riser seating units. Examples of typical double-L and double hammerhead or stemmed tread and riser seating units are shown in Figs. 1 and 2.

A specific project which nicely illustrates form reuse is the newly completed Louisiana State University Tiger Stadium East Side Expansion in Baton Rouge, Louisiana. After completion of the 11,000-seat addition in the summer of 2000, LSU's 75-year-old Tiger Stadium became one of the largest, on-campus football stadiums in the United States. Recently, it was honored by *Louisiana Contractor* magazine as the "2000 Top Construction Project of the Year."

On this job, Boykin Brothers, Inc./Louisiana Concrete Products asked Hamilton Form for assistance in modifying an existing 200 linear ft (61 m) self-stressing single-L riser form to cast the required tread and riser sections. The modifications consisted of designing new jacking plates for a revised strand pattern and adding stem fillers for different riser heights (see Figs. 3 and 4).

Another example of reusing existing forms can be found at Resch Center Arena in Green Bay, Wisconsin. Spancrete Industries of Waukesha, Wisconsin, will reuse a double hammerhead form originally manufactured for their Miller Park Project, which was completed in late 2000. Hamilton

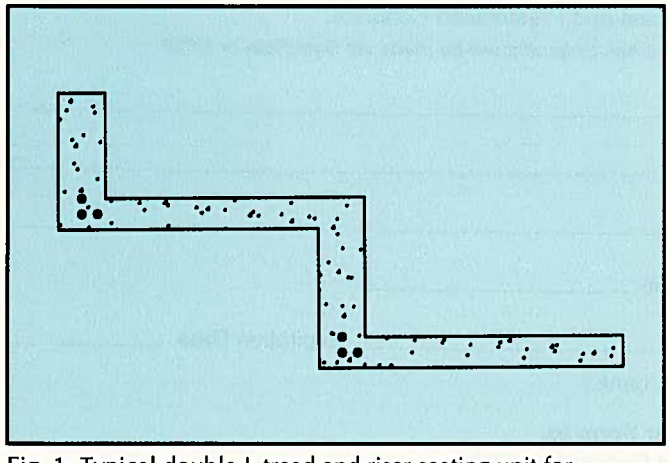

Fig. 1. Typical double-L tread and riser seating unit for stadiums.

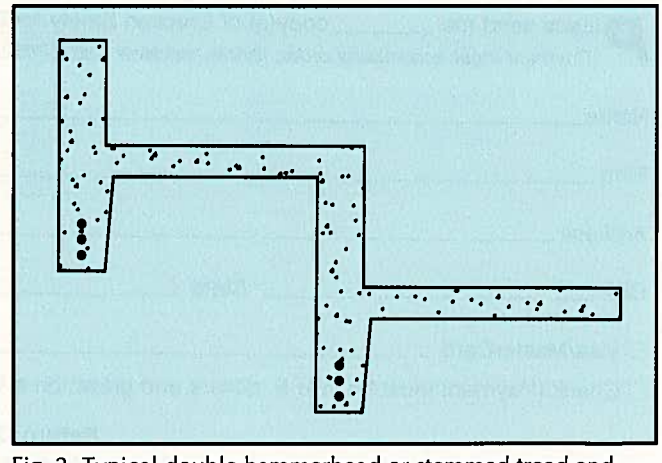

Fig. 2. Typical double hammerhead or stemmed tread and riser seating unit.

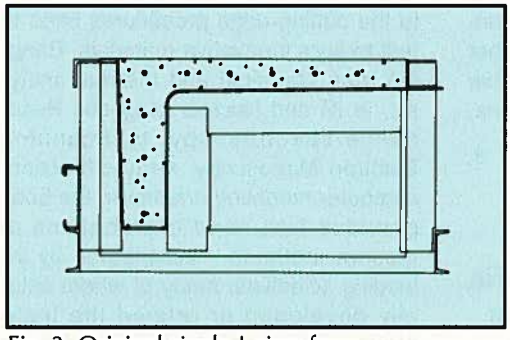

Fig. 3. Original single-L riser form.

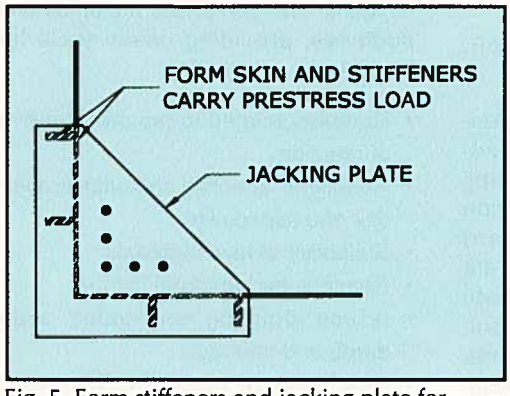

Fig. 5. Form stiffeners and jacking plate for L-shaped riser.

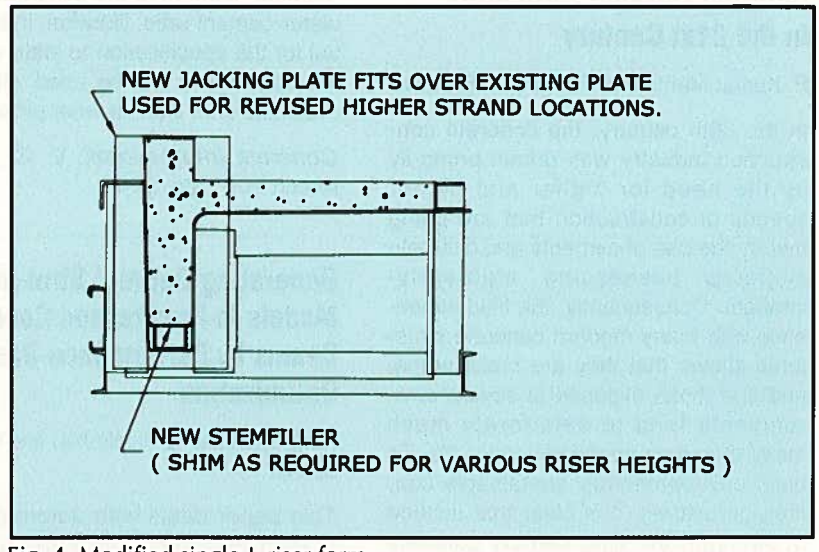

Fig. 4. Modified single-L riser form.

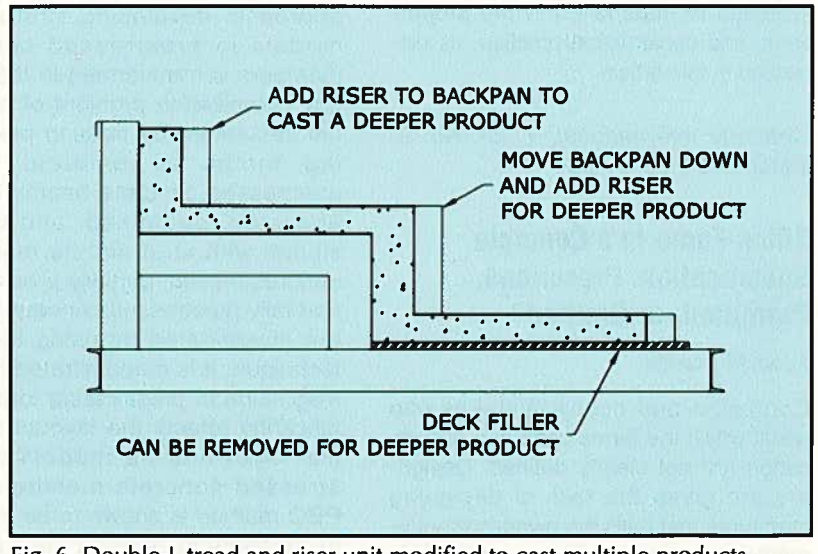

Fig. 6. Double-L tread and riser unit modified to cast multiple products.

Form engineers were able to design new jacking plates and stem fillers to accommodate revised strand patterns and product cross sections.

Whenever strand modifications are necessary, the precaster should always consult with his form manufacturer before increasing the number of strands or adding any new strand holes in the jacking plates. Strand quantity and location are major considerations in the design of a self-stressing form.

For example, in the case of an L-shaped riser, the jacking plate is designed as a beam that spans diagonally to transfer the prestress force to the form skin and stiffeners (see Fig. 5). Revising strand locations or adding more strands could exceed the stressing capacity of the form, resulting in failure of the jacking plate or form skin and possibly causing serious injury to personnel.

By adding or deleting deck fillers and risers on top of back pans, multiple products can be cast from the same form (see Fig. 6). As always, good communication between the precaster and form manufacturer is essential during the design process. Good planning up front will help determine the most economical forming solution and ensure a smooth-flowing casting operation.

For situations that require major modifications – especially with regard to changes in strand quantity and location, or significant changes in riser height or tread width – modifying existing forms may not be practical or cost effective. In such cases, the form manufacturer should be consulted.

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