Structural Connections

Why are Splices Important?

Cooling towers are typically of a size which necessitates splicing many of the structural members. These splices must be designed to transfer loads along discontinuous members with no loss of structural integrity.

Inattention to an appropriate design standard, and failure to exercise a consistent structural philosophy, can produce splices that will become failure points in the future.

What is Critical in a Proper Splice Connection?

The strength of a splice joint depends upon fastener capacity, fastener spacing and end or edge distance. The National Design Specification (NDS) for Wood Construction and CTI Bulletin STD-119 establish minimum allowable spacing as well as minimum allowable end and edge distances for fasteners. If loads are great enough to require shear plates in the joint (see Marley Difference Item S-3), minimum fastener spacing and end/edge distance must increase. Failure to observe these minimums can reduce fastener strength – and, therefore, splice capacity – by as much as 50%.

To the untrained eye, the splice shown in Figure 2 looks good. Six bolts, after all, would seem to provide a lot of strength. However, distances between bolts as well as end and edge distances are clearly contrary to the aforementioned standards. This splice is a possible candidate for premature failure.

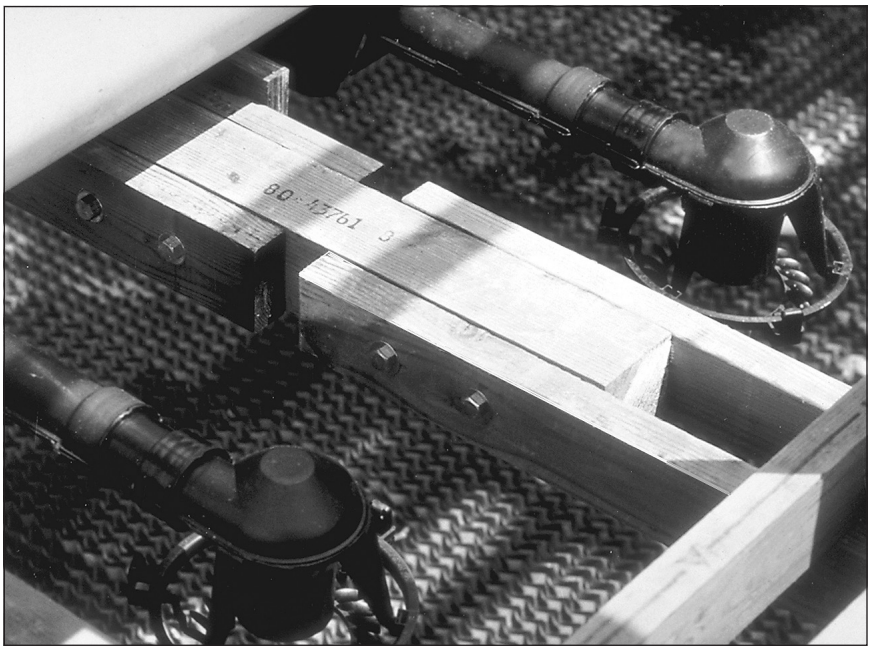

Figure 1–Marley splice joint

The Marley Difference

The splice pictured below in Figure 2 is capable of transferring only relatively small loads—and will have a limited service life. The Marley-designed joint shown in Figure 1 uses a combination of long splice members, good fastener spacing and appropriate end and edge distances to develop a far superior structural joint. Imbedded within all critical Marley joints are structural shear plates (see Marley Difference "Item S-3"). This commitment to design integrity provides long term value to our customers at minimal cost.

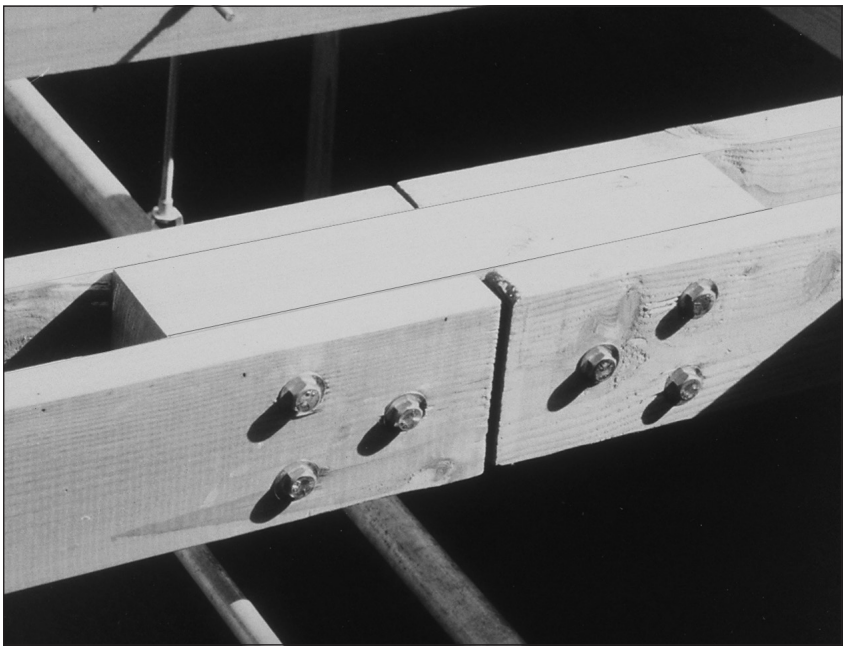

Figure 2–Poorly designed splice joint

How to Specify

Include in your specifications the following language:

The splicing of wood members shall be in accordance with NDS requirements, as well as those defined in CTI Bulletin STD-119, latest edition. Where loads dictate, shear plates shall be incorporated as part of the splice design.

Finally, inspect your tower during construction. Don't settle for less than quality design and workmanship.

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