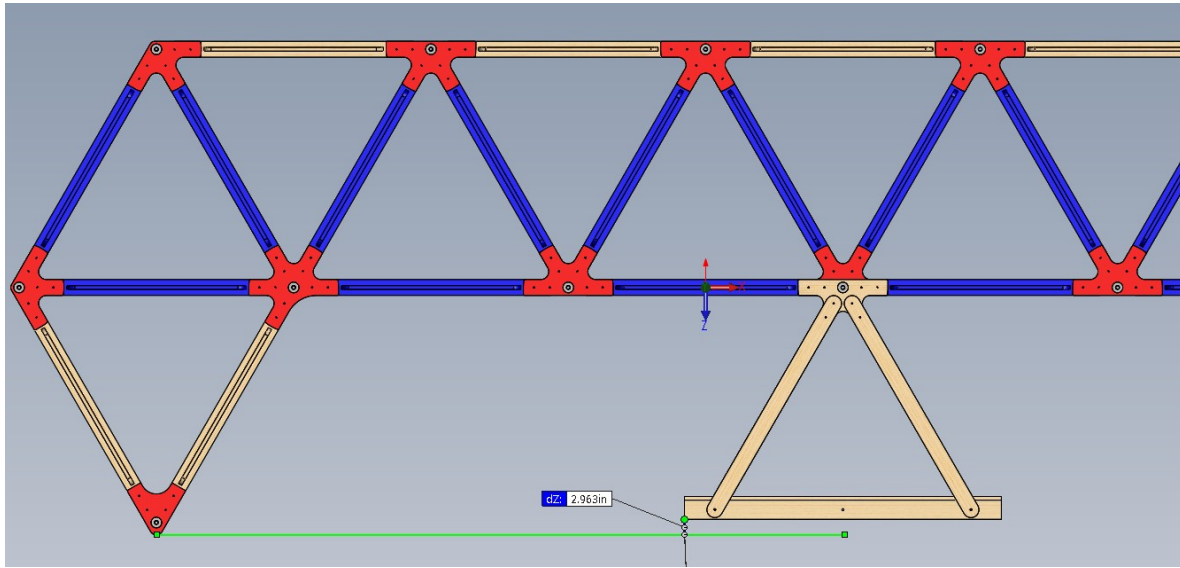


Solution in Designing Big Bridge

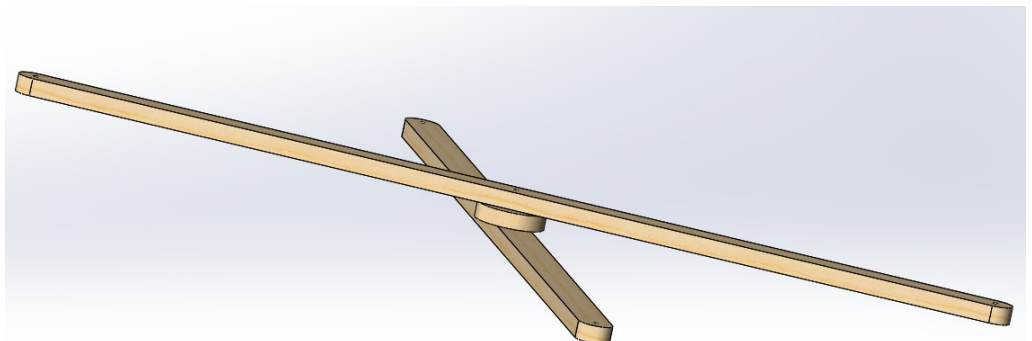
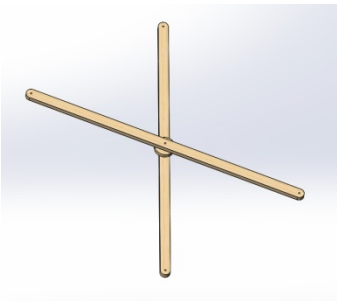
Corporal Willy, Tuesday, June 17, 2014

In time most problems can be figured out. Sometimes it is best to walk away from what you are doing and come back when the mind is no longer stuck in a groove, that it cannot climb out of. In trying to cross brace this Big Bridge Design it was necessary to do that "walk away" a few times. The bridge can stand up by itself but it cannot support any weight because of the inherent swaying that exists laterally with wind forces exerted perpendicular to the struts. This happens without any weight placed as a "dynamic or static loading" force that would be expected on a bridge. So a simple, easy to make, cheap and complimentary add in had to be designed. One of my solutions will be discussed here.

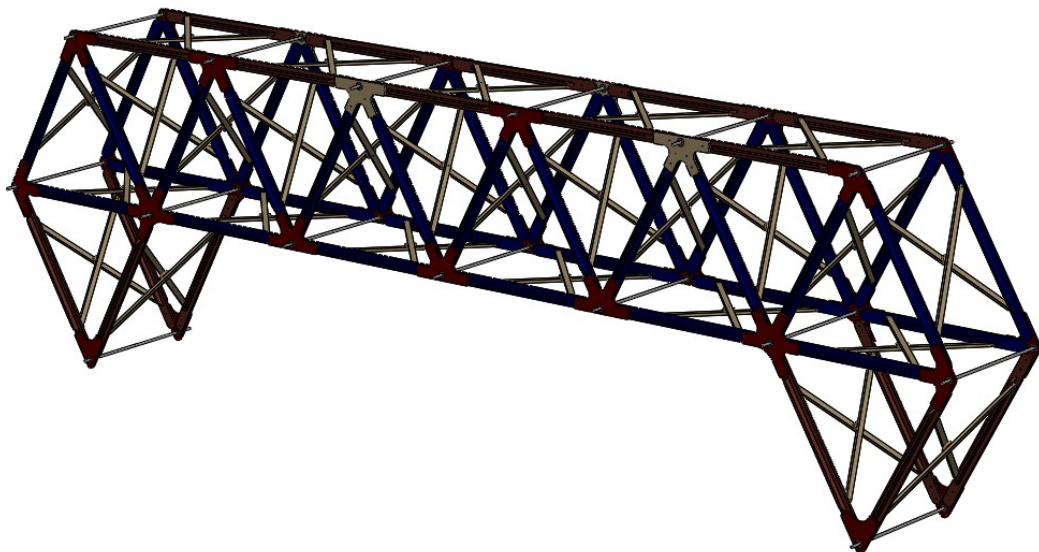
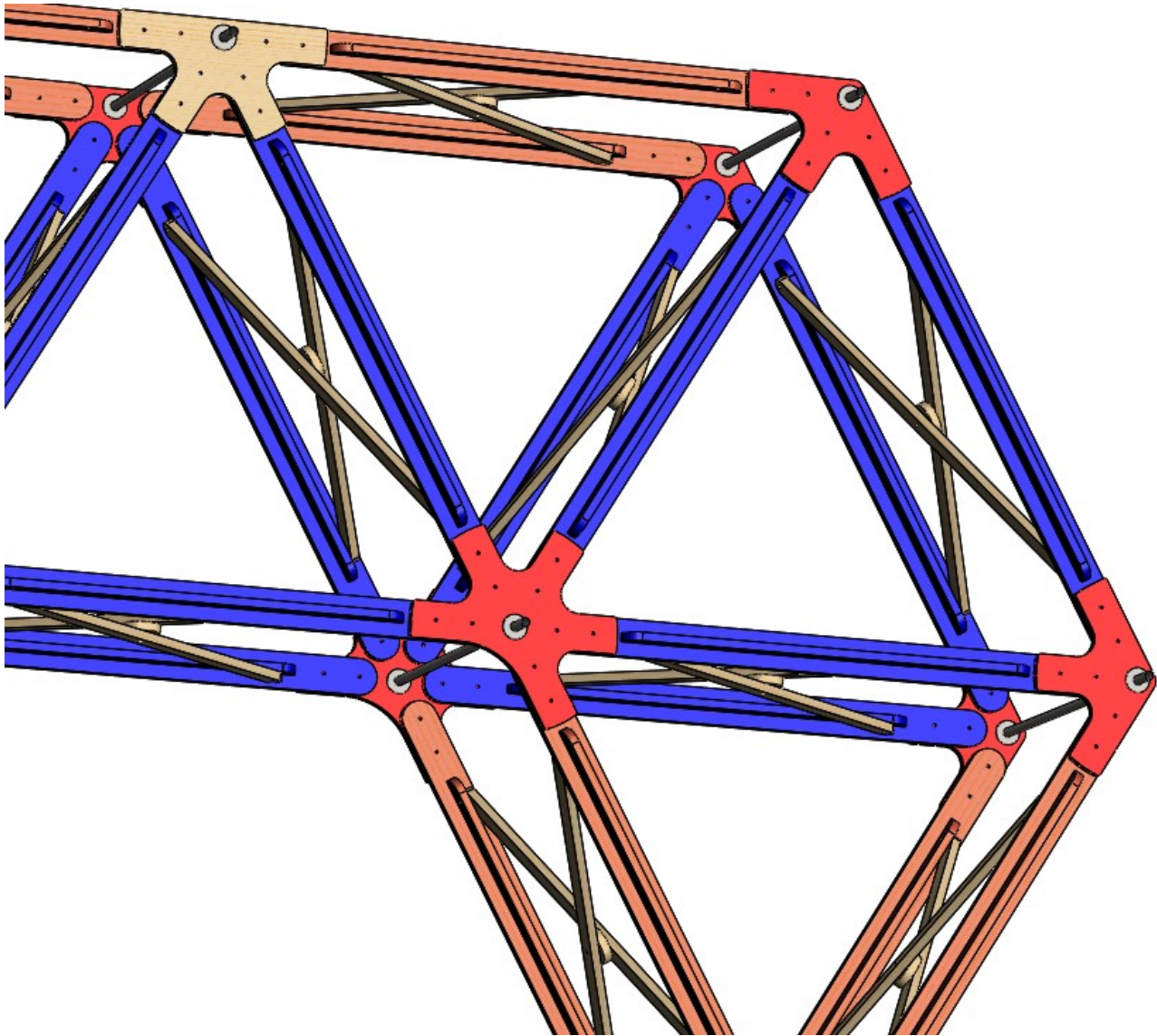


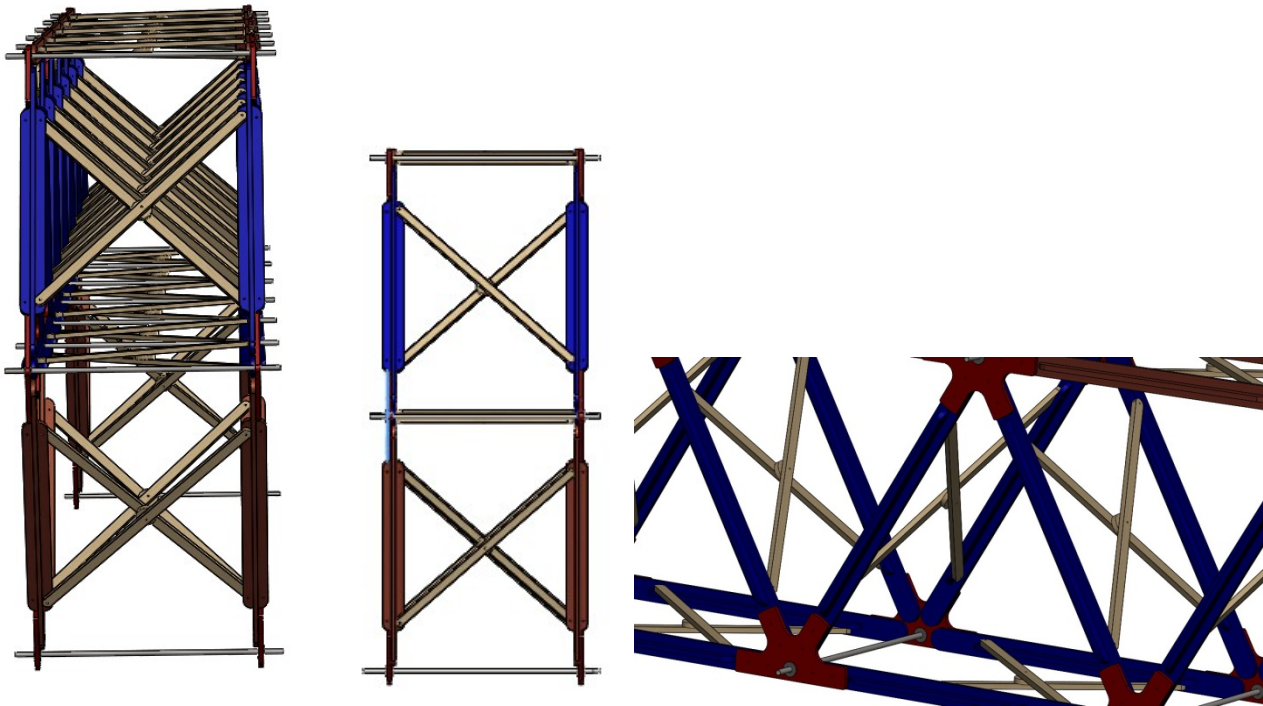
I am not sure that what I came up with is the perfect solution to the problem of stiffening up these struts so that they can take both a dynamic and static load force. My solution came quickly when I finally was able to think outside of that "groove" and the design was tried out on the bridge.

This is a simple cross brace assembly made from $\frac{3}{4}$ x $1\frac{1}{2}$ inch pine and referred to in the construction industry as "furring strips" and it has many uses. It will be used in this design to provide stiffening of the Warren Truss Triangles.

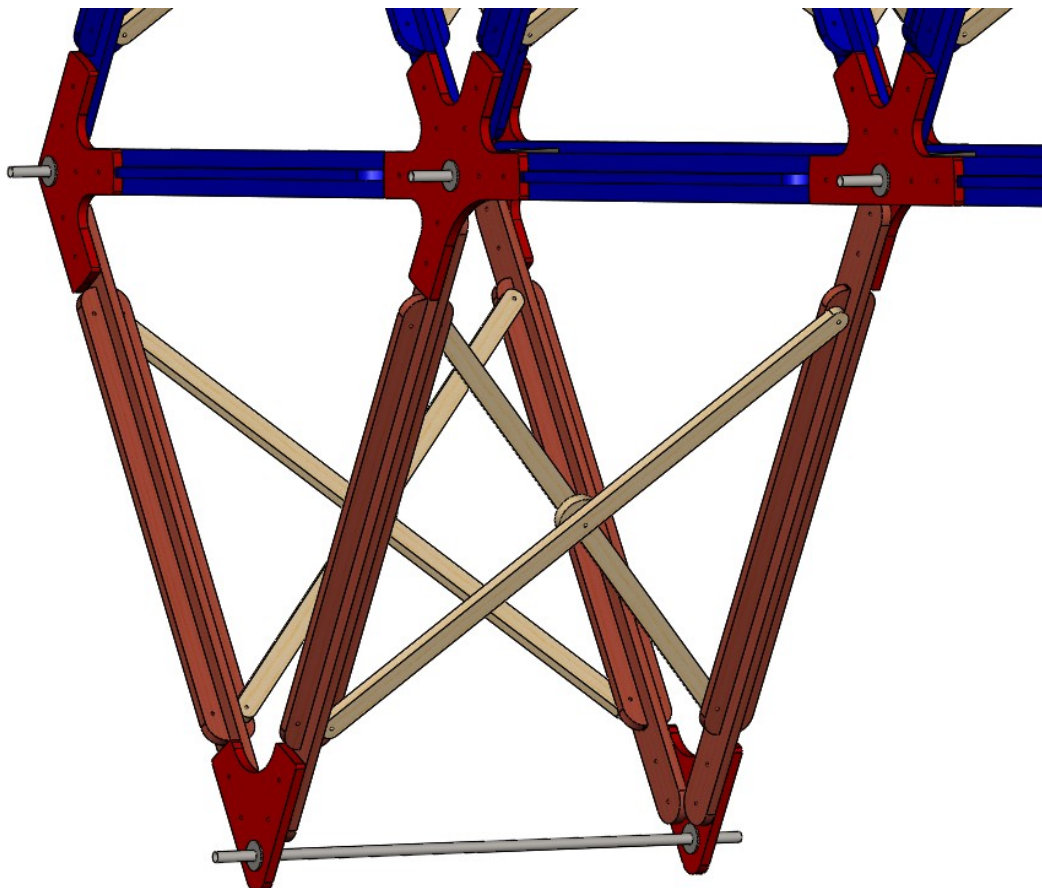


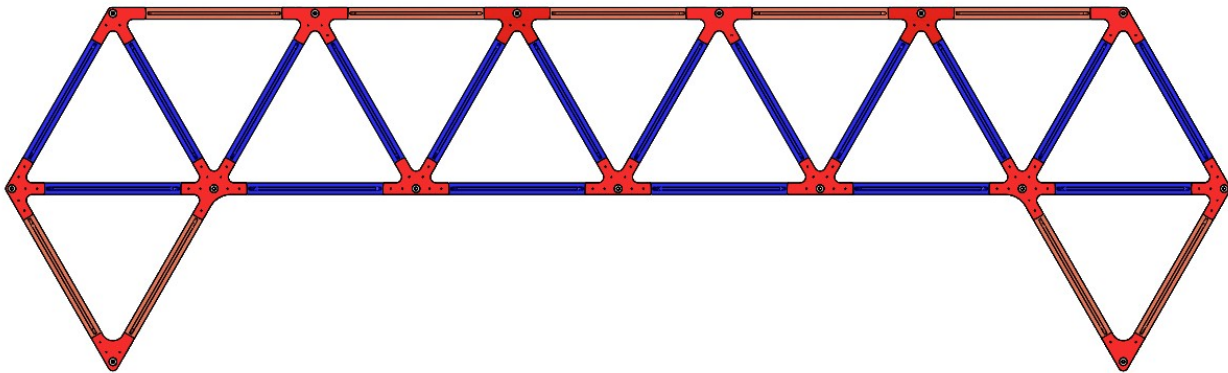
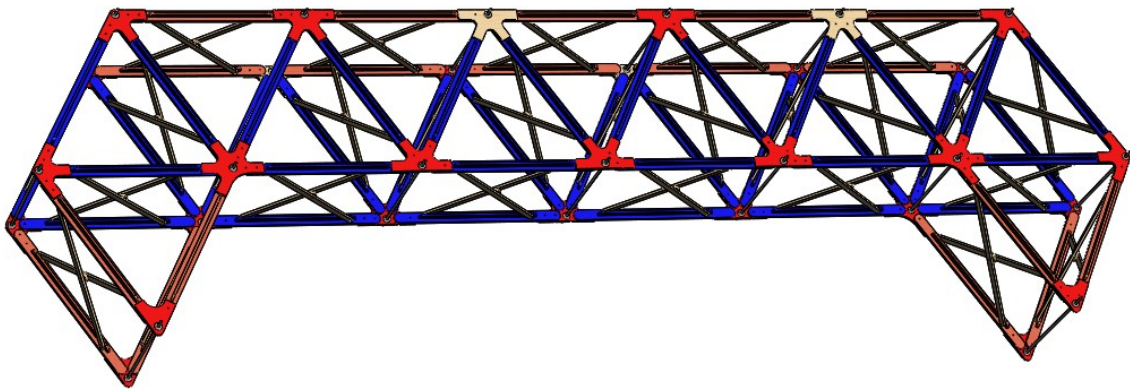
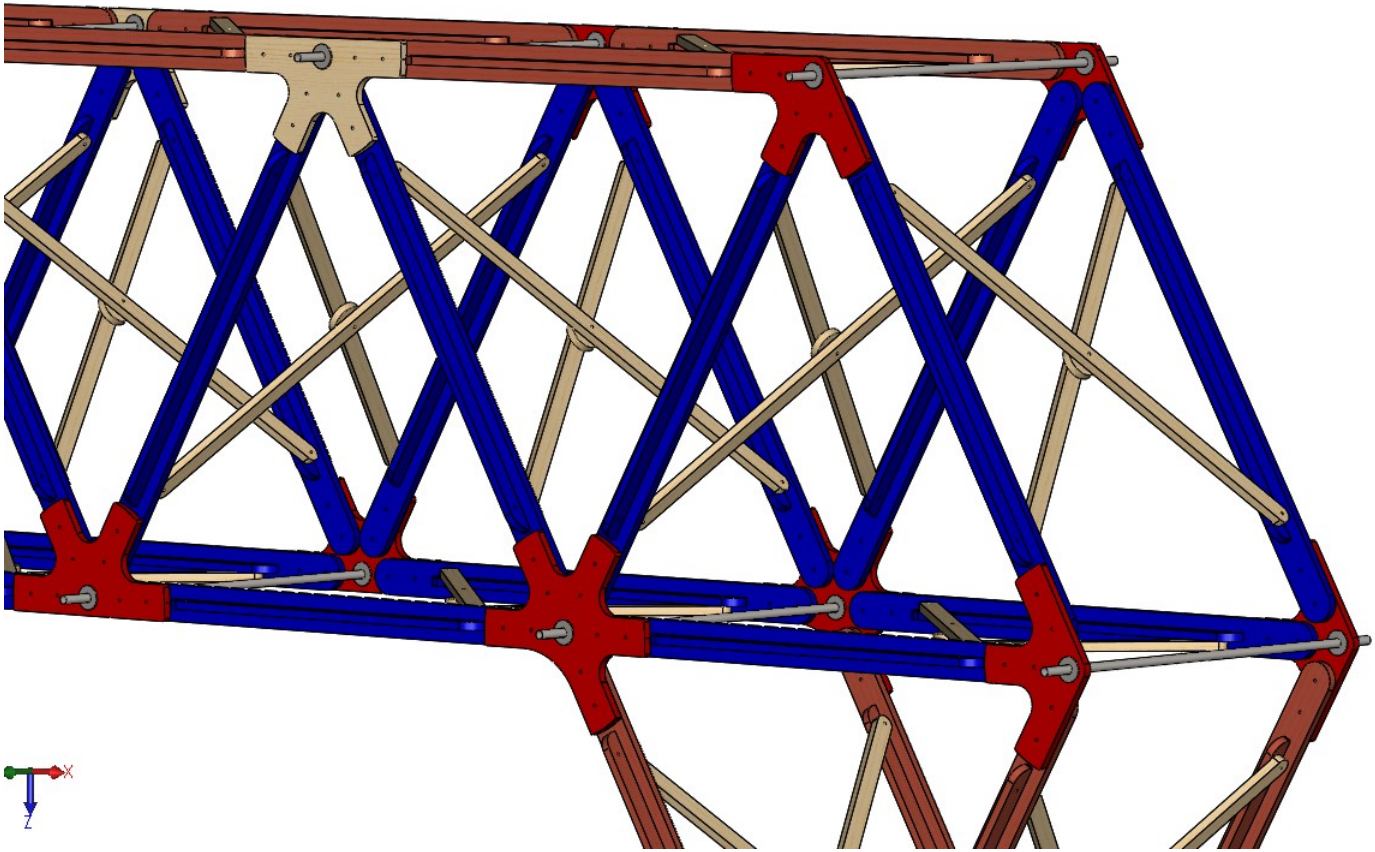
In my design application problem I strived to provide this anti-sway bracing without regards to how it would look and present itself as a bridge. The only metal used now on this bridge are the axles, pipe connectors and properly sized bolts, nuts and washers. You could also think of this as a "boxed truss" rather than a bridge. However, we will use the convention of Big Bridge to continue along with this design that will be tested at the University here in Las Vegas.





I have about two weeks to finalize my cross bracing ideas before I have to submit it to someone that is going to try an FEA analysis on this design. The problem I have is that my computer can only handle a small portion of this type of study and not the whole bridge. This is not the only cross bracing idea I have to play with. But so far it seems to be the most applicable and doable without much more building expertise and machining. The engineering word KISS keeps playing over and over in my mind and it is becoming more and more important to apply that word in my designs.





Comments, advise, sketched ideas, web references, all are welcome and please send them to: cplrich@cox.net