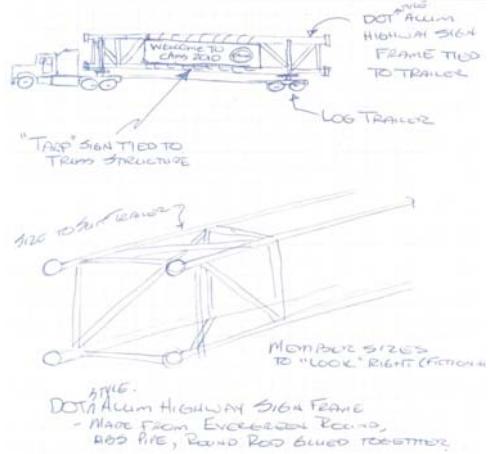


Building the Welcome Truss

For CAMS 2009, Bob built a display using two fire trucks hanging a welcoming banner for the show. With the 2010 show fast approaching, Bob showed the club the Peerless logging trailer by AMT that he had and talked about some ideas for carving the welcome from small trees. I got home from the meeting and had a thought that since Bob worked for DOT there might be a way to combine DOT and the log trailer into a project. I sketched some rough layouts using his trailer and a scratch built truss load of a fictional DOT highway sign and emailed them to him. From there our ‘secret’ project was born. Bob would build the truck and trailer and I would build the load and banner.

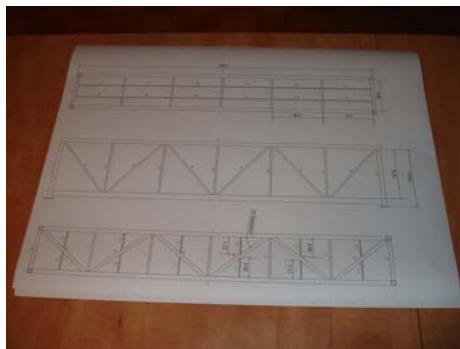


After thinking about the DOT truss for a while, I realized that it would be quite a chore to design, draw and build a truss from round sections. I work for Dynex Mfg, a steel fabrication shop, and I remembered that a few years ago we built a walkway link truss

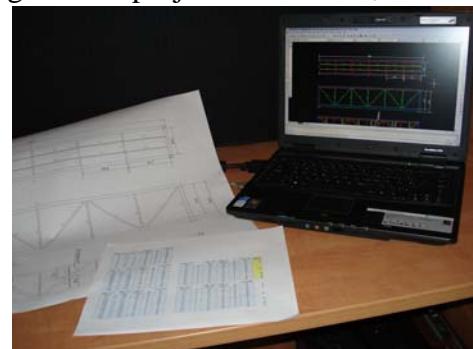


between two buildings at a local hospital. It was built in the shop and shipped to the site in one piece as an oversize load. I had never scratch built anything before and thought ‘How hard could it be?’ I was about to learn new respect for the scratch builders!

The first task was to locate a set of drawings for the truss. When I did, I realized that the actual truss scaled down to 1/25 scale was far too big for the project we wanted, so the



drawings would have to be modified. After looking through the scratch building supplies I had been gathering for over 30



years and checking out what was readily available for purchase, I realized that the member sizes of the truss for our display would have to be scaled down to suit what was available. In other words, new drawings would have to be completely made in the scale of 2/3 of 1/25. I also made cut sheets with a spreadsheet to determine just exactly what materials would have to be gathered.

Once the drawings were completed, I plotted them together and made a paper mock-up for Bob to use in building the truck and trailer (that way he would not be waiting on me if I got delayed).



Next came the cutting. I used a miter box with a razor saw to cut most of the parts.



Since some of the parts had an angle of more than 45 degrees, a jig for the razor saw had to be made.



The small parts were cut using a 'Chopper' from North West Short Line. To get the ends perfectly square or angled precisely, the 'True Sander' from North West Short Line was used.



Once the parts were cut, I realized that the walls of the tubes were very thin so splices in the butt joints of the chord members would be very weak. To remedy this, reinforcement to go inside the tubes was made. (Photo 10) It was interesting that I had some $\frac{1}{4}$ " tubes from 2 different manufacturers and one required sanding the $\frac{3}{16}$ " reinforcement piece to fit inside while the other required gluing some extra strips on the reinforcement piece to make it fit. Care should be taken in splicing



to make sure that the same make of tube be used on both sides of a joint.

At the joints where the tubes butt together, the tubes were filled on the ends to provide a good gluing area as well. In the photo it can be seen the before and after filling with styrene and the much better gluing area.



After all the parts were cut they were laid out for examination and a final check to make sure everything was made.



To glue everything together, I used the Tamiya Extra Thin liquid glue. This worked extremely well and provided strong joints and set up quickly. Before gluing, I made a base from a piece if 1/8" thick steel. I laid out a full size 1/25 print of the drawing on the



base and used magnets to align the pieces for gluing. Once the pieces were aligned, the extra thin glue was applied from the top by touching the joint with the applicator brush and capillary action pulled the glue throughout the joint. Where the cross members were in the center of the chord members, shims had to be placed under them prior to gluing.

Some of the joint detail is shown here.

The magnets and steel base were also used to align the sides with the top and bottom prior to gluing.



The completed truss, ready for paint.



All in all it was a very interesting project. In total there were over 150 parts made (sometimes numerous times) to complete the build. I chose not to put the decking on the truss so the details of the build would show.

This was my first attempt at scratch building and my first completed build in over 25 years. I used materials that I had been gathering for many years, some of the bottom members were 5mm Tamiya solid square stock that I have had for 25 years. It just shows that the old ‘you never know when I might need that’ excuse for buying and saving supplies might be justified.