

V.THEORETICAL VS ACTUAL RESULTS

In comparison to our pre-test analysis our truss unfortunately underperformed in the load it was able to bear. We predicted that it would take a load of 113.1 lb to break our truss, however it only took a load of 88.5 lb to do so. We predicted tensile failure at beam DE, but that was also not the case, as we experienced tensile failure in beam CD. We were not surprised by this failure at CD however, as that member had to hold the most weight. We made member CD specifically the widest beam so that it could handle this heavier load, and because of this width adjustment we expected failure to occur at a different member. Our calculations are for a 2D planar truss, and the structure was built in 3D. These calculations offer a good approximation but will not be exact. Some factors that were not calculated were that the truss testing device also supports the truss (we saw that for greater loads the members press up against the testing device) and that not all of our members were parallel to the xz-plane. We could have made spacers or something else to fix that issue, which could have played a role in the underperformance of our truss. I also believe that we should have had a consistent placement of the support screws on the truss tester; the support from the truss tester could have played a nontrivial role in our testing, so it would have been best to keep that a constant.

