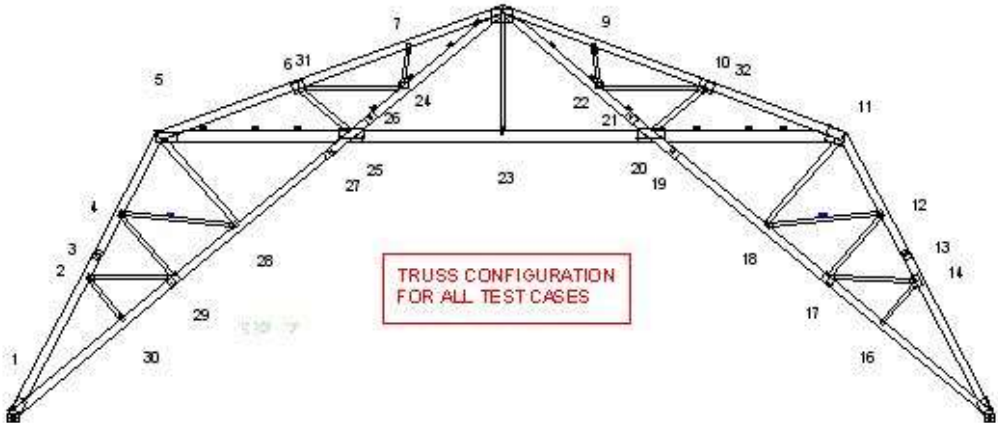


When you receive a set of plans that calls for a five or six piece assembly for a Gambrel truss, what to do next? This is a question we hear quite often in the MiTek Engineering Department. So let's walk through the steps to properly design the truss. First, the information that follows is based on what we have typically seen specified in plans and specifications provided to the fabricator from Advanced Storage Technology, INC. All assumptions stated here must be verified with what is called out in the plans. The fabricator needs to confirm the parameters to be used with the building designer prior to the design or fabrication of the components.

These types of trusses are to be designed with pinned-roller bearing conditions. Typically, the in-field bearing conditions allow for substantial horizontal movement at the bearings, thus reducing lateral thrust on bearing walls. The plans will have a bearing plate detail, and these bearing plates typically have a 3" slotted hole. This 3" slot on the bearing plate at each end of the truss allows for our first assumption in the design process, which is that the maximum allowable horizontal deflection is 6" total (3" at each end). Due to the highly corrosive environment of a salt storage building, the plates will need a recognized corrosive resistant coating as specified in ANSI/TPI 1. The plates will also be designed for a 20% reduction in strength which is best done by reducing the DOLs by 20%. (Don't forget to reduce your DOL's for wind and snow loading as well).

The plans will have all the necessary dimensions for you to input the truss. Once the truss members are input, the next step is to get a two-ply design to work. The main objective at this point is to make sure the lumber materials will work. All of the joints will need to plate as well. You may get a horizontal deflection limit exceeded note, but remember that with the bearing plates used in the field, you may be able to allow a horizontal deflection as high as 6" as explained earlier. Due to the nature of these trusses and the loading they are subjected to, it may be necessary to design the truss with lumber and plates not normally in your inventory in order to get a running model.



When you submit this working design to your MiTek engineer, we will review and come up with a final design which will include a bolted or screw connection detail and a detailed drawing showing the interior and exterior components and how they are to be assembled.

Please remember that the final assembly will be a five or six piece truss assembly, and it is advised that you have your design reviewed by your MiTek engineer prior to bidding.

Please be aware that recently there have been some plans in Virginia that call for a salt storage design but are not to be built utilizing this five or six piece composite design. If you come across a set of plans calling out a salt storage design that has a similar profile but is not based on this six piece assembly, keep in mind that these designs must follow regular truss guidelines (i.e. 6" horizontal deflection is not acceptable).

For additional information, or if you have questions regarding high arch gambrel salt storage design please, contact MiTek Engineering department.