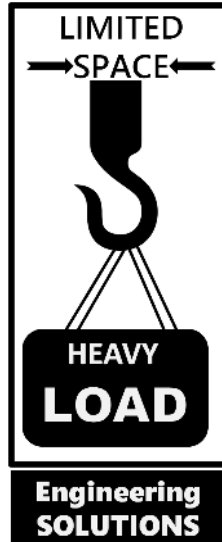


DSI ENGINEERING – COAL FIRED POWER

MONORAIL AND SUPPORT SYSTEM [W10233]

CHALLENGE: Engineer monorail and support system necessary for deaerator tank removal and replacement

SOLUTION: The design and selection of shallow, reinforced beams in conjunction with adding tank straddling support posts allowed for a successful tank removal and replacement.



In order to facilitate the removal and replacement of a deaerator tank, the construction of a monorail support structure was necessary. Space constraints required that the monorail be supported from the steel structure above the tank. The steel from which the monorail was to be hung was designed to support only the roof loads; therefore support of the tank by these members alone was not feasible. In addition, very limited head room existed between the roof beams and the top of the tank, limiting the options to reinforce these members.

DSI utilized the most shallow monorail beam appropriate to carry the load of the tank and chose low-headroom rigging equipment. This narrowly achieved the required headroom necessary, however left no room for reinforcement of the roof beams below the bottom flange. Instead of reinforcing the roof beams to allow them to support the entire lifted load, DSI designed posts to straddle the tank which allowed the load from the monorail to be shared between the roof beams and the

floor beams below, proportionally to their respective moments of inertia. Through this load sharing, appropriate ratios of added stress to allowable stress were achieved. The old deaerator was successfully removed and the new deaerator installed.

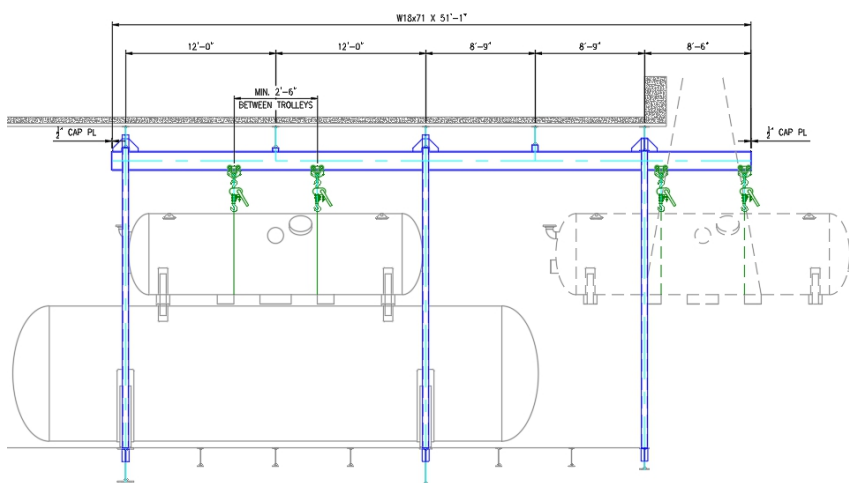


Figure 1: Elevation View – Monorail System

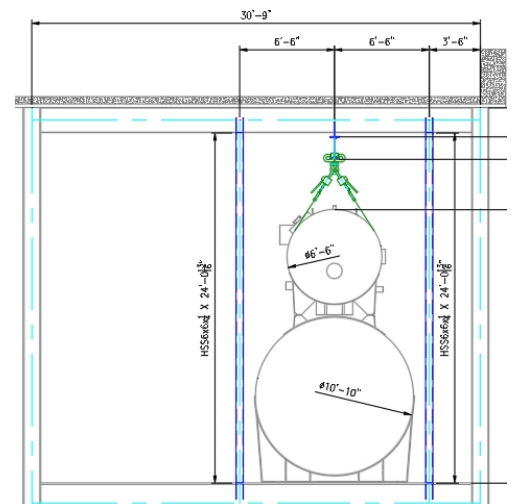


Figure 2: End View – Monorail System