Multiple Position Welding Platform

Overview
The Rockland Manufacturing Company makes a wide variety of custom attachments for construction equipment. Currently, the company’s fitting and welding departments depend on stepladders or a small, steel scaffolding for workers to reach welding areas. Each apparatus requires very awkward positioning or climbing onto the work piece. When 4 feet or higher, standing on the work piece is an OSHA violation as there is no fall protection. The project team was given the task of designing a work apparatus to allow easy access to a work piece while keeping the worker safe.

Objectives
Rockland wants a design for an apparatus that can reach a height of at least 60” and be easily moved and set up by one person. Due to Rockland’s wide variety of products, the apparatus must be adjustable to nearly any surface. Finally, the apparatus should provide necessary fall protection and eliminate any awkward working positions. Upon creation of a design, a prototype must be built.

Approach
• Basic preliminary design ideas were reviewed with Rockland’s manufacturing team.
• With a transparent design process with Rockland, project scope constantly stayed focused on Rockland’s project objectives
  o Preliminary and subsequent designs were reviewed with Rockland
• Multiple visits to the Rockland Manufacturing facility for on site measurements and observation
• CAD models created for the adjustable platform designs
• Prototype manufactured at Penn State using raw materials for the platform and railing and a purchased pallet stacker and step ladder

Outcomes
• Adjustable 62” wide platform
• 24 Unistrut sliding square tube pieces that allow for adjustment to any surface profile
  o Sliding members lock into place using Unistrut nut when weight is applied to prevent sliding
• Platform frame has been equipped with brackets to sit on the tines of height adjustable pallet stacker
• For platform access, a bracket to seat a stepladder was attached to stacker frame.
• 40” high railings provide proper fall protection