

Designing a knock box for the smaller packing facility: one structure for bison, cattle, swine, sheep, and goats.

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Introduction: Tonkawa Processing Corps. in Tonkawa, Oklahoma processes all sizes of animals, from sheep and goats to bison and cattle. Finding a structure suitable for this range of species is not only difficult, but expensive as well. A team from Dr. Weckler's BAE Senior Design class was tasked with designing and building a multi-species knock box.

Purpose: The purpose of this project was to design a knock box that would allow the safe and efficient harvesting of livestock processed at Tonkawa Processing Corps. The design needed to account for the small stature of sheep and goats and keep them restrained in the structure without a handler, while being large enough to hold cattle and bison and adjustable to prevent swine from turning around.

Methods: A meeting was held at the beginning of the design phase to inspect the current chute and its functions, and to discuss what the client wanted in the new system. Five design options were drawn up. After visiting the Robert M. Kerr Food and Agricultural Products Center and the new Tonkawa Processing Corps. facility, in addition to conferring with industry professionals and the client, a single design was finalized. Fabrication will take place later this semester.

Results: The final design utilizes a standard rear swinging gate, one slanted side that can be squeezed in on a track system that allows chute width to vary between 12-30 inches, a head gate with an extruding head space, and one full length swinging side panel. This side panel includes two smaller gates that allow the chute length to be shortened significantly. This project will conclude with a safer, more efficient knock box installed at Tonkawa Processing Corps.

Significance: This design meets the need faced by a majority of smaller packing facilities when it comes to harvesting more than one species. Serving a diverse group of local producers means harvesting a more diverse group of animals. This design allows Tonkawa Processing Corps. to have the system that meets each of their needs.

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