Dry Forage Transportation Solution

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Dry Forage Transportation Solution
Client: ISU Beef Nutrition Farm, Ames, IA

Problem Statement
- The ISU Beef Nutrition Farm has no way to transport multiple large round hay bales from the field to the storage area on the farmyard in one trip
- This results in many trips from the yard to the field picking up one bale at a time

Objectives
- Build a frame on an existing running gear that will securely hold 11 large round bales (approx. 8.25 tons) during transport
- Considerably reduce the time it takes for farm employees to collect bales from the field after baling
- Create a versatile design that can haul either round or large square bales

Constraints
- Initial (flexible) budget of $1000
- Must be ready to use by the first hay cutting of 2020
- Must hold 11 large round bales
- Frame should be painted to prevent rust

Scope
- Hay rack solution design
- Material selection and acquisition
- Fabrication and assembly of proposed solution
- Project delivery

Methods/Approach
- Communicate with client about needs and initial ideas
- Brainstorm several product variations based on client criteria
- Design hayrack to client specifications on CAD
- Finalize bill of materials
- Fabricate hay rack and paint
- Present finished product to client

Major Deliverables
- Final Report
- Final Poster
- Complete hay rack

References
- Eden, Levi. Hay rack design fundamentals
- Howe’s Welding. Material consultation
- TSM 443 Course materials

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