Hydraulic Tilt Trailer

Trailer Division

Fergus of Lewistown FFA

Levi Poser and Trace Martin

Constructed for Fergus FFA Alumni – Mel and Becky Jackson

Construction Dates

January 10th 2020 – March 15th, 2020

September 1st 2020 – July 31st, 2021

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Inspiration and Product Use

The construction of our tilt bed trailer was born from a request by Fergus FFA Alumni Mel and Becky Jackson and their son Robbie. Mr. Long, our Ag teacher, developed a welding fabrication class that allows us to think creatively and enhance our mechanical abilities developing large projects. They came to us with a need to more efficiently move their skid steer around their ranch. Part of their inspiration is to decrease spending money and time renting tilt bed trailers from our local rental facility. The Jackson family needed a trailer to their skid steer and implements as well logging equipment and small agricultural machinery. They agreed to provide and pay for all materials necessary to complete the project.

We modeled this project after a PJ Tilt Trailer. During our initial client meeting Robbie brought a PJ he asked us to model. He discussed things liked about the trailer and other pieces he wanted changed. Removable fenders and a tilt were exceptionally important. We duplicated the basic trailer design and modified components to meet the clients need.

Career Relevance

We started the year building adjustable jack stands. The jack stands had to be welded in position and welds had to be 1” long and spaced 2” apart. Perfection and professional quality were expected and that set the stage for completion of our trailer. Mr. Long was very particular about the quality of work we completed. If pieces were done poorly they were redone until they were perfect. The most important lesson learned was the ability of to complete work professionally. We are college and career ready because we have the ability to think critically then use ours hands and create something magnificent. We do not simply weld stuff together anymore. We create projects with purpose that provide us with skills to pay the bills. Specific skills we learned include thinking one step ahead of where you are. This prevented us from redoing what was done to make room for the next step. We learned how important keeping things square are to the success of the project. By keeping things square we were able to work more precisely and without fault. We also learned that we are capable of doing more than we think we can. By challenging ourselves and thinking bigger we able to fill our proverbial tool box with tangible and hirable skills.

Bill of Materials

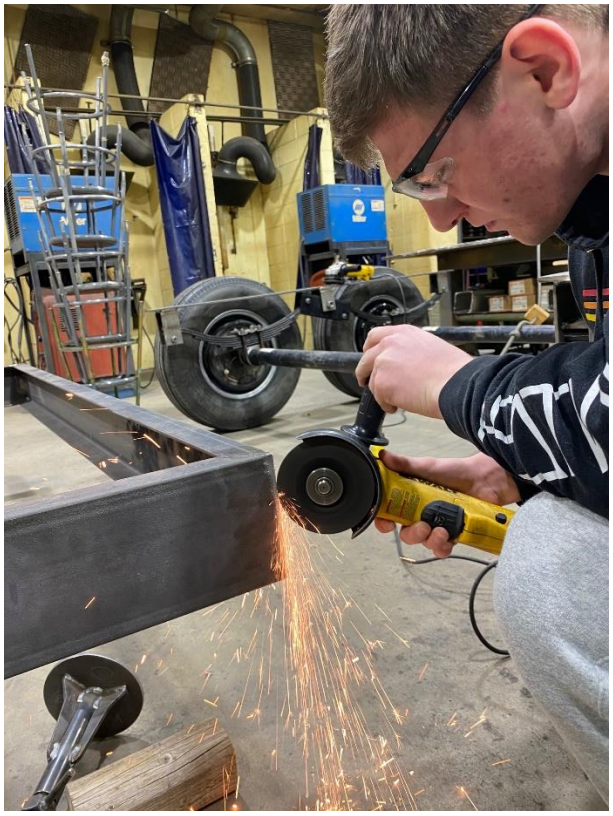
As previously stated our clients purchased and provided EVERYTHING we needed to complete the project. We were simply able to provide the clients with materials we need and they provided them immediately.

Steel 1. 6” Channel 2. 3” Channel 3. 2”x4” Rectangular tubing 4. 2”x2” Square tubing 5. 2”x3” Angle Iron 6. 4’x8’ Sheet of 3/16” Tread plate 7. 1” round tubing 8. Expanded metal 9. 3/4” plate	$2100
Trailer Parts (axles, wheel, wiring harness, lights, jack) 6 Robles)	$1295
Paint (Centruty Construction)	$3200
Lumber and Deck Screws (Bloedorn Lumber)	$541

We used the plasma cutter to notch the angles in the tongue of the trailer. The heat created from the plasma cutter allowed us to bend the tongue pieces to an angle of 155 degrees.

Perfection was expected on every cut and weld. When pieces were not cut appropriately they were measured again, marked correctly then recut.

When we created the running gears we clamped them to a piece of 6” square tubing. The Root pass was 6011 then capped with 7018. Arc welding with this method will help ensure a long lasting product.



Corners were all cut out with a cutoff wheel so the filler metal from the welder could burn in deeply to the base metal. This also provided a high quality weld as well.

The running gears were assembled early in production. This allowed us to build a base for the rest of the frame.

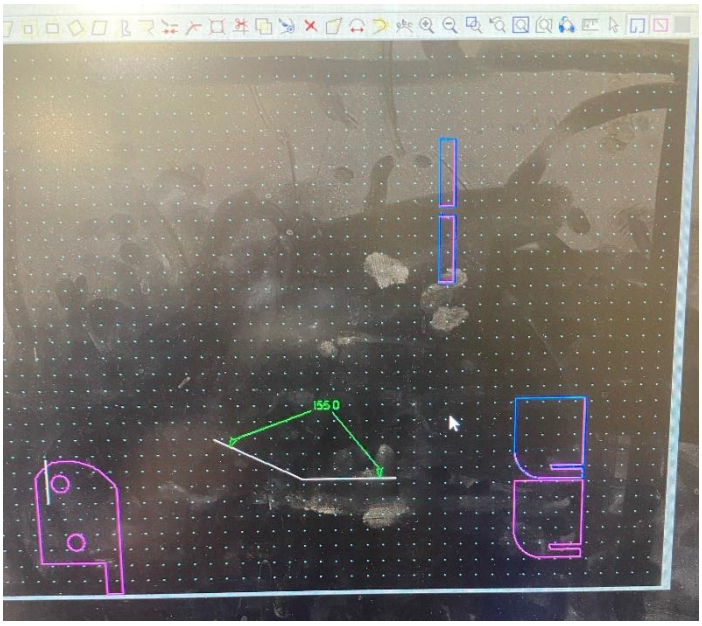
We created our own brackets to hold the pipe that the tilt of the trailer. These welds had to be burned in well and great care was taken to ensure their quality.

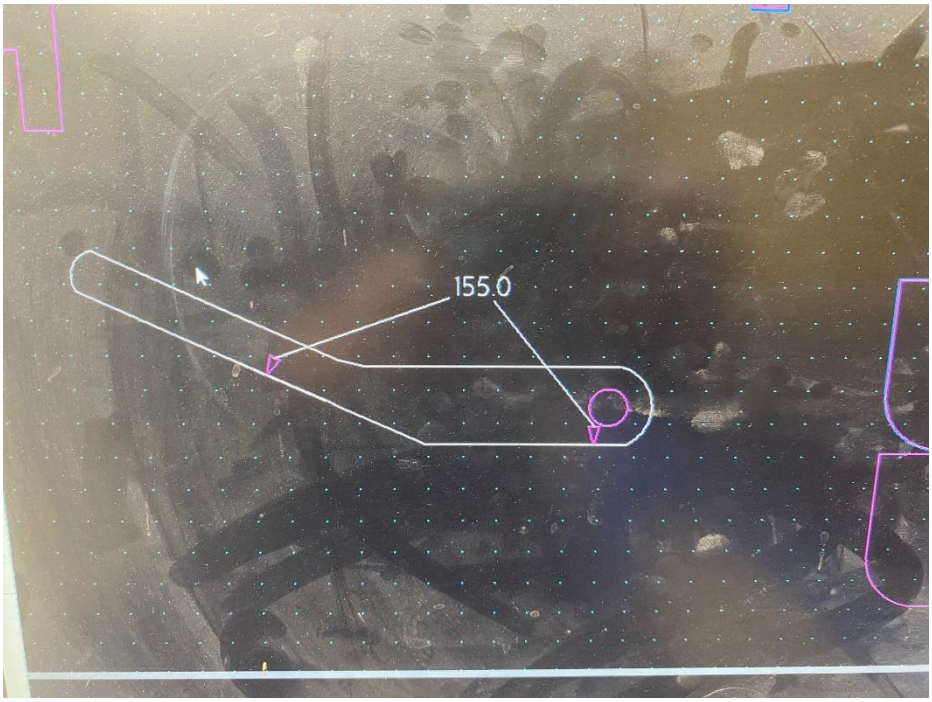
Once the running gear and tilt was attached it became clearly obviously the axle setup the customer desired was going to make the trailer too tall. We had to change plans to fix the height of the trailer and angle of the tilt.

To fix our height and angle problem we purchased drop axles then cut and sleeved them to fit the desired width of the trailer. The holes in the sleeves provided more surface area to burn holes into the axles.

The trailer was flipped upside down so we could arc weld the tongue and the bed together with 6011. The integrity and quality of these welds was critically important.

Precision and quality were executed to the highest degree. All welds and brackets were evenly spaced to provide a sound and aesthetically pleasing product.





PlasmaCam was utilized to design many of the components on the trailer. This added another level of learning to the project.

Off to paint and finished painted product. OSHA regulations prohibited us from being allowed in the paint booth to actually paint the trailer ourselves.