Among the most famous artifacts in the museum are the first four tractors built by the Steiger Brothers in the late 1950's. Steiger #1 was built for about $10,000 and had 200 flywheel horsepower.

Museum Celebrates Bonanza Farms

During the late 1800's, the prospect of acquiring and operating rich farmland in the Red River Valley of North Dakota and Minnesota created large tracts known as Bonanza Farms. In 1954 the Cass County, N.D., Historical Society was organized to preserve that history for the ages. Over the past 70 years, Bonanzaville has grown into a popular tourist attraction on 12 dedicated acres that houses more than 400,000 educational items and numerous pieces of farm equipment and vehicles in 40 buildings.

Much of the Bonanzaville site appears as a pioneer village, with dozens of historic buildings that have been moved in and authentically reconstructed.

"Anybody with even a slight interest in the history of this region or farming in general will love Bonanzaville," says Beth Jansen, the museum's executive director. Asked what draws the greatest interest, she thinks it might be Engine 684, an 1883-era steam engine. Other high-interest displays include the Brass Rail Saloon and Hotel, the Houston House mansion (moved from an original Bonanza farm site) and other tractor and farm equipment displays.

Among the most famous artifacts in the museum are the first four tractors built by the Steiger Brothers in the late 1950's. Steiger #1 was built for about $10,000 and had 200 flywheel horsepower. The second tractor, Tiger, had about half that horsepower.

These powerhouse tractors worked thousands of hours on Steiger farms and were completely restored in the mid 1970's. Today, Steiger #1, Tiger, Cougar and #4 are still operable and make appearances each year at the Western Minnesota Steam Thresher's Reunion, the annual Big Iron Farm Show in Fargo, and at other regional parades and events.

In 2019, Bonanzaville attracted visitors from all 50 states and a half dozen foreign countries. While the COVID pandemic reduced traffic over the past two years, Jansen anticipates high numbers again in 2022.

Along with the restored period buildings Bonanzaville has 10 modern buildings with various themed displays: Eagles Air museum, Eugene Dahl Car museum, Melroe Tractor Building, Moum Agricultural Building, and the Railroad Museum.

Contact: FARM SHOW Followup, Bonanzaville, USA, 1351 Main Ave. W., West Fargo, N.D. 58078 (ph 701-282-2822; www.bonanzaville.org).

Hitch can be taken off so the trailer can be used at its original capacity.

Trailer Modification Lets Him "Stack" Trailers

Alaska-based FARM SHOW reader Ken Brewer has invented a "patent pending" mount for a larger trailer designed to haul a smaller one on top of it.

As he explains, "This is a 2-in. ball hitch that can haul my 4-wheeler trailer. I can put my snow machine on there and haul my machine sled simultaneously. It's a U-shape - you can pin it on the bottom."

This unconventional design makes it easy to transport equipment of varying sizes. "In Alaska, there's a lot of stuff you need to transport," says Brewer. "It's a big problem to tie down a trailer when going over rough roads, so this hitch system helps keep everything secure." Hauling small trailers on a larger one can be convenient because it prevents the smaller ones from flopping around the road or fishtailing during turns.

By design, snowmobile trailers have bars that go across. When you put the machine's skis up near the front, you can lock them down with this bar. Brewer used that same hole and designed the hitch, so it is long enough to extend into it.

Brewer isn't making any permanent modifications to the trailer but instead is using the existing hole. This means that the hitch can be taken on and off so the trailer can be used at its original capacity.

Brewer's trailer hitch is made of a 1/8-in. steel plate, 1-in. square tubing, and a 2-in. ball hitch welded together and installed using the existing tie-down crank handle. This works for a 4-wheel trailer as well as a snow machine sled.

The hand crank ties this mount into the trailer, which is where the mount usually goes across to hold down the skis.

"This hitch is easy to make. A flat plate and a ball hitch - that's all I used," says Brewer.

Contact: FARM SHOW Followup, Ken Brewer, 1701 Tamarack St., Fairbanks, Alaska 99709 (ph 907-452-2919).

Made-It-Myself Automated Laser Leveling

Brian Laine hacked a rear-mounted laser receiver to automatically level his 3-pt. blade. Previously, he had to turn around to watch the receiver getting its signals from a tripod-mounted rotary laser. At the same time, he had to adjust the back blade with its 3-pt. control lever.

Laine used the output from a laser reciever to make his own leveling system.

"We were redoing a horse arena that had a rock base with about 2 1/2 in. of sand that needed to be graded to a tolerance of plus or minus a 1/2 in.," says Laine. "I could do it manually, but it was very slow and cumbersome, and the hydraulic control wanted to move in larger increments than I wanted, making it more difficult."

Laine noted the receiver could be fitted with an optional remote display. Thinking he could tap into that to adjust the blade automatically, he contacted the manufacturer. They refused, so he tackled the job himself. He used an oscilloscope to decode the pulse train on one of the pins on the remote output. This gave him the information needed to tap into the signal and use it.

Laine certainly has more than the average electrical engineering ability and tools, but the job still took months. He had to explore and make circuits, modify equipment, make a handheld receiver and 3D print a faceplate for it.

His first step was to replace the top link on the 3-pt. with an electric 12-volt actuator that could move two tons. This required machining Heim (3-pt. connections) joints for the actuator. The 8-in. stroke and the joints gave him the length needed. He also had to install a switch on the actuator so it could be run automatically from the controller he planned to build and from the receiver.

Other components he needed to assemble included an electronic circuit board added to the actuator. It would be the central core. Cabling would run to the laser receiver, a handheld control, the actuator motor and sensor and a power source.

"I wanted the handheld control to plug straight into the laser receiver instead of the actuator," says Laine. "This would allow it to serve as a handheld repeater (remote display), even if the installation didn't have the actuator."

He used high-quality cabling, matched the circular connector shape on the laser receiver and used 4-pin and 7-pin, male and female connectors. His power source was a connector tied into an off/on switch on the dash also used for his sprayer attachment.

"I was nervous about the power capacity of the connector," says Laine. "I cabled to an XT connector at the actuator. The XT takes a lot of power and is available in hobby shops for radio-controlled rigs."

Designing the central core circuit board for the actuator was key. He used a 3D printer to create a horseshoe-shaped enclosure for the electronics that could be mounted on the actuator cylinder. The circuit board was also horseshoe-shaped.

Laine used solid-state devices (MosFETs) to control the cylinder power and to serve as the core for the cabling needed. The most complicated part of the circuit was some digital logic to prevent the handheld and the actuator switches from sending different (in/out) directional signals at the same time.

"I put in a 20-amp breaker just in case and mounted the XT underneath the enclosure," says Laine.

For the handheld control, he used an off-the-shelf enclosure with a rubber boot, sized to be held in one hand. A removable panel at one end was for cable input. Laine 3D printed a replacement sized for the cable he was using. He wanted the handheld to allow him to see what the laser was doing, control the actuator and provide automated actuator control.

Top link on 3-pt. replaced with 12-volt actuator.

To accomplish all this, he had to install a microprocessor to read and decode the signal from the laser receiver. He also included a switch for power off and manual or automated control. A spring-loaded switch, as well as a 2-button switch, controls up and down. The switches remain active while in automatic mode, so the operator can override the computer.

Hand held control for laser leveling system.

LEDs display power on, whether the actuator is being commanded to go up or down, whether manually or automatically. Laser receiver arrows are replicated with a green LED indicating the back blade is on target or red for a need to move up or down. If the direction LED blinks, it shows a major correction is needed.

An ohmmeter built into the circuit board reads a signal from the actuator indicating extension distance.

Laine also made provisions on the circuit board and microprocessor code for saving a position, saving high and low travel limits and returning to a saved position. For simplicity's sake, he left them off the control but notes that they could be added later.

"With waiting for parts and design changes, it wasn't as simple as I thought, but I've learned a lot," says Laine.

Contact: FARM SHOW Followup, Brian Laine, 7921 Wade Rd., Arlington, Wash. 98223 (ph 425-879-2890; brianlaine@aol.com; www.lainefamily.com).