

Case Study #2: Trackside Industries

One of the most common things we must do as route designers is to provide access to trackside industries our railroad serves. This access can be anything from a simple freight platform to a large, multitrack industrial area. This tutorial will discuss setting up two such areas, and although we'll be using a cattle ranch as our industry, the same principles apply for other industries.

We'll start simple, by picking up cattle at the Crown cattle ranch. Crown is a single-track spur that allows local trains to pick up cargo by backing into the sidetrack. Our ranch uses the Cattle Feedlot, <kuid2:50567:10027:2>, from Trainz Pro Routes, one several cattle related industries they have available on the download station. The Crown ranch access is right off the mainline, so the local may be required to uncouple part of it's consist on the mainline while it services the ranch.

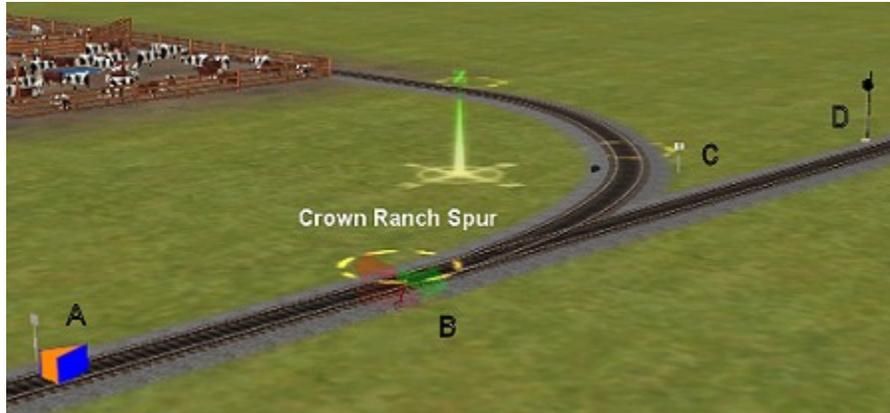
Once we get Crown up and running, we'll visit Mesa Valley ranch. That industry uses the more complex, Feedlot Industry, <kuid2:50567:10713:2>, from TPR, which allows both cattle pickup and deliveries of hay bales and pallets of cattle feed. Locals that service Mesa Valley also make stops at other ranches, and since Mesa Valley is the farthest one from the yard, it includes a turnaround loop. That allows trains to drive in headfirst, make their pickup or delivery, and then head back toward the yard, stopping at the other ranches along the way.

Then we'll modify Mesa Valley a bit, situating it on one side of a double-track mainline, requiring a crossover to allow opposite-side trains to reach the industry.

As with other parts of Midwest Central, AI trains can service the ranches on the Crown/Mesa Valley run. So, along the way, we'll discuss some of the special issues involved with AI operations.

Crown Cattle Ranch

As noted earlier, Crown ranch sits just off the mainline track. Check out the drawing below: (For this tutorial, I've squeezed things together so you can see them a bit better.)

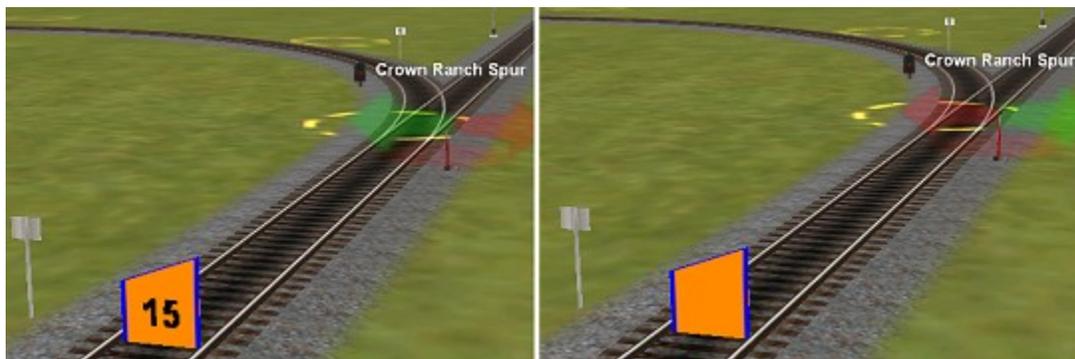


Trains that service the ranch approach from the right, run past the switch and then reverse into the sidetrack. Those of you who've read other tutorials in this series will immediately recognize the blue and orange ISS (Invisible Speed Signal) at "A" in the drawing. Check out that tutorial for further information.

As we discussed in the earlier tutorial, the ISS allows us to set a speed limit thru a turnout. In the drawing above, let's say the mainline speed is 55. When our train approaches from the right, it has a speed limit of 55. After it stops to the left of the switch, it will back into the sidetrack, still with a 55 speed limit unless we do something to change it.

We can and have placed a speed limit sign just inside the industry, at "C" above. This is a prototypical way to do it, but it will do nothing to keep AI trains from taking the turnout at a far higher speed than they should. They won't even "see" the speed limit sign until they reach it.

By using the ISS, we can tell trains entering the industry to slow to a more realistic speed.



I won't repeat setup of the ISS here since we covered that in the earlier tutorial, but notice in the left drawing how the speed limit is 15 for trains taking the left route thru the switch. The right picture illustrates

that trains going straight thru the switch are unaffected.

When you place the ISS, keep it fairly close to the switch. Why? Because when AI trains reach the switch, they typically stop one to two car lengths past the switch points. With that in mind, you need to place the ISS so it is between the train and the switch.

Finally, there's one other thing to note from the drawing above: a second speed limit sign just to the left of the ISS. Why is it there? Well, trains in the industry have a speed limit of 15. That's fine, but unless we do something to restore the mainline speed limit, trains *exiting* the industry will continue at the same restricted speed until they reach the next speed limit sign—even if it's miles down the track. We certainly don't want that, so we make it a practice to place a speed sign just past every industry, to make sure that trains leaving the industry get back up to mainline speed as quickly as possible.

Signaling Crown Ranch

Whether you signal an isolated sidetrack like Crown depends your railroad's operating practice. It also depends on how busy your route is. If the traffic is only one train per hour on this stretch of track, a signal to protect the industry may not be necessary. On the other hand, if things are busy, you might need the signal to protect the local as it services the industry.

Let's talk for a minute about where to place the signal. Normally, you'd expect to see a signal just short of the switch, like "D" in the first drawing above. That might be okay if the sidetrack is long enough to hold an entire train. But if the engineer has to uncouple part of his consist on the mainline while he services the industry, you might want that signal. Furthermore, the signal should be placed at least a train length from the switch, as shown at A below, to protect the rear of the train.



As noted earlier, I've squeezed things together here to make them easier to see. So if you typically run 20-car cattle trains, you'd need the signal at "A" to be further down the track.

One other thing: When you lay out your industry, be sure to allow plenty of track on the *other* side of it.



In the drawing above, the mainline is out of sight to the left of the picture. The loading zone for the cattle industry is at A. When you give an AI-controlled train a "load" command, the entire train *including the locomotive* must be able to back through the loading zone toward B. That means the distance from A to B above should be at least as long as any consist servicing the ranch, *plus* two-three car lengths, since the train will not back up all the way to the track-end barrier, but will want to stop some distance from it. Give yourself plenty of room.

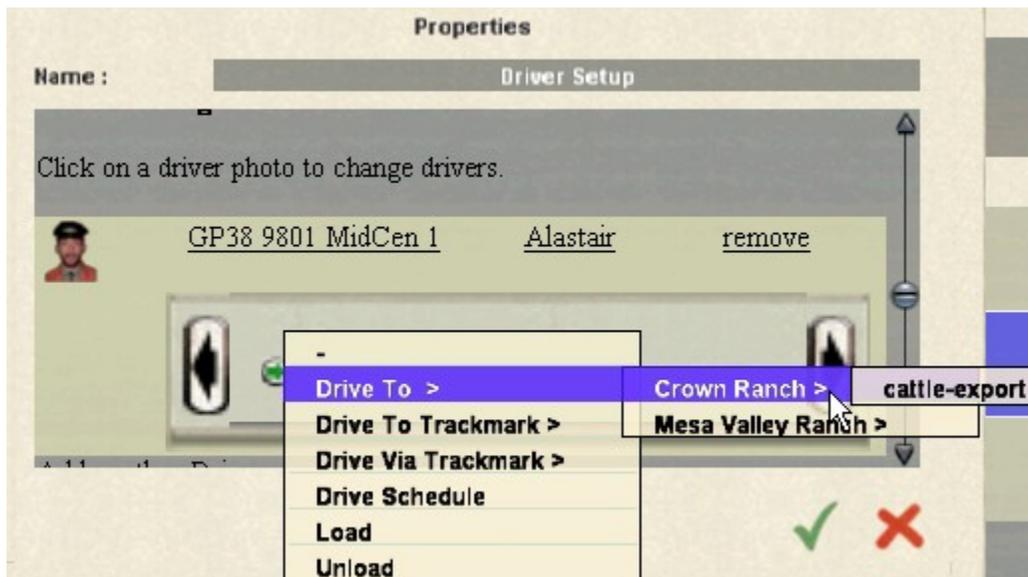
Loading AI trains at Crown Ranch

Sending trains to Crown is quite simple. In Surveyor, you click on the edit symbol near the top of the screen:



When the window opens, select “Driver Setup” and then “Edit.”

After choosing your locomotive and driver name, click the green dot, and choose where you want your train to go, in this case the “cattle-export” platform of Crown Ranch.



Once the train arrives at Crown, we have to tell it what to do. This time we select, “load.”



Our completed schedule will look like this:



In setting up our schedule, we'll want to add more destinations for our train as well. For example, after stopping at Crown, we might want to have the train go to Mesa Valley and do a pickup there, then continue to the meat packing plant. Each of those destinations needs a separate command for our driver, such as:

Drive to... Mesa Valley ranch, cattle export
Load
Drive to... Meat Packing plant, cattle in
Unload

Picking up a consist at Crown ranch

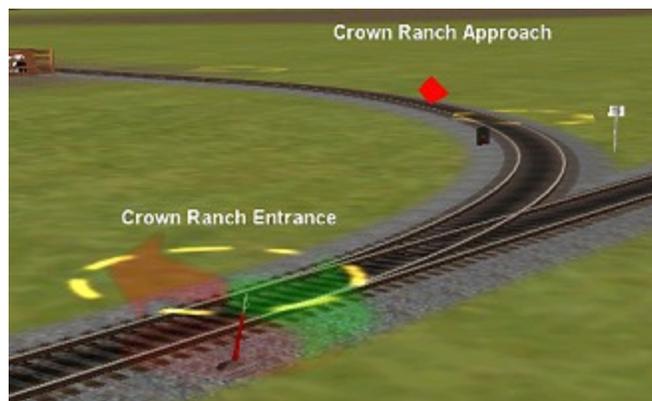
Things work a little differently when the industry is already occupied. Let's say a previous local has left four cars at Crown to be loaded by the shipper. Now our train has to stop and pick them up.

We could tell the train to "Drive to Crown Ranch" and then "Couple *car number*." There is, however, a problem with this method. If you issue the "Drive to..." command, the train will try to go all the way to the ranch loading zone. But since the loading zone is blocked, it will stop short of the waiting cars and refuse to move any further. See the error message in the picture below.



So, we can't use a "Drive to..." command when the destination track is already occupied. Most of the time, you can just use the "Couple" command by itself, relying on the game's AI to find it's way to the car you want to pick up.

If, however, your route is complicated, or the distance to the destination is great, you could also place a trackmark just inside the industry, to help the train find it's destination.



With the trackmark in place, you issue a 'Drive Via Trackmark...' command, then your "Couple" command.



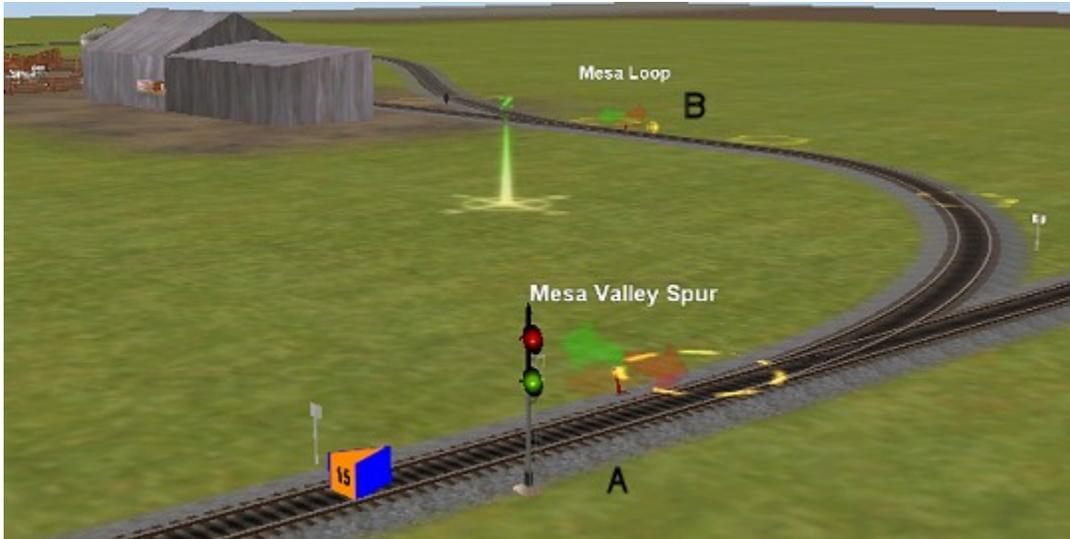
Either method works fine, and the train will move right up to the waiting cars and couple to them.



A brief word about trackmark commands and then we're done with Crown. There are two types, "Drive to Trackmark," and "Drive Via Trackmark." When trackmarks originally came out, the only one was the "Drive to" command, where the train goes to the mark and stops. As route designers began using trackmarks as waypoints on the route, however, they didn't want the train to stop, but continue to the next destination. So, one of the service packs added the "Drive Via" command, where the train merely passes through the trackmark without stopping, a very useful upgrade to the game.

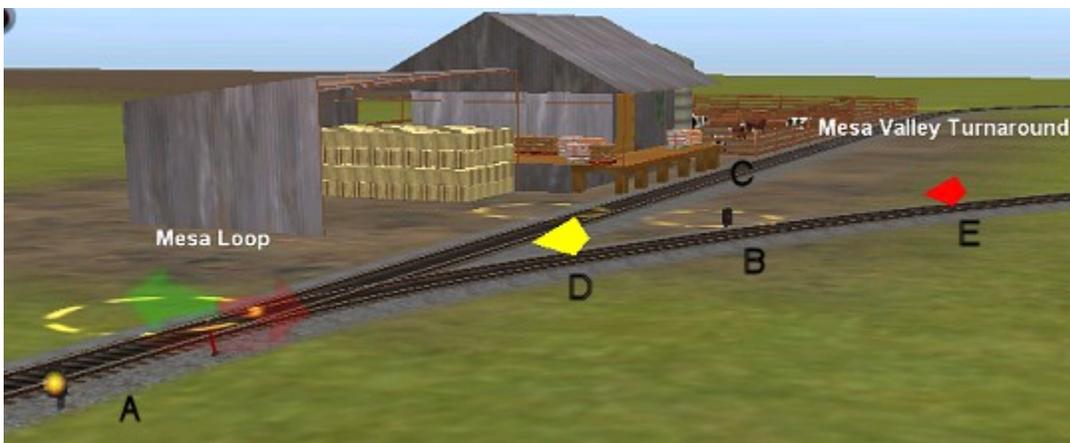
Setting up Mesa Valley Ranch

At first glance, Mesa Valley appears similar to Crown.



There are, however, some differences, most notably the extra turnout at B and the reverse loop inside the industry. We've also added an "L02" signal at A, primarily for trains approaching from the left bound for the industry. As with Crown, whether you use the mainline signal is up to you, depending on the traffic load and your railroad's standards.

Now let's take a closer look at the industry itself.

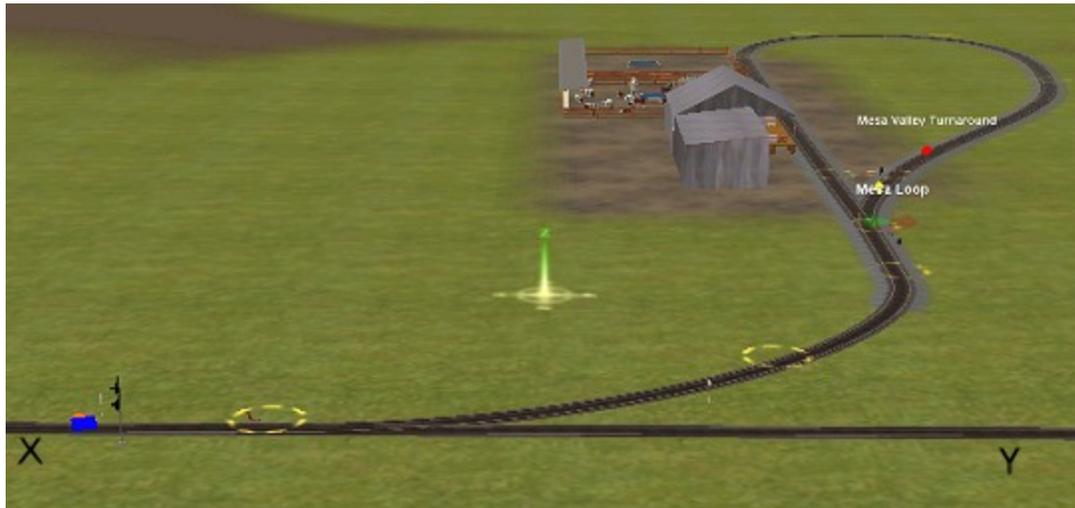


Well, things are looking a little more complicated now, but let's take it a step at a time. First, we have the ranch itself. The Feedlot Industry has two loading zones, one of them at C, where trains unload hay bales and pallets of cattle feed. The other, behind the word "Mesa", is where cattle are picked up.

Notice the yellow directional arrow, at D. Why is it there? Its primary purpose is to force trains to take the straight-through direction of the switch. Said another way, all trains entering the industry must take the main industry track from A to C. We do, however, have one

complication.

Let's say our train has completed loading or unloading at Mesa Valley. Which direction do we want it to go next? It depends on how the train entered the industry. Check out the drawing below.



Let's say the first train to enter the industry is delivering hay bales and cattle feed. That train approaches from the right, at Y. To make its delivery, the train runs by the switch at X, then backs into the industry to unload. Now, after unloading, we want the train to continue to the yard, so it pulls out of the industry headfirst, continues past X and on to the yard. It does not take the reverse loop.

An hour or so later, a cattle train approaches from the left, passes X, then drives headfirst into the industry. After loading the livestock, we want the train to go around the loop, exit the industry and head back toward the yard. That's where we have a problem.

Let's say the train is sitting at the cattle-loading zone. If we tell it, "Drive to...Yard", it will back out of the industry and proceed to the yard in the reverse direction, believing that is the shortest route. How do we prevent it from doing that?

We do it by providing a trackmark near the end of the reverse loop. The trackmark is called, "Mesa Valley Turnaround." (If you look back at the close-up drawing of the industry, you'll see it at E.)

We then command the train to drive via the trackmark before heading to the yard. The driver setup might look like this.

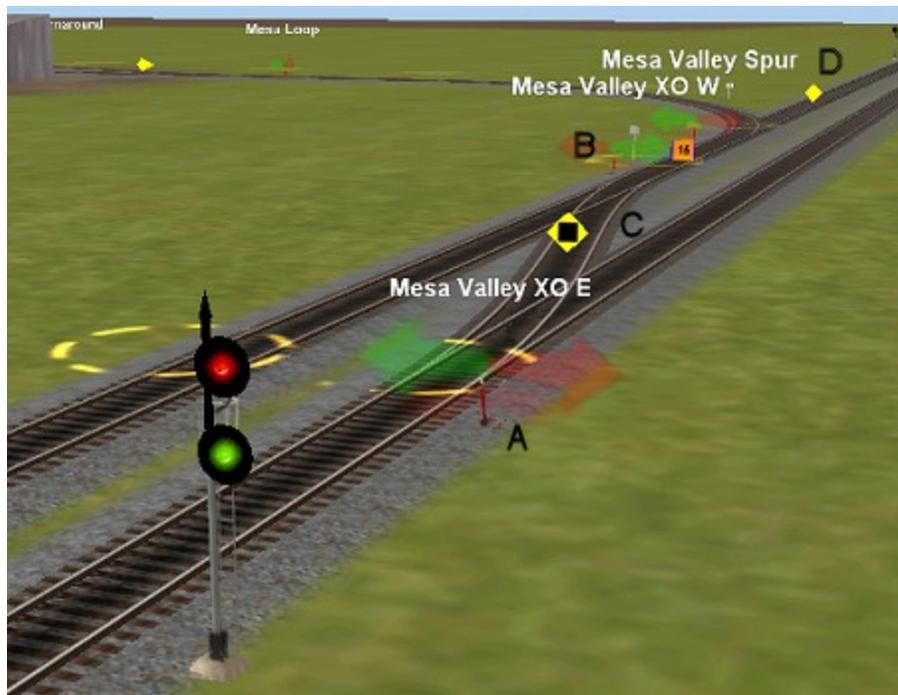


Following this sequence forces the train around the loop instead of letting it back out.

In testing the ranch, it appears that all of the signals are optional. The industry itself seems to work fine without them.

The Full Mesa Valley Configuration

Now that we have Mesa Valley up and running, let's add a complication: Our industry is now situated beside a double-track mainline, requiring trains to cross the opposite track to reach the industry, as you'll see below.



A couple of things to note in the drawing above: We now have a crossover from A to B, allowing trains from the yard, which approach

from the left, to reach the industry. At C, we have a directional arrow. This arrow prevents trains leaving the ranch or coming from D from taking the crossover and ending up on the wrong track. In a similar manner, we have a second directional arrow at D, forcing trains that do take the crossover into the ranch and preventing them from entering the other mainline.

This process of blocking the unwanted path is something you have to watch for at every crossover. If you allow the AI train a choice, it will invariably take the one you don't want! (Been there, done that, friends.)

The two-headed signal in the foreground is an L02, since it controls a left divergence.

There's also an '04' signal on the other mainline, down past D. That signal now has two duties. One, it guards the end of any industry consist left on the mainline, and now also, it guards the crossover, forcing oncoming trains to stop if the crossover is in use.

Some of you might be asking, "Where's the ISS for the crossover?" Good for you, 'cause we definitely need one. The answer is it's further down the track, as shown below.



It's further away because we're dealing with mainline speeds. If the train is moving at 60 MPH (100K/H), it will take some time to slow to 25 for the crossover, so we have to place the ISS far enough way for the train to slow from mainline to crossover speed. In fact, where I have it

in the drawing is probably still too close. You have to experiment on your own route to determine the correct distance. Just remember, the faster the mainline speed, the further the ISS must be from the crossover.

With the double track and the crossover, we now use two ISS devices, one before the crossover and one between the crossover and the siding. The second ISS further restricts crossover trains, but more importantly, it also restricts trains that come from the other direction, stop and then back into the siding. Without the second ISS, these reversing trains would take the siding at full mainline speed.

Cattle Ranching on Midwest Central/

There are actually three ranches on the MidCen cattle run. In a typical scenario, the train leaves the yard and travels first to Mesa Valley, where it does a pickup. After taking the reverse loop, it heads back toward the yard, stopping at Crown ranch, then at Pearson ranch. With the train full, it heads for the Armour Meat Packing Plant for unloading. After unloading, it returns to the yard, ready for the next run.

In wrapping up, I thought you'd enjoy seeing the actual Crown and Mesa Valley ranches from my own route. Below is Crown ranch. It's a little different than we discussed, as I used the full cattle feedlot industry, but the mainline interchange is identical. As I look at it again for the first time in a few months, it appears the track on the other side of the loading area may be too short allow ten cars to move past the load point. Remember we talked about that? Guess I'll have to move that road to the other side of the house. ☺



Below is the Mesa Valley ranch, very similar to what we discussed.



In the picture below, the entrance to Mesa Valley is different than we talked about earlier. There is a pass track, where divided consists can wait without tying up the mainline. If you look closely, you can see the

local backing toward the ranch, with the rest of his consist waiting in the pass track.



Below is the Armour Meat Packing plant at Huntersville. The cattle delivery pens are in the foreground and there is a long platform on the other side where you can place an industrial track for meat pickup.



All of these cattle industries above are by Idiotbouy, Gary Bjork. They look great, don't they? Since the above picture was taken, there's a new version of the Armour plant, which also allows for hog deliveries and several additional output products. <kuid2:50567:111174:1>.

Industry download information:

You can find the cattle industries we mentioned on the Download Station. Just do a title search for "feedlot" and it will find both of the cattle ranches mentioned in this tutorial. For the Armour plant, do a title search for "MeatPackingPlant V2."

If you plan to model a cattle empire, Gary also has several other industries you might consider. Two are pictured below. The top one shows the Inadale Feed Mill. It accepts Wheat, Barley and other bulk food items and produces bags of cattle feed, which you can then take to the feedlot industry. You can see the bags of feed on the dock, on pallets for easy shipment. On the download station or content manager, look for this industry as "feedmill-coop" <kuid2:50567:10702:3>



The second picture is the Hay Shed Industry, which produces bales of hay, which you can also take to your cattle ranches. Look for it as "hayshed_ind", <kuid2:50567:1112661:3>.

Both industries have animated loading. In downloading them, pay careful attention to the required dependencies. The hayshed, for example, will not work without the required hay baler.

That's it for now. I hope you found this information helpful.

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