



## **SCOPE OF WORK**

Date: December 14, 2023

### **NEW STORAGE AND DRYING FACILITY**

#### **PROJECT OVERVIEW**

Contractor to provide final design, equipment, and labor to construct a new storage and drying facility to include tanks, foundations, equipment, structures, and final site work. The project location is 5950 Hwy 104 West, Dyersburg, TN 38024. Design drawings can be found later in this document. Contractor shall adhere to this design and the specifications in this scope of work document. Overall project goals include: • Installation of a truck scale, truck receiving system, and truck loading system • (3) new storage tanks for a total of approximately 201,000 bushels of storage • Installation of drying system to include a wet grain holding tank • Installation of a day tank for a process (process system and building by others). The system shall be designed to handle/store/dry the following products: rice, corn, soybeans, and wheat.

#### **GENERAL CONDITIONS AND NOTES**

- Owner is responsible for providing a level site for construction. Assume that all foundations will be built on approximately 1' of compacted crushed limestone. Assume that some or all the crushed limestone base will contain one or more layers of Geotech fabric.
- Electrical supply will be 460V 3ph 60Hz. Owner will be responsible for electrical service to Contractor's main panel. Contractor will be responsible for all connections between the service and their main panel.
- Gas supply will be natural gas. Owner will be responsible for providing gas service to the location of the dryer and for connecting the service to the dryer. Contractor to specify location of the dryer for the gas provider and the BTU/HR and pressure requirements for the dryer.

#### **STORAGE BINS**

- 1 - 60' diameter externally stiffened bin with an approximate 44' eave height. The bin is to have a minimum holding capacity of 100,000 bushels. Acceptable manufacturers are GSI, AGI, Brock, and Sukup. Note: All three (3) storage bins should have the same eave height for purposes of the catwalk system.

This bin is to have the following equipment:

- 29 – gravity roof vents
- Roof stair with handrails
- Peak platform with handrails



### **STORAGE BINS (cont.)**

- Inside ladder
- Two-ring sidewall entry door with entry step
- 2 – 50 horsepower 460-volt 3-phase 3450 r.p.m fans.
- 2 – fan transitions with fan shutters.
- 18-gauge plank floor with .093” round perforations
- Floor support system of adequate height to provide clearance for the under-floor conveyor
- 10,000 bph hi-flite under floor conveyor to unload bin into reclaim conveyor as shown in drawings. Acceptable manufacturers are GSI and AGI
- DAAY paddle sweep with rated for 5,500 bph with 3-phase motor
- This bin is to have 5 – intermediate sumps on the door side of the bin, an extra-large center well, and 2 – intermediate sumps on the back side of the bin. There will be 2 – rack and pinion openers, one will control the center well and the 5 – sumps on the door side and the other will control the 2 – sumps on the back side of the bin.
- 1 – Levalert full bin level indicator
- Bin monitoring/drying/rehydrating automation with CO2 sensors. Acceptable manufacturers are GSI Grain Vue and AGI Suretrack Bin Manager.

- 1 - 48’ diameter externally stiffened bin with an approximate 44’ eave height. The bin is to have a minimum holding capacity of 65,000 bushels. Acceptable manufacturers are GSI, AGI, Brock, and Sukup. Note: All three (3) storage bins should have the same eave height for purposes of the catwalk system.

#### **This bin is to have the following equipment:**

- 23 – gravity roof vents
- Roof stair with handrails
- Peak platform with handrails
- This bin is to have a spiral stair to access the eave catwalk system
- Inside ladder
- Two-ring sidewall entry door with entry step
- 2 – 40 horsepower 460-volt 3-phase 3450 r.p.m fans.
- 2 – fan transitions with fan shutters.
- 18-gauge plank floor with .093” round perforations
- Floor support system of adequate height to provide clearance for the under-floor conveyor
- 10,000 bph hi-flite under floor conveyor to unload bin into reclaim conveyor as shown in drawings. Acceptable manufacturers are GSI and AGI
- DAAY paddle sweep with rated for 5,500 bph with 3-phase motor



## STORAGE BINS (cont.)

- This bin is to have 4 – intermediate sumps on the door side of the bin, an extra-large center well, and 2 – intermediate sumps on the back side of the bin. There will be 2 – rack and pinion openers, one will control the center well and the 4 – sumps on the door side and the other will control the 2 – sumps on the back side of the bin.
  - 1 – Levalert full bin level indicator
  - Bin monitoring/drying/rehydrating automation with CO2 sensors. Acceptable manufacturers are GSI Grain Vue and AGI Suretrack Bin Manager.
- 1 - 36’ diameter externally stiffened bin with an approximate 44’ eave height. The bin is to have a minimum holding capacity of 36,000 bushels. Acceptable manufacturers are GSI, AGI, Brock, and Sukup. Note: All three (3) storage bins should have the same eave height for purposes of the catwalk system.

### This bin is to have the following equipment:

- 17 – gravity roof vents
- Roof stair with handrails
- Peak platform with handrails
- Inside ladder
- Two-ring sidewall entry door with entry step
- 2 – 30 horsepower 460-volt 3-phase 3450 r.p.m fans.
- 2 – fan transitions with fan shutters.
- 18-gauge plank floor with .093” round perforations
- Floor support system of adequate height to provide clearance for the under-floor conveyor
- 10,000 bph hi-flite under floor conveyor to unload bin into reclaim conveyor as shown in drawings. Acceptable manufacturers are GSI and AGI
- DAAV paddle sweep with rated for 5,500 bph with 3-phase motor
- This bin is to have 3 – intermediate sumps on the door side of the bin, an extra-large center well, and 2 – intermediate sumps on the back side of the bin. There will be 2 – rack and pinion openers, one will control the center well and the 3 – sumps on the door side and the other will control the 2 – sumps on the back side of the bin.
- 1 – Levalert full bin level indicator
- Bin monitoring/drying/rehydrating automation with CO2 sensors. Acceptable manufacturers are GSI Grain Vue and AGI Suretrack Bin Manager.



## **LOAD-OUT HOPPER TANK AND SUPERSTRUCTURE**

- 1 - Install a load-out hopper tank superstructure at the entrance side of the truck scale as shown in the drawings. The stand should provide 15' under-clearance from the scale deck to the bottom side of the support beam with a minimum of 10' clear between any leg to beam braces. The stand is to have a platform with stair for monitoring of truck loading and sampling. Acceptable manufacturers are GSI, AGI, Warrior, and Apex.
  
- 1 - 15' diameter tank with cone bottom minimum 45° angle. The bin is to have a minimum holding capacity of 3,300 bushels. Acceptable manufacturers are GSI, AGI, Brock, and Sukup.

### **This bin is to have the following equipment:**

- 1 – gravity roof vent
- Roof stair with handrails
- Peak platform with handrails
- Outside ladder and cage package to access the roof stair from the truck loading platform
- Inside ladder
- Electric actuator gate to allow for loading of trucks at a minimum rate of 15,000 bph. The gate is to be controlled by momentary forward/reverse buttons from the scale building as well as the hopper tank load-out platform

## **“DAY” TANK FOR PROCESS**

- 1 - 12' diameter hopper tank with cone bottom minimum 45° angle. The bin is to have a minimum holding capacity of 1,200 bushels. Acceptable manufacturers are GSI, AGI, Brock, and Sukup.

### **This bin is to have the following equipment:**

- 1 – gravity roof vent
- Roof steps with handrails
- Peak handrails
- Outside ladder and cage package to access the roof from the ground
- Inside ladder
- Electric actuator gate to allow for loading of a conveyor (conveyor by others). The gate is to be controlled by momentary forward/reverse buttons from the process building



### **“WET” HOPPER TANK**

- 1 - 24’ diameter hopper tank with cone bottom minimum 45° angle. The bin is to have a minimum holding capacity of 15,000 bushels. Acceptable manufacturers are GSI, AGI, Brock, and Sukup.

#### **This bin is to have the following equipment:**

- 3 – gravity roof vents
- Roof stair with handrails
- Peak platform with handrails
- Inside ladder
- Manual rack & pinion gate at discharge with handwheel, dust cover, and dust hopper to discharge into the bypass inlet on the double-run vertical grain pump
- 1 – 10 horsepower 460-volt 3-phase 3450 r.p.m fan
- 2 – 18” aeration tubes in the hopper of the tank with manifold system to connect the aeration tubes to the fan.

### **VERTICAL DOUBLE-RUN GRAIN PUMP**

- 1 - 10” Hutchinson vertical double-run grain pump rated at 6,000 bushels per hour conveying capacity to convey grain from the “Wet” hopper tank to the dryer. It’s not shown in the drawings, but there should be a two-way manual valve on the discharge of this grain pump to be able to bypass the dryer.

#### **The grain pump will have the following equipment:**

- 81XHH chain
- UHMW paddles
- 1 – 40 horsepower drive with 40 horsepower 3-phase TEFC motor
- Service platform with ladder and cage package to access the drive end of the grain pump and the discharge spout. The ladder will be accessible from the eave catwalk system as shown in the drawings.

### **MIXED FLOW DRYER**

- 1 - 24180 Neco dryer.

#### **The dryer will have the following equipment:**

- 48” leg package
- Chain conveyor unloaders rated at 6,000 bph
- Variable speed drive on unload conveyors
- Service platforms at fans and roof
- CommandNet remote management



### **MIXED FLOW DRYER (cont.)**

- Cooling floors
- Bottom blower upgrade
- Cable package to remote mount control panel
- Support and wiring package to make dryer expandable to a 24380 dryer
- Dryer to be mounted on piers to allow it to discharge directly into the “dry” bucket elevator

### **DUMP-THROUGH TRUCK SCALE**

- 1 - 11' X 70' steel deck dump-through truck scale. The scale is to be custom configured to accept a Hutchinson dual-hopper truck unload conveyor as shown in the drawings. Acceptable manufacturers are Mettler Toledo, Rice Lake, Weigh Tronix, and Fairbanks.

#### **The truck scale is to have the following equipment:**

- Digital load cells
- Digital scale terminal – rated for harsh conditions – to be located in the scale building
- Scoreboard – mounted scale-side on a pole
- Red and green traffic lights. These may be incorporated into the scoreboard – mounted scale-side on a pole
- Ticket printer with power supply

### **RECEIVING CONVEYOR**

- 1 - Hutchinson Dual Hopper Chain Conveyor rated at minimum 13,000 bushels per hour conveying capacity. This conveyor is to be configured as shown in the drawing to accept grain for approximately 24' 9" of length. This conveyor will be supported in accordance with the scale manufacturer's recommendations. This conveyor will discharge into the Receiving Cross Conveyor.

### **RECEIVING CROSS-CONVEYOR**

- 1 - Enmasse chain conveyor rated at minimum 13,000 bushels per hour conveying capacity. This conveyor will receive grain from the receiving conveyor and discharge into a two-way valve that will feed both bucket elevators. Acceptable manufacturers are GSI, AGI, Schlagal, Warrior, Sweet, and Essmueller.

#### **This conveyor is to have the following equipment:**

- Powder coat paint or hot dip galvanized construction
- Bend section not to exceed 12 degrees
- 10 ga. AR400 side liners and 7 ga. AR400 bolt-on bottom



### **RECEIVING CROSS-CONVEYOR (cont.)**

- Split sprockets
- End relief door with limit switch
- Class II drive
- Designed to start under full load
- Maximum speed: 160 fpm
- Slack chain sensor

### **RECEIVING BUCKET ELEVATOR**

- 1 - Bucket elevator rated at minimum 13,000 bushels per hour receiving capacity and an approximate discharge height of 125'. This BE will receive grain from the receiving cross-conveyor and two cross-reclaim conveyors and discharge into a dual-inlet swingset distributor. Acceptable manufacturers are GSI, AGI, Schlagal, Warrior, Sweet, and Essmueller.

#### **This bucket elevator is to have the following equipment:**

- Powder coat paint or hot dip galvanized construction
- Slide lagging on head pulley
- Lagging inspection doors on both sides
- Service doors both sides on boot and head
- Shovel hopper
- Boot will be mounted minimum 4" above concrete foundation for housekeeping purposes
- Minimum 12 ga. Trunking
- Inspection sections both sides above boot
- Class II drive with backstop
- SCORFR rubber belt with mechanical splice (lap splice not acceptable)
- Designed to start under full load
- Maximum belt speed: 700 fpm
- Inlet hopper(s), front half of bonnet, discharge, and discharge transition to be ¼" Kryptane lined
- 4B Watchdog elite kit

### **"DRY" BUCKET ELEVATOR**

- 1 - Bucket elevator rated at minimum 6,000 bushels per hour receiving capacity and an approximate discharge height of 125'. This BE will receive grain from the dryer, the receiving cross-conveyor, the wet grain pump (not shown in drawings), and one cross-reclaim conveyor and discharge into a dual-inlet swingset distributor. Acceptable manufacturers are GSI, AGI, Schlagal, Warrior, Sweet, and Essmueller.



### **“DRY” BUCKET ELEVATOR (cont.)**

This bucket elevator is to have the following equipment:

- Powder coat paint or hot dip galvanized construction
- Slide lagging on head pulley
- Lagging inspection doors on both sides
- Service doors both sides on boot and head
- Shovel hopper
- Boot will be mounted minimum 4” above concrete foundation for housekeeping purposes
- Minimum 12 ga. Trunking
- Inspection sections both sides above boot
- Class II drive with backstop
- SCORFR rubber belt with mechanical splice (lap splice not acceptable)
- Designed to start under full load
- Maximum belt speed: 700 fpm
- Inlet hopper(s), front half of bonnet, discharge, and discharge transition to be ¼” Kryptane lined
- 4B Watchdog elite kit

### **DUAL-INLET DISTRIBUTOR AND SPOUTING**

- 1 - 16” Schlagal electric dual-inlet swingset distributor.

The distributor is to have the following equipment:

- Electric operator to be located in the scale building and be able to interface with main PLC
  - 1/4” full Kryptane liner package (if Kryptane is unavailable from the manufacturer, use the best quality urethane liner that is offered)
  - Positive pressure fan
  - Minimum of 8 discharge spouts to 16” round
  - Distributor is to be mounted to the bucket elevator tower using the manufacturers recommended connections
- 6 - 16” round spouts. All spouts and spout fittings are to be minimum 7 ga. thickness and be hot dipped galvanized. Spout end cushion boxes are to be used at the termination of each spout. The spouts will be configured as shown in the drawings.





### **RECLAIM CROSS-CONVEYOR #1**

- 1 - Hi-flite chain conveyor rated at minimum 10,000 bushels per hour conveying capacity. This conveyor will receive grain from the 36' bin reclaim conveyor and discharge into a two-way valve (as shown in drawings) that will feed both bucket elevators. Acceptable manufacturers are GSI, AGI, Schlagal, Warrior, Sweet, and Essmueller.

#### **This conveyor is to have the following equipment:**

- Powder coat paint or hot dip galvanized construction
- 10 ga. AR400 side liners and 7 ga. AR400 bolt-on bottom
- Split sprockets
- Plug switch in head discharge transition
- Class II drive
- Designed to start under full load
- Maximum speed: 160 fpm
- Slack chain sensor

### **RECLAIM CROSS-CONVEYOR #2**

- 1 - Hi-flite chain conveyor rated at minimum 10,000 bushels per hour conveying capacity. This conveyor will receive grain from the 48' bin reclaim conveyor and the 60' bin reclaim conveyor and discharge into the receiving bucket elevator (as shown in drawings). Acceptable manufacturers are GSI, AGI, Schlagal, Warrior, Sweet, and Essmueller.

#### **This conveyor is to have the following equipment:**

- Powder coat paint or hot dip galvanized construction
- 10 ga. AR400 side liners and 7 ga. AR400 bolt-on bottom
- Split sprockets
- Plug switch in head discharge transition
- Class II drive
- Designed to start under full load
- Maximum speed: 160 fpm
- Slack chain sensor



## **STRUCTURAL COMPONENTS**

- 1 - Vertical double-run grain pump support tower 5' x 5' x 56' hot-dipped galvanized construction. Include ladder and cage with access from the eave catwalk system and full head service platform with minimum 2' clearance around all components.
- 1 - Bucket elevator support tower 12' x 12' x 125' hot-dipped galvanized construction. Base quote to include ladder and cage with rest platforms with access from the eave catwalk system, full head service platform for both bucket elevators with minimum 2' clearance around all components, and distributor platform. **NOTE: Provide an alternate quote with a switchback stair in lieu of the ladder and cage package.**

## **ACCESS COMPONENTS**

- 1 - Eave catwalk system to access the eaves of all four tanks, the ladder for the vertical grain pump, and the ladder for the bucket elevator tower from the spiral stair on the 48' bin as shown on the drawings.

NOTE: Other access components are listed with the equipment they service. Please pay special attention to the design drawings for other access components. Also, the chosen contractor will be responsible for ensuring that there is adequate access on and off any elevated concrete and that there is access to service all drives and bearings on the conveying equipment.

## **CONCRETE FOUNDATIONS AND FINAL SITE WORK**

- All tank foundations are to meet minimum manufacturer's recommendations. Wire mesh is not acceptable in any of the structural foundations. Wire mesh can only be used in pedestrian or housekeeping paving where the concrete is less than or equal to 4" thick.
- All structural support foundations are to be designed and stamped by a structural engineer licensed in the state of TN.
- There should be adequate pedestrian/housekeeping paving to allow for foot traffic and ease of clean-up around all equipment. Recommended paving is represented in the design drawings. Bidding contractor's are to specify the amount of paving included in their bid in square feet.
- The successful bidder will be responsible for ensuring adequate drainage away from all bins and equipment.
- The contractor will also be responsible for all trash and extra material disposal and clean-up.
- The owner is responsible for all road work.



## **SCALE/CONTROL ROOM**

A scale house will be provided by owner. It will be a concrete slab building or portable building. Owner will coordinate with chosen contractor.

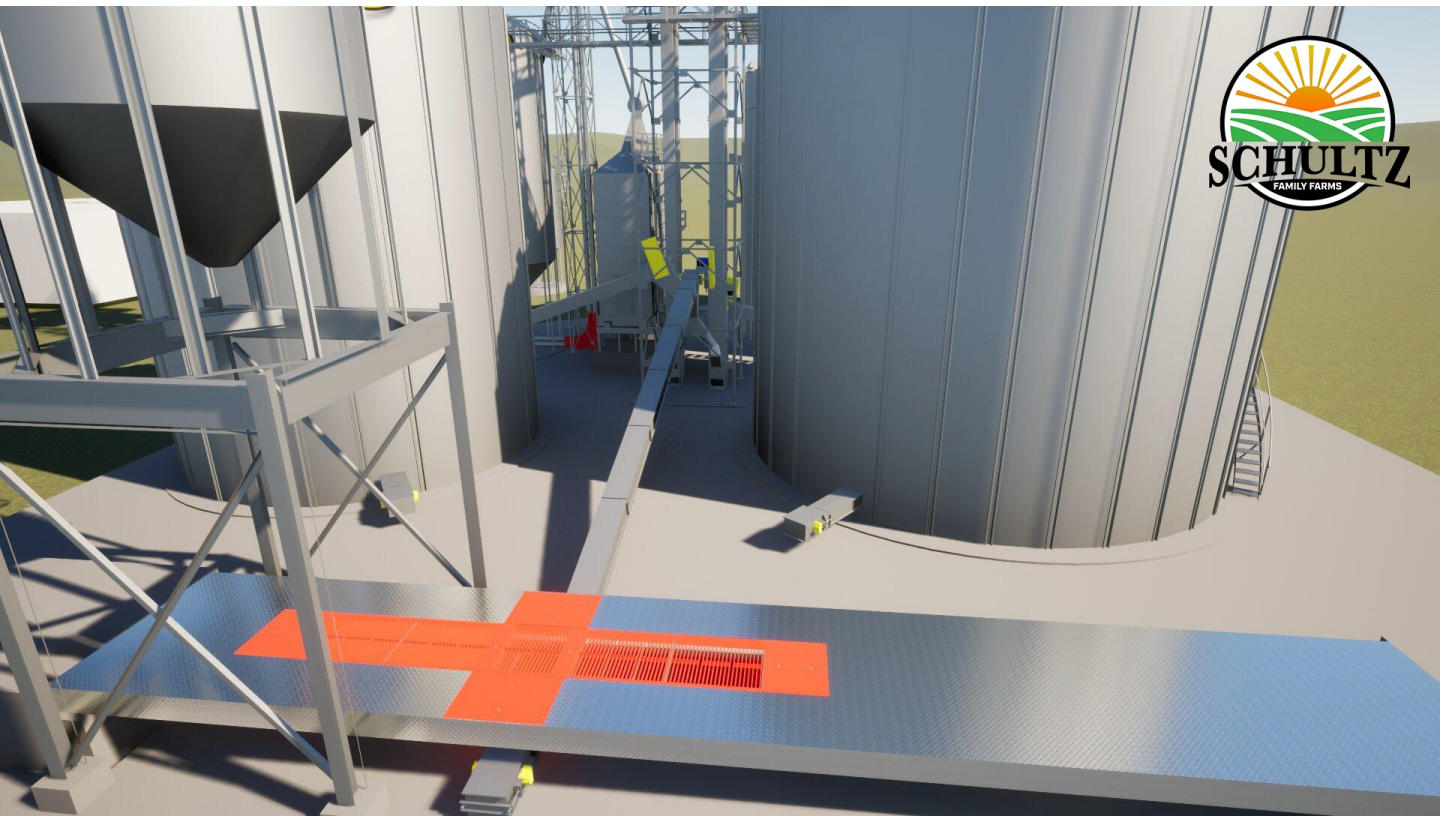
## **ELECTRICAL WORK**

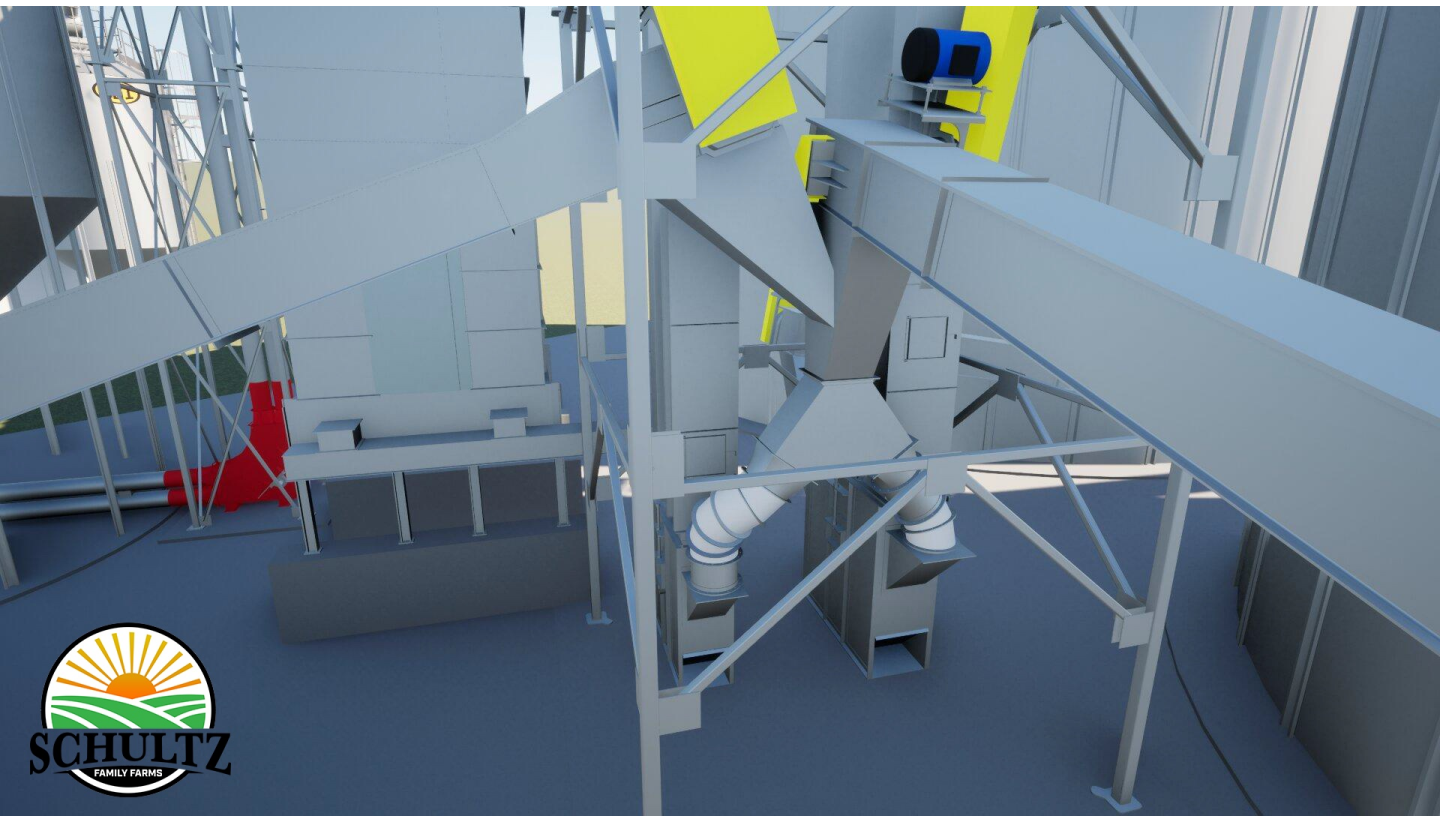
- The contractor is responsible for all electrical work.
- The main panel and all breakers are to be mounted inside the electrical side of the scale/control room.
- The system is to be controlled by a PLC that is to be mounted in the scale office side of the scale/control room building.
- Adequate lighting for operating at night is to be provided at all bin entry doors, on all catwalks and service platforms, and at the truck loading/unloading area.
- The electrical service and panel is to be sized for the current load plus 4 additional 48' bins, 2 additional 60' bins, an additional wet hopper tank, and 6 additional 36' bins. There is to be spare conduit buried beyond the extents of the concrete paving and located for future expansion.

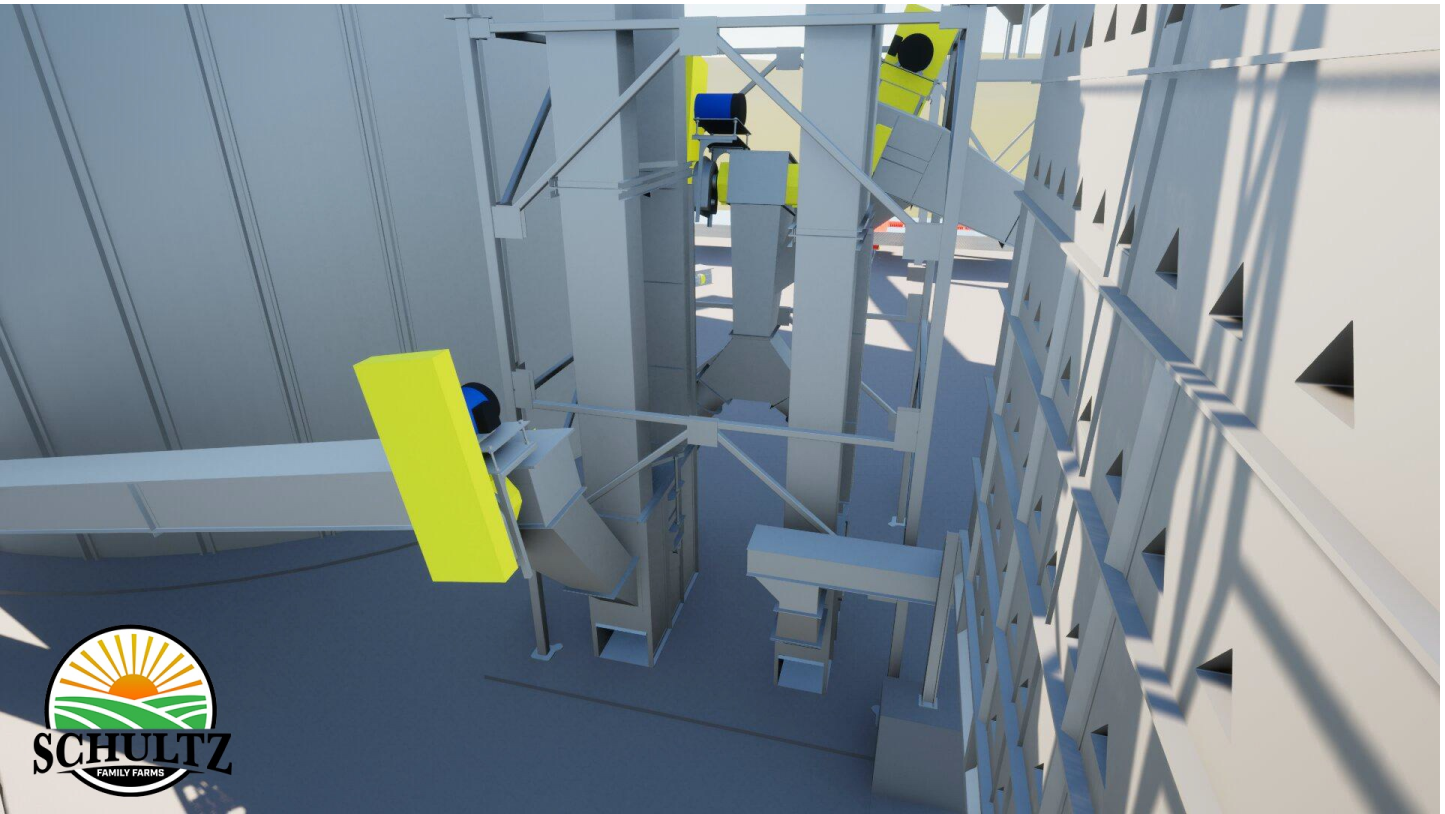
## **Bids to be submitted through:**

[www.schultzfamilyfarms.com/invitation-to-bid](http://www.schultzfamilyfarms.com/invitation-to-bid)

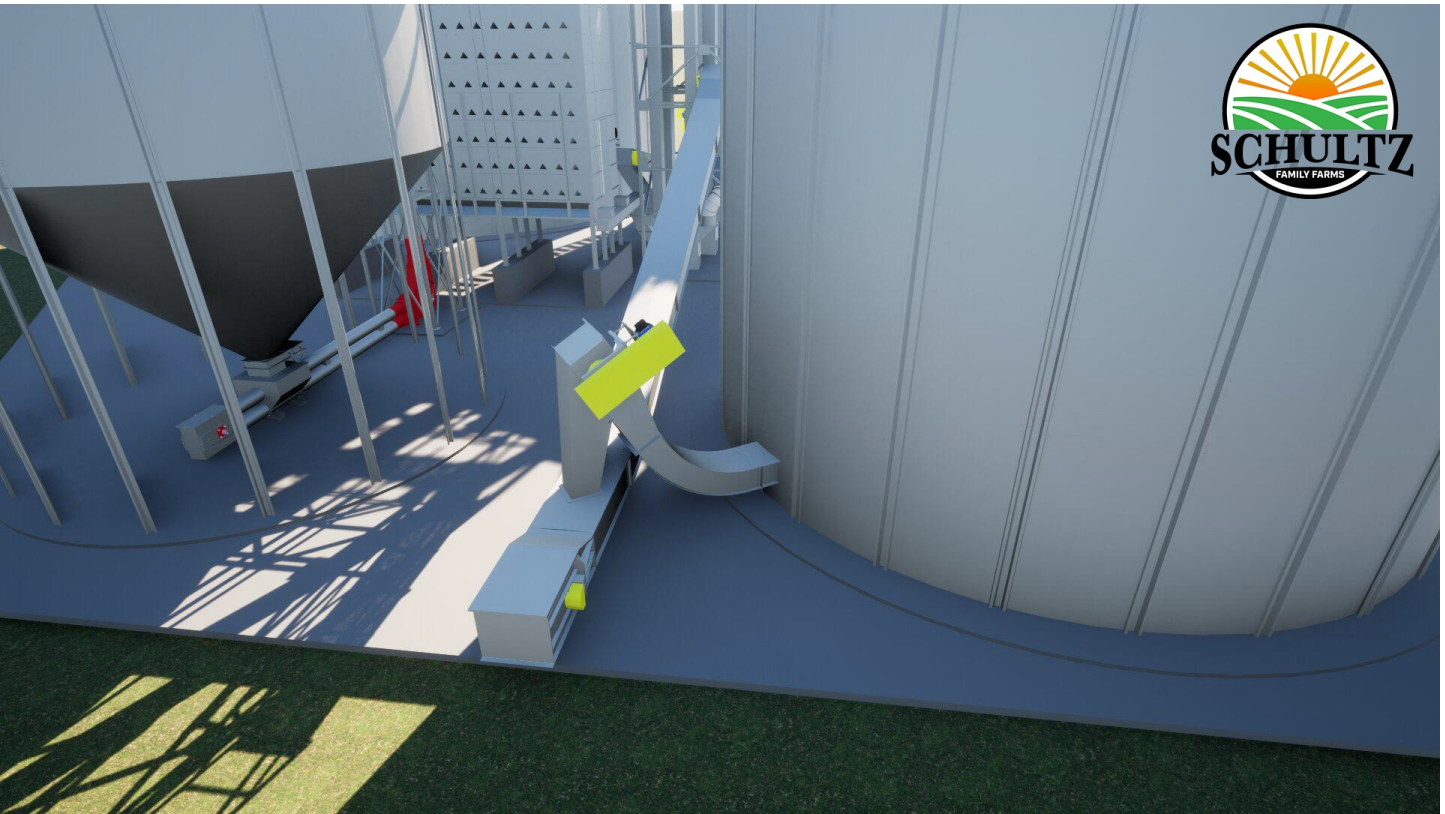
**NOTE: ALL BIDS MUST BE SUBMITTED BY 12/29/2023 TO BE CONSIDERED. ALL BIDS MUST BE VALID THROUGH 02/01/2024. REQUIRED COMPLETION DATE FOR ALL CONSTRUCTION IS 08/15/2024. ASSUME AWARD OF BID BY 02/01/2024. SITE ACCESS AND BUILDING PADS ARE ESTABLISHED AND READY FOR PROJECT INITIATION.**



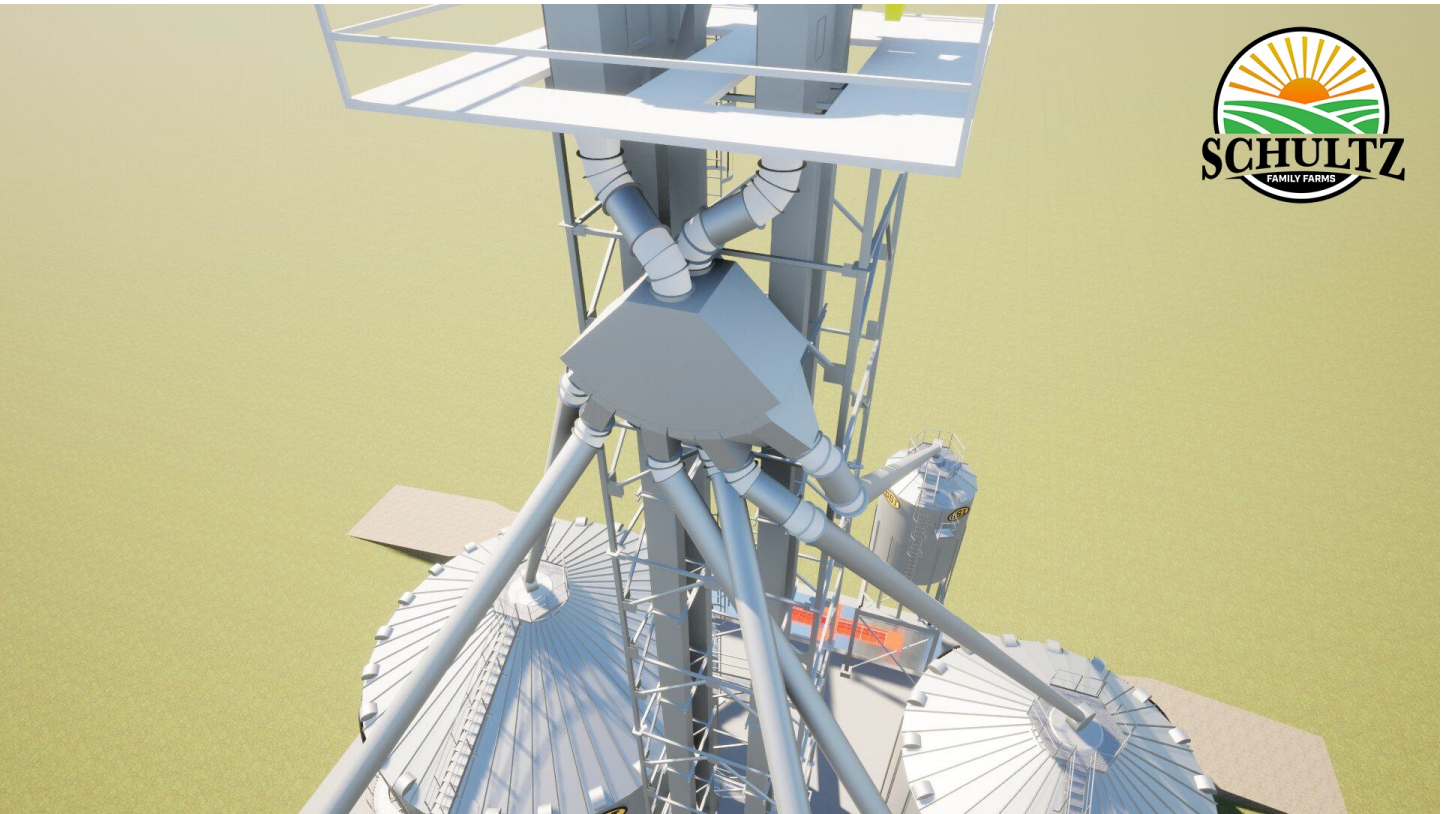


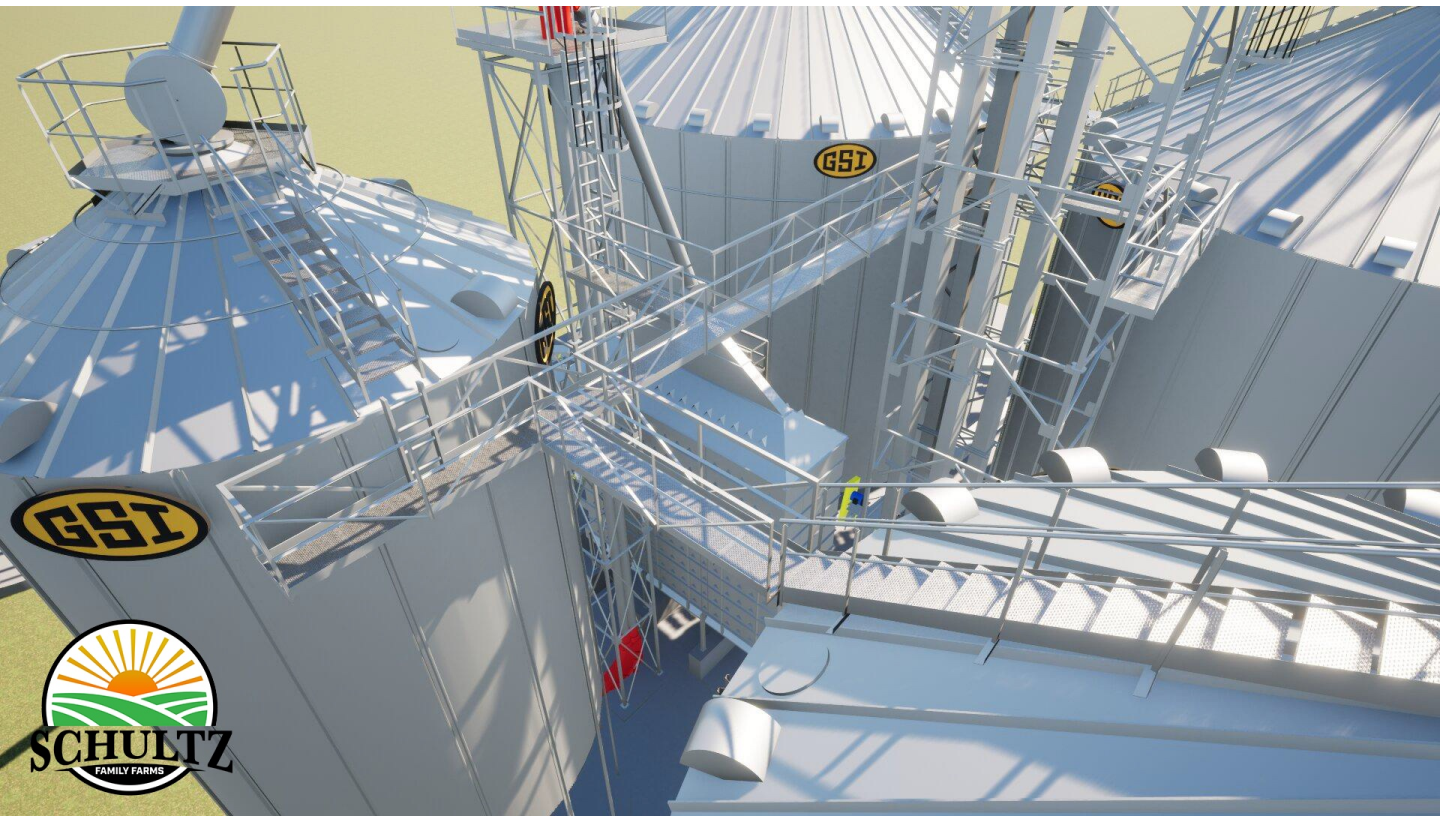










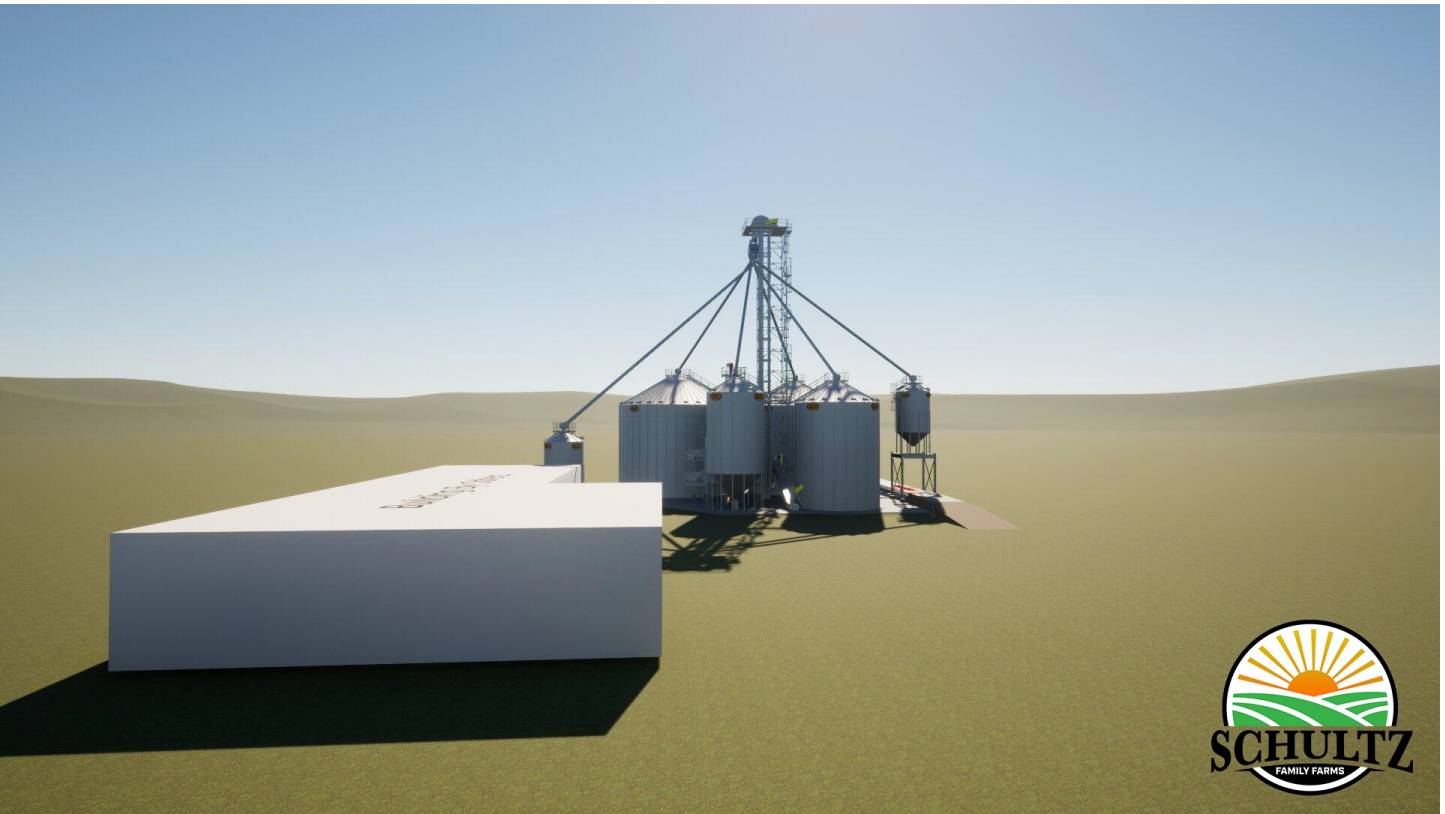


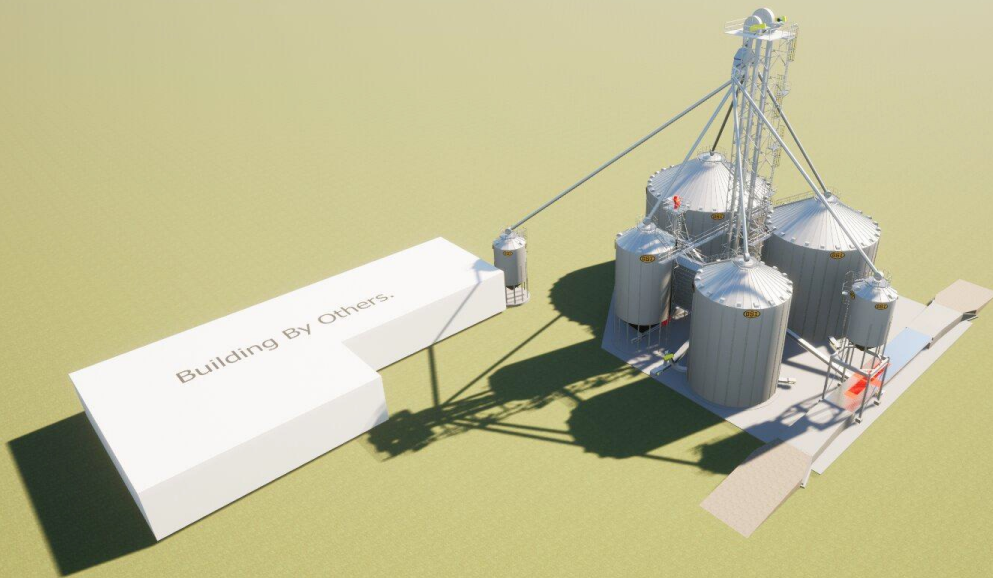


















Building By Others.

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