

# Space for a Terminal

NORTH DAKOTA GRAIN HANDLER'S NEW FACILITY IS ITS THIRD RAIL-LOADER

**The Arthur Companies**  
Arthur, ND • 701-967-8312

**Founded:** 1906  
**Storage capacity:** 16 million bushels at 11 locations  
**Annual volume:** XX million bushels  
**Annual sales:** \$XX million  
**Number of employees:** 60  
**Crops handled:** Hard red spring and winter wheat, corn, soybeans, barley, peas, sunflowers, canola  
**Services:** Grain handling and merchandising, agronomy, crop scouting

**Key personnel at Pillsbury:**

- Justin Knott, terminal manager
- Matt Linster, superintendent
- Hank Brown, head merchandiser
- Kevin Karel, merchandiser
- Brandon Hokana, agronomy manager
- DeeDee Bamberger, grain accountant

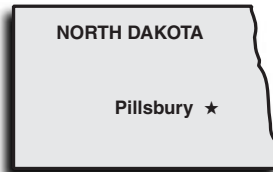
**Supplier List**

- Aeration fans..... GSI
- Bearing sensors.....Rolfes @Boone
- Bin sweeps ..... GSI
- Bucket elevators ..... GSI
- Bulk weigh scale .. Warrior Mfg. LLC
- Bulk weigh scale controls..... CompuWeigh Corp.
- Catwalks .....Warrior Mfg. LLC
- Cleaners ..... InterSystems
- Concrete ..... Aggregate Industries
- Contractor/millwright ..... EEE Inc.
- Control system.....Hope Electric
- Conveyors ..... GSI
- Distributor.....Schlagel Inc.
- Dust collection system.. CAMCORP
- Electrical contractor.. Hope Electric
- Elevator buckets ..... Maxi-Lift Inc.
- Fall protection ...Warrior Mfg. LLC
- Grain dryer ..... Zimmerman Grain Dryers
- Grain temp system ...Rolfes@Boone
- Level indicators.. Monitor Technologies
- Manlift..... PMI
- Motion sensors .. Process Control Systems
- Sampler..... Gamet Mfg. Inc.
- Spouting .....Nolin Milling
- Steel storage..... GSI
- Steel tank erection ..... EEE Inc.
- Tower support system...Warrior Mfg. LLC
- Truck probe ..... InterSystems
- Truck scales.....Rice Lake Weighing Systems



*The Arthur Companies' new 2-million-bushel rail terminal on a BNSF main line near Pillsbury, ND has been operational since May 2016. Aerial photo by Hanson Photography, Fargo, ND.*

Since 110-car-loading grain terminals began being built in earnest in the 1990s in North Dakota, a common rule of thumb for grain handlers is that the heavily-farmed state could produce enough crops to support a rail terminal every 20 miles in every direction.



One of the gaps in coverage across the state

was near Pillsbury, ND, about 60 miles northwest of Fargo. The Arthur Companies, a family-owned grain operation currently celebrating its 110th year in business opened a 2-million-bushel, all-steel terminal there (701-945-9503), along a Burlington Northern Santa Fe (BNSF) main line, in 2016.

“There was space for it,” says Terminal

*Terminal personnel, from left: Brandon Hokana, agronomy manager; Kevin Karel, merchandiser; Matt Linster, superintendent; Justin Knott, terminal manager. Ground-level photos by Ed Zdrojewski.*



Manager Justin Knott, who has spent his career with the company. “It’s our third rail-loading location. We also operate a terminal at Ayr on the BNSF and at Harvey on the Canadian Pacific.”

In addition to the terminal elevator, the site includes a 10,000-ton fertilizer plant and an 11,000-foot loop track.

To build the entire \$XX million project, Arthur Companies selected EEE Inc., Page, ND (701-668-2258), as general contractor and millwright. Knott comments that EEE has been the company’s sole general contractor for many years, and “they have a good track record with us.”

Also having roles on the project:

- W Design Associates, McCook, NE (308-345-2370), performed design and engineering work on the terminal.
- Hope Electric, Hope, ND (701-945-2460), served as electrical contractor and supplied PC-based control systems.
- CompuWeigh Corp., Woodbury, CT (203-262-9400), provided a Smart-



Truck carrying a load of corn pulls onto a Rice Lake inbound scale prior to dumping.

Truck system for moving truck traffic through the site and a GMS system for controlling the bulk weigh loadout system for rail. Knott says the Pillsbury site is the first to receive a server-based control system from CompuWeigh, which allows the entire system to be operated from any of the supplier’s

workstation around the terminal. “Before, if one part of the system went down, say an inbound scale, the entire system shut down.”

- R&R Contracting, Grand Forks, ND (701-772-7667), built the loop track. According to Knott, it’s the first loop track at a grain facility in North



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Dakota to utilize high-carbon steel ties. “This type of track requires less ballast, and gauge problems are eliminated, because the tie is stapled directly to the rail,” he says.

The fertilizer plant was the first part of the facility to be built, with construction starting in August 2014 and finished in March 2015. That month, work began on the grain elevator, which went operational in May 2016.

### Two Rows of Tanks

Storage at Pillsbury consists of two east-west rows of steel tanks: six GSI 72-foot-diameter flat-bottom corrugated steel tanks holding 360,000 bushels of dry grain each, and six GSI 21,000-bushel hopper tanks for wet storage or segregation.

The big tanks stand 80 feet tall at the eaves and come equipped with outside stiffeners, 12-inch GSIX-Series sweep augers, 12-cable Rolfes@Boone grain temperature monitoring systems, and Monitor Technologies radar-type level indicators. A pair of 50-hp GSI



*CompuWeigh SmartTruck system guides drivers through the Pillsbury property. In the background, a propane tank supplying a 7,000-bph Zimmerman grain dryer.*

centrifugal fans provide 1/10 cfm per bushel of aeration through in-floor ducting.

The hopper tanks stand 24 feet in diameter and 62 feet tall at the eaves, with 45-degree steel hoppers. Because they are intended for short-term storage, they each are equipped with 10-hp GSI axial fans but no grain temperature monitoring.

### One-Way Routing

Truck traffic through the facility

is routed on a single one-way path for fast receiving and to avoid truck lines as much as possible utilizing CompuWeigh's SmartTruck RFID system.

Incoming trucks are routed past an InterSystems truck probe adjacent to the office building, then onto a 110-foot Rice Lake pit-type scale. After being weighed in automatically based on that truck's unique RFID tag, a CompuWeigh SmartView digital display automatically routes drivers to one of two 800-bushel enclosed mechanical receiving pits based on the commodity and grade factor requirements saved in the CompuWeigh system.

After depositing their grain, drivers continue onto another 110-foot Rice Lake outbound scale with a CompuWeigh OTP-4700 outdoor ticket printer to provide scale receipts.

The receiving pits feed a pair of GSI 30,000-bph legs with two rows each of 20x11 Maxi-Lift HD buckets mounted on 44-inch Goodyear belts. These legs are enclosed in a Warrior

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*An 80,000-bph Warrior bulkweigher is used to load shuttle trains. The trolley-type fall protection unit, fabricated by Warrior, runs for 500 feet.*

20-foot-x-60-foot-x-180 foot main receiving tower, along with the load-out leg.

The legs deposit grain into an eight-duct Schlagel rotary double distributor. From there, grain travels via a series of 30,000-bph GSI drag conveyors out to storage. Two of the three drag conveyors are supported on a 240-foot, 11-foot-wide Warrior

box bridge; the other by a 240-foot, 7-foot-wide handrail truss. A 200-foot, 6-foot-wide Warrior catwalk supports the drag conveyor over the row of hopper tanks.

The hopper tanks empty onto an above-ground 30,000-bph GSI drag, while the big tanks empty onto 60,000-bph GSI enclosed belt conveyors. All lead to a 60,000-bph GSI loadout leg equipped with three rows of 20x11 Maxi-Lift HD buckets on a 64-inch Goodyear belt.

Prior to loadout, the operator has the option of running grain through one of two InterSystems gravity screeners, one rated at 35,000 bph and the other at 50,000 bph.

Rail loading is handled by an 80,000-bph Warrior bulkweigher fully integrated with a support structure, hydraulic spout, control room, Gamet sampler, and a CompuWeigh GMS failsafe control system. Workers atop railcars are protected by a 500-foot trolley-type fall protection system fabricated by Warrior. Knott says 110-car shuttle

trains have been loaded as quickly as eight hours.

### **Additional Equipment**

The facility also includes a 7,000-bph propane-fired Zimmerman grain dryer. Propane is run through a heavy-duty vaporizer before being introduced to the burners. The dryer is fed by a 15,000-bph GSI wet leg supported by a Warrior 12-foot-x-12-foot-x-140-foot support tower.

The entire property is lit by energy-efficient LED lights.

*Ed Zdrojewski, editor*



*Loop track rails, laid by R&R Contracting, are stapled to high-carbon steel ties.*

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