

Soybean Handling Boost

CONCRETE SILO, LEG COMBINATION QUADRUPLES VOLUME INTO, OUT OF FLAT STORAGE



Dodge ★

NEBRASKA

Cooperative Supply Inc.
Dodge, NE • 402-693-2261

Founded: 1911
Storage capacity: 9.2 million bushels at five locations
Annual volume: 12 million bushels
Annual sales: \$80 million
Number of members: 500
Number of employees: 38
Crops handled: Corn, soybeans
Services: Grain handling and merchandising, feed, agronomy

Key personnel at Dodge:

- Dan Forey, general manager
- Steve Ortmeier, location manager
- Mary Kay Hegarty, controller
- Todd Henke, merchandiser

Supplier List

Aeration fans Chief Agri
Bearing sensors 4B Components Ltd.
Bin sweep Springland Mfg.
Bucket elevator Schlagel Inc.
Cement Arps Red E Mix
Concrete silo Hoffmann Inc.
Concrete/building Aschoff Construction
Contractor/millwright EBM Construction Inc.
Control system Otte Electric Inc.
Conveyors Schlagel Inc.
Electrical contractor... Otte Electric Inc.
Elevator buckets Maxi-Lift Inc.
Excavation... Doermann Construction Inc.
Level indicators..... BinMaster Level Controls
Tower support system... Warrior Mfg. LLC



Cooperative Supply Inc.'s grain elevator at Dodge, NE, with new jumpform concrete storage silo and freestanding leg adjacent to a 2-million-bushel soybean flat storage. Aerial photo courtesy of Dakota Aerials, Yankton, SD.

Cooperative Supply Inc. operates three large flat storage buildings at its elevator in Dodge, NE, and one of them, a 2-million-bushel structure dedicated to soybeans, has been a particular bottleneck, especially during fall harvest. With a receiving capacity of only 5,000 bph via an overhead drag conveyor, the flat storage sometimes caused trucks to back up and limited the amount of beans the facility could handle.

“With the increasing size of farm equipment, we couldn’t keep up,” says General Manager Dan Forey who has been with Cooperative Supply for three years. (Prior to joining the coop, Forey worked in various grain industry positions in his native Iowa.)

In 2015, Forey sat down with EBM Construction Inc., Norfolk, NE (800-356-9782), to come up with a way to speed up throughput into and out of the flat storage. “EBM has always done all of our millwright work,” he says.

EBM came up with a novel solution; rather than rebuild the flat storage or replace its equipment, why not build an annex adjacent to the flat storage that can handle soybeans at a much higher speed? Instead of backing up at the flat storage, trucks can deliver grain to or receive grain from the annex, which also can serve as a gateway for filling the flat storage.

The \$3.2 million project consisted of a single, roughly 350,000-bushel Hoffmann jumpform concrete silo with two mechanical receiving pits and a 20,000-bph Schlagel leg. Construction began early in March 2015, as soon as the weather would allow, and was completed in August, in time for fall harvest.

In addition to EBM, Otte Electric Inc., Columbus, NE (402-564-9996), served as the electrical contractor, and Doermann Construction Inc., Clarkson, NE (402-892-3244), did excavation work.



Dan Forey

Project Specifications

The new Hoffmann silo

stands 66 feet in diameter and 140 feet tall. The flat-bottom silo is equipped with a 9-inch Springland sweep auger capable of unloading grain at 5,000 bph and a BinMaster level indicator. However, since the silo is acting essentially as a huge “surge bin” for the adjacent flat storage, no grain temperature monitoring cables were needed, Forey says.

The silo does have aeration, however, in the form of four Caldwell 40-hp centrifugal fans that deliver approximately 1/10 cfm per bushel of air through in-floor ducting.

In addition, the silo is outfitted with a Warrior switchback staircase mounted directly to the concrete for improved worker safety, since the annex is not equipped with a manlift at this point.

Incoming truckers proceed to one of two receiving pits enclosed in a steel structure. Each 500-bushel mechanical pits feeds into a single freestanding 20,000-bph Schlegel, which is attached directly to the concrete silo. The leg is equipped with a single row of Maxi-Lift 20x8 Tiger-Tuff orange buckets mounted on a 22-inch belt.



Head section of the new 20,000-bph Schlegel receiving leg from which grain can go to the new concrete storage silo.

“We alternate which pit is receiving grain,” explains Forey. “That keeps the truck lines shorter, and the leg operates without interruption.”

At the top, a spout can send grain via a 20,000-bph Schlegel drag conveyor into the silo. The silo sidedraws via gravity onto the fill conveyor in the flat storage.

The silo empties onto an above-ground 5,000-bph Schlegel drag conveyor, which in turn, ends at a loadout spout for loading trucks. Trucks also can utilize a sidedraw out into a receiving lane.

Results

As of late September 2016, the Dodge grain facility had gone through one complete fall harvest with the new annex and was starting on its second.

“It takes us about three minutes to unload a semi-truck,” says Forey. “Just having this new leg and silo allowed us to take in 350,000 more bushels of soybeans. As the word got out, that allowed us to increase our draw area. We have producers delivering from within a 35-mile radius, and we’ve had some coming in from as far as 50 miles away.”

After harvest is over, and the soybeans have been emptied out of the new silo, Forey says that the coop has been using it for long-term corn storage.

“We regard this as just an initial



Ground-level view of the new annex with twin enclosed receiving pits, Hoffmann 350,000-bushel concrete storage silo with Warrior switchback staircase, and free-standing Schlegel 20,000-bph leg.

investment,” he adds, noting that the site has plenty of space for more silos and receiving legs.

Ed Zdrojewski, editor



Two of four Caldwell 40-hp centrifugal aeration fans that deliver roughly 1/10 cfm per bushel to stored grain. Ground picture courtesy of EBM Construction.