

Eastern Shuttle Loader

SOUTHERN MINNESOTA COOP BUILDS ITS SECOND RAIL TERMINAL

Crystal Valley Cooperative
Lake Crystal, MN • 507-726-6455

Founded: 1927
Storage capacity: 18.2 million bushels at six locations
Annual volume: 26 million bushels
Annual revenues: \$373 million
Number of members: 1,200
Number of employees: 160
Crops handled: Corn, soybeans
Services: Grain handling and merchandising, agronomy, feed, petroleum, propane

Key personnel:

- Roger Kienholz, general manager
- Jeff Spence, grain division manager
- Tim Lewis, grain superintendent
- Terri Sittig, administrative assistant
- Jeff Harriman, foreman
- Craig Johnson, outside labor
- Jayme Underwood, outside labor
- Jim Johnson, grain marketer
- Joe Williams, grain marketer

Supplier List

- Aeration fans**.....Rolfes@Boone
- Bearing sensors**..... CMC Industrial Electronics
- Bin sweeps**The GSI Group
- Bucket elevators**.....S-M Enterprises
- Bulk weigh scale**C&A Scales
- Catwalk**.....Warrior Mfg. LLC
- Cleaner**Intersystems
- Contractor/millwright** ..CEEC Inc.
- Control system**.....Knobelsdorff Electric Inc.
- Conveyors (belt)**.....Hi Roller Conveyors
- Conveyors (drag)** ...S-M Enterprises
- Distributor**.....Schlagel Inc.
- Dust filters**.....CAMCORP Inc.
- Electrical contractor**....Knobelsdorff Electric Inc.
- Elevator buckets** Maxi-Lift Inc.
- Engineering** VAA LLC
- Fall protection**Fall Protection Systems Corp.
- Grain dryer** Zimmermann Grain Dryers
- Grain temp system**..... Carver Co.
- Motion sensors** CMC Industrial Electronics
- Rail**.....R&R, Inc.
- Samplers** Gamet Mfg, Inc.
- Steel storage**.....The GSI Group
- Surge tanks**Meridian Mfg. Inc.
- Tower support system**...Warrior Mfg.



Crystal Valley Cooperative's 2014 shuttle-loading terminal near Hope, MN on the Union Pacific Railroad offers roughly 6.5 million bushels of upright and temporary grain storage. Aerial photo courtesy of Crystal Valley Cooperative.

For several decades, producers in the western part of Crystal Valley Cooperative's service territory have enjoyed the services of a shuttle loading terminal on the Union Pacific Railroad in Madelia, MN. Over the years, additions to the terminal have brought storage capacity to nearly 8 million bushels.



Now, producers in the eastern half have their own 6.5-million-bushel rail terminal at Hope, MN (507-414-0036), also on the Union Pacific, with an 8,200-foot loop track off the main line. Built in 2013-14, the all-steel facility began receiving grain in October of this year.

General Manager Roger Kienholz comments that the Crystal Valley board of directors approved the Hope facility after reviewing a



From left: Jeff Spence, grain division manager; Roger Kienholz, general manager; and Tim Lewis, superintendent at Hope.

study conducted by Dr. Bill Wilson at North Dakota State University that a shuttle loader in the area would be viable for the cooperative.

In addition to the rail service, Kienholz says, the board selected the site at Hope due to easy road access via Interstate 35 and U.S. Highway 14, a few miles south of Owatonna, MN.

The board took bids on the project and awarded the contract to CEEC Inc., Wabasso,



Ground-level view of the Hope terminal with two temporary storage units at right.

MN (507-342-2383). “We liked their design best,” says Grain Division Manager Jeff Spence. “We wanted everything to be above ground as much as possible, and they accommodated that. Also, they’ve done projects for Crystal Valley for years, and we’ve been happy with their work.”

Among the other contractors on the \$30 million project:

- VAA LLC, Plymouth, MN (763-559-9100), performed the engineering work.
- Knobelsdorff Electric Inc., Goodhue, MN (651-923-4970), served as electrical contractor and supplied the facility’s control systems.

- Cross Country Construction LLC, Elbow Lake, MN (218-685-6410), erected the corrugated steel storage tanks.

Construction got underway in April 2013 and took approximately 18 months to complete.

Grain Storage

The bulk of the upright storage consists of three 1.1-million-bushel GSI tanks standing 135 feet in diameter, 80 feet tall at the eaves, and 125 feet tall at the peaks.

These tanks have flat concrete floors, outside stiffeners, 16-inch GSI X-Series zero-entry bin sweeps, and 34-cable Carver grain temperature monitoring systems. A set of six 30-hp Rolfes@Boone centrifugal fans supply 1/10 cfm per bushel of aeration assisted by 15 roof exhausters.

Storage also includes a 400,000-bushel wet tank from GSI standing 72 feet in diameter and 92-1/2 feet tall at the eave. This tank also has a 16-inch sweep auger, 12-cable temperature monitoring system, and four 50-hp Rolfes@Boone centrifugal fans also supplying 1/7 cfm

per bushel.

A pair of 55,000-bushel GSI hopper tanks hold wet grain and double as blending bins.

As yields have grown in recent years, temporary storage is almost a must. The Hope facility has a 2.8-million-bushel temporary pile 300 feet wide by 500 feet long. The pile, which is filled from an overhead S-M 20,000-bph drag conveyor running out from the main elevator, has 4-foot perforated steel sidewalls, a lime floor, and twenty 5-hp axial fans providing aeration and suction for the tarp.

Grain Movement

Incoming trucks are routed into an enclosed scalehouse adjacent to the facility’s two-story steel-walled office building. The enclosure includes an 80-foot Rice Lake Survivor® pit-type scale and Gamet truck probe. The scale operator can see inside trucks through a second-floor window in a grain lab that includes a Perten moisture tester and an MCI Kicker grain tester. After weighing and grading, a CompuWeigh SmartTruck automation system routes trucks to the appropriate receiving pit.

The facility has three 1,200-bushel mechanical receiving pits in a separate enclosed building. All three are rated at 20,000 bph with a single row of 20x8 Maxi-Lift Tiger-Tuff buckets mounted on a 22-inch belt. Two receiving legs double as train-loading legs along with the 40,000 bph shipping leg bringing the bulk capacity to 80,000 bph. The 40,000-bph shipping leg has two rows of 18x8 Tiger-Tuff buckets mounted on a 40-inch belt.

All of the receiving legs feed a Schlagel



Stairway and access door provide safe access to the 1.1-million-bushel GSI tanks directly above tunnels that house Hi Roller reclaim belts. Photo by Ed Zdrojewski.

20-inch, 22-duct triple rotary distributor. From there, grain travels to upright storage via 20,000-bph S-M drags, to the temporary storage pile, or via gravity spout to loadout.

The legs, distributor, and two 25,000-bph Intersystems screener are supported by a Warrior six-column, 20-foot-x-32-foot-x-208-foot support tower with switchback stairs.



Zimmerman 10,000-bph tower dryer is fired by propane. Photos on these two pages by Ed Zdrojewski.

The dryer is a propane-fired 10,000-bph Zimmerman model, which is serviced by 20,000-bph S-M wet and dry legs. “We’ve been buying Zimmerman dryers since 2009,” Spence says, “and we think they provide a more even moisture content in the grain.”

Storage tanks empty onto a series of 40,000-bph Hi Roller enclosed belt conveyors in above-ground tunnels, which run back to the three receiving legs.

Two legs can be configured to feed an 80,000-bph C&A bulk weigh loadout scale equipped with CompuWeigh control software and Gamet sampler. The operator can send grain through a 40,000-bph Intersystems gravity screener mounted above the bulkweigher. A Fall Protection Systems trolley running the length of five railcars protects workers atop the cars.

Ed Zdrojewski, editor



Enclosed scalehouse adjacent to the facility office building includes an 80-foot Rice Lake truck scale, Gamet truck probe, and CompuWeigh SmartView screens.



The terminal's 80,000-bph bulk weigh loadout scale from C&A Scales is topped by an Intersystems gravity screener.