River Bottom Rail Loader

DEBRUCE GRAIN EXPANDS IN MISSOURI VALLEY WITH LOOP TRACK AND ELEVATOR

DeBruce Grain Inc.
div. of Gavilon Grain Inc.
Kansas City, MO • 816-421-8182

Founded: 1978
Storage capacity: 146 million bushels at 24 grain locatoins
Number of employees: 500
Crops handled: Commercial, white, and waxy corn; soybeans; sorghum; hard and soft red winter wheat; rough long-grain rice

Key personnel at Rock Port:
- John Thompson, facility manager
- Rob Herbers, superintendent
- Chris Schaffenacker, merchandiser
- Mike Anderson, project manager

Supplier List

Aeration fans.. AIRLANCO, Rolfes@ Boone
Aeration system .... North American Equipment Co. Inc.
Bearing sensors ... 4B Components Ltd.
Bin sweeps ..... Springland Mfg.
Bucket elevators..... Intersystems
Bulk weigh scale ..... Intersystems
Catwalk ..... LeMar Industries Corp.
Cleaner.. Intersystems, Baasch & Sons
Concrete tank builder..... Adams Building Contractors
Conveyors (belt).... Hi Roller Conveyors
Conveyors (drag) ..... Tramco Inc., Intersystems
Dust collection system ..... Kice Industries Inc.
Electrical systems.. Wachter Electric
Elevator buckets ..... Maxi-Lift Inc.
Engineering ... Sunfield Engineering
Grain dryer ... Zimmerman Grain Dryers
Grain temp system..... Rolfes@Boone
Level indicators..... Monitor
Manlift..... Sidney Mfg. Co.
Millwright..... HABCO Inc.
Samplers ..... Intersystems
Site preparation.... Zech Construction
Temporary storage . LeMar Industries
Truck probe ..... Gamet Mfg. Co.
Truck scales..... Fairbanks Scales

DeBruce Grain Inc.'s new 6.4-million-bushel rail terminal in the Missouri River bottom land near Rock Port, MO began taking in grain and loading railcars in September 2010. Aerial photo by JH Photography, Spencer, IA.

DeBruce Grain Inc. already had a strong presence in the country where Iowa, Missouri, and Nebraska meet in the middle of the Missouri River, when it opened its new rail-loading terminal at Rock Port, MO (660-744-2222) late in 2010. The regional grain handler already was operating a rail and barge-loading terminal on the river at Nebraska City, NE and a 1.5-million-bushel rail loader it had acquired from the former Crestland Cooperative in Shenandoah, IA.

Facility Manager John Thompson notes that the Missouri River bottom and surrounding hills are extremely fertile,with plenty of grain to originate. Adding a new rail terminal with loop track just to the south of the Missouri state line would tap into more of that grain and expand DeBruce's customer base southward. (Thompson, a 10-year veteran at DeBruce, most recently worked at the company's river terminal in Rosedale, MS.)

From left: Chris Schaffenacker, merchandiser; Rob Herbers, superintendent; John Thompson, facility manager. Photos by Ed Zdrojewski.

Line of incoming trucks await processiing, with 80-foot Fairbanks Truck Scale in foreground and Gamet truck probe in background.

The new terminal, which began receiving grain in September 2010, has approximately 6.4 million bushels of upright and temporary storage. DeBruce selected a site for its project strategically near the interchange of Interstate 29 and U.S. Highway 136, with plenty of level ground for an 8,300-foot loop track off of a Burlington Northern Santa Fe main line.

The contractor building the 2.4-million-bushel slipform concrete structure was Adams Building Contractors, Jackson, MI (517-748-9099), which recently completed a major expansion at another DeBruce elevator in New Carlisle, IN. The contractor providing millwright services and mechanical fabrication on the project was HABCO Inc., Salina, KS (785-823-0440). Sunfield Engineering Inc., Cedar, MI (231-228-4400), performed engineering services. Wachter Electric, Lenexa, KS (913-541-2500) did the electrical work.

Construction broke ground in November 2009.

Concrete Storage

The slipform concrete elevator can be divided into four sections, east to west:

• Two 296,000-bushel tanks standing 62 feet in diameter and 121 feet tall. These flat-bottom tanks are equipped with 16-inch Springland sweep augers and 12-cable Rolfes@Boone grain temperature monitoring systems. A set of four AIRLANCO 50-hp centrifugal fans per tank supply 7/10 cfm per bushel of aeration.

• A square headhouse section containing three Intersystems 20,000-bph mechanical receiving legs, a 60,000-bph shipping leg, and two truck loadout bins. The receiving legs are equipped with two rows of 14x8 Maxi-Lift CC-MAX buckets mounted on a 30-inch belt. A series of openings were left on the north and south walls of this section as an explosion control safety measure. ►

One of two 2-million-bushel temporary storage piles at the Rock Port elevator. Portion of an 8,300-foot loop track is visible in the background.

• A set of three 445,000-bushel flat-bottom tanks standing 76 feet in diameter and 121 feet tall, equipped with sweep augers and 12-cable grain temperature monitoring system. Four 50-hp centrifugal fans provide aeration at 6/10 cfm per bushel.

• A four-pack of 113,000 tanks standing 38 feet in diameter and 117 feet tall, equipped with KanalSystem floors with side sumps and a single grain temperature monitoring cable per tank. This section also contains two interstice bins. Aeration for grain conditioning and unloading is supplied by four 50-hp centrifugal fans. Thompson notes that two of the four tanks may be used for wet grain awaiting passage through an adjacent grain dryer.

In addition to the upright storage, the facility includes a pair of 2-million-bushel temporary piles just to the north of the concrete structure. One of the two were still full when *Grain Journal* conducted a photo shoot early in January.

The two units measure 600 feet by 180 feet and are outfitted with concrete pads poured by Platte Valley Precast and 9-foot LeMar oak sidewalls. Each pile also has 16 Boone 10-hp axial fans for aeration and to hold the tarp in place.

Twin Tramco drag conveyors at the bottom carry incoming grain out to storage, while a single Intersytsems drag conveyor at the top carries grain to storage from the dryer.

Grain Flow

Incoming trucks are routed by the facility office, where an Apollo truck probe takes samples, and the full trucks are weighed on an 80-foot Fairbanks pitless truck scale. (Outbound trucks have tare weight measured on a second Fairbanks scale.)

From there, trucks proceed to one of three side-by-side 500-bushel mechanical receiving pits that feed into the three Intersystems receiving legs inside the slip. Wachter Electric installed the PLC control system operating the receiving area.

Rather than passing through a distributor on top, grain passes through a series of two-way valves and onto parallel 20,000-bph Tramco drag conveyors running east and west out to storage. Twin drag conveyors allow for maximum flexibility to route multiple commodities throughout the elevator.

For drying, DeBruce operates a 7,000-bph Zimmerman tower dryer located at the west end of the concrete structure. The dryer is fired by natural gas and served by 15,000-bph Intersystems wet and dry legs. The dry leg empties onto a 15,000-bph Intersystems drag conveyor running back to storage.

Tanks empty onto a series of 60,000-bph Hi Roller enclosed belt conveyors in above-ground tunnels, which run back to the bucket elevator section. The belts feed a 60,000-bph Intersystems shipping leg outfitted with three rows of 20x8 Maxi-Lift CC-MAX buckets mounted on a 63-1/2-inch belt.

The shipping leg feeds grain into a 70,000-bph Intersystems bulk weigh loadout system under the control of Intersystems' own proprietary softward. In addition to the shipping leg, any or all of the receiving legs can route grain into the bulkweigher. The operator has the option of running grain through a 40,000-bph Intersystems gravity screener.

DeBruce crews can load a 110-car BNSF shuttle train in under eight hours.

Ed Zdrojewski, editor

New 7,000-bph Zimmerman grain dryer served by 15,000-bph Intersystems wet and dry legs.