

Category: 5 – Best Building Project – Specialty Contractor (\$2 - \$6 Million)

Contractor: Flintco, LLC

Project Name: McDonald Farms Franklin Street Terminal

Flintco Industrial Division's comprehensive and far-reaching construction services have produced some of the largest modern industrial structures in the country. That includes a Dry Bulk and Liquid Terminal project in the Western United States – the McDonald Farms Franklin Street Terminal, in Denver, CO. McDonald Farms Trans-Loading facility is a replacement for an existing operation located 3/4 of a mile to the south. The relocation was necessary to make way for the National Western Complex's new facilities. This industrial trans-loading facility transfers raw materials (stored in silos) between rail cars and trucks, and it provides short-term commodity storage. Flintco worked with St. Louis-based Penta Industrial Corporation – the project's engineering, procurement, and construction (EPC) partner – to complete the multi-million dollar civil and mechanical packages, which included the erection of the large EPC-furnished vessels and equipment. The 3.6-acre site along the South Platte River consists of:

- Modular office building with a commercial/public truck scale
- Bio-fuel storage/transfer facility with a concrete containment
- Hot water generator/air compressor building
- (1) 75-foot-tall sand silos with a bucket elevator and screw conveyors to facilitate the loading/unloading of specialty sand to/from rail cars and trucks
- (3) 75-foot-tall lime soda ash silo
- (4) 55-foot-tall biofuel silos
- Blower building consisting of three blowers that are connected to the lime/soda ash silos
- Loading dock with a rail spur

Solutions of Special Projects

Prefabrication was key to constructing this project. The large 30-foot diameter sand silo was a prefabricated bolt-up tank. Each piece was 15'x4' and was bolted together on the ground to make a full 30'x4' ring. The first level of radius steel walls was attached to the roof with four sets of hydraulic jacks placed inside, under the roofs. Once this was completed, the tank sections were jacked up and the steel wall plates were added as the silo rose from the foundation slab at about

15 feet per day. This process was used to complete the 30'x75' tank that contains sand. The compression ring around the tank holds 300,000 pounds of sand in the cone, which facilitates the unloading into rail cars and trucks. By prefabricating the tank, the jobsite was safer as the material was not staged on-site. All accessories – pipe, support brackets, and sensors – were pre-attached to the tank, eliminating the need for lifts, as well as removing tight works spaces between tanks.

Flintco also reviewed the installation of prefabricated ducts and chutes in the 3D model to check allowances for field tolerances ensuring the components fit precisely in their final location. Flintco's superintendent separated the model into components for prefabrication, including large vertical pieces, stainless steel piping, and process piping, eliminating the need for scaffolding and aerial lifts, and increasing jobsite safety, quality and timeliness. The tanks containing biofuel and soda ash were prefabricated as one tank and raised into place by a crane.

[Excellence in Project Execution](#)

Coordination was a crucial element of the project. The location of the project along rail lines is imperative to operations; however, this also posed a challenge. Denver Rock Island (DRI) is a local freight short-haul rail line that serves customers throughout the north Denver area. Approximately 25 miles of rail run along two corridors – adjacent to the South Platte River and the east side of National Western Drive. The two rail corridors convene at Franklin Street and Race Court – where the Franklin Terminal is situated. The DRI operates two trains per day in each direction, plus switching movements, to deliver and pick up rail cars at local businesses. Therefore, these lines are busy from 7 a.m. to 5 p.m., with priority given to DRI over construction work. Notice of any rail blockage or crossing work was required a week in advance. During construction, 5,300 linear feet of new rail lines were installed on the site, with nine switches to move the tankers and cars around the facility once complete. The rails cross several below-grade pipelines, airlines and electrical, requiring sleeving and advance installations to be closely coordinated during the rail installation, while the tanks and other facility components were built concurrently. With constant communication and coordination, Flintco completed the project on schedule without delaying operations of DRI.

Work of this scale and scope requires precise accuracy and measurement. Tolerances as low as 1/16 of an inch demanded impeccable virtual planning and flawless execution in the field. Accurate bolt placement and installation of the tanks were closely coordinated during concrete placement which allowed all tanks to be placed without any adjustments or delays. A total of 116 anchor bolts were placed in the foundation, varying from 2' to 4' thick. Flintco produced CAD files of the anchor bolt layouts and sent them to a prefabrication shop. Once onsite, Flintco bolted the tank together seamlessly resulting in higher quality construction and a safer installation process.

Construction Innovations

Safety and quality are the two most important pieces of a project. When we effectively manage safety and quality, schedule and production will ensue. Along that framework, Flintco's Superintendent performed a detailed pipe drawing to allow for the prefabrication of all the piping systems in an on-site fab yard. This increased the quality of the welded pipe systems and decreased the total time and work hours required to install the pipe, also creating a safer work environment. Prior to installation, Flintco verified that the pipe, with radius fittings, could be installed as a single piece through three tanks with the use of Virtual Design Construction (VDC). During installation, Flintco left the siding off the adjacent building and propped the door open on the other side to slide the pipe into place. This task took six workers 45 minutes to complete, instead of days. The 52-foot pipe ranged in size from 2 to 8 inches and was created with both carbon and stainless-steel pipe.

Environmental/Safety

We consider safety our top priority and believe everyone – trade partners, Flintco employees, and all those associated with our jobs – should go home safely at the end of each day. Our success depends on our people, and we sweat the small stuff that makes a tremendous difference in keeping our people safe: completing a proper pre-task plan as a team; wearing the correct PPE, and watching out for each other.

Every day on site we acted with intention, clearing the path to tackle the work we needed to do – safely. To reduce injuries, Flintco started each day with our Stretch & Flex program to warm up

the muscles, improving elasticity, and helped to meet the job's physical demands. Our work on the McDonald Farms Franklin Terminal project was completed with zero injuries or incidents – proof that our safety program works, and our team members take safety seriously. Flintco also self-performed construction of all underground mechanical, civil, above-ground structural, process piping, and equipment installation with zero incidents.

In addition to our standard safety protocols, working during the Covid pandemic had its challenges. Covid protocols were stringent on this project like they were on any project within the City and County of Denver. Building inspectors would only come onto the site if personnel were wearing masks, hand wash stations were present, and appropriate safety distancing was in place. To mitigate exposure risks on our projects and offices, Flintco created a Covid-19 Exposure Prevention Plan that includes the following requirements:

- Prescreening of all workers before entering all jobsites and offices
- Face coverings and gloves while working onsite
- Additional wash/sanitizing stations throughout the project
- Disinfecting of shared tools, equipment, and high traffic areas
- Social distancing of at least 6'
- Stay home when ill
- No more than 10 people in common areas/work areas
- No more than 1 person in a vehicle
- Video conferencing in lieu of in-person
- In offices, required face coverings when outside of their workstation, less than 6' away from co-workers, or in conference rooms
- Essential business travel only

Environmental concerns also changed the dynamic of this jobsite and working conditions. This site was previously a meatpacking plant; therefore, all personnel were strongly encouraged to wash and or disinfect their hands regularly, even before the Covid requirements. Animal blood pathogens were known to be in the soil, making hand washing imperative after becoming in contact with any soil. All soil was removed by a third party to comply with contaminated soil

requirements. During excavation operations, Flintco kept a close eye out for asbestos pipe as it was known to be buried throughout the jobsite. A small section of asbestos pipe was encountered, shutting down a portion of the project for a couple of weeks while remediation work was authorized and safely removed.

Excellence in Client Service

McDonald Farms and Penta Engineering were pleased with how Flintco executed and maintained the schedule and coordinated activities through Covid with the City and County of Denver's stringent requirements. Consistent communication and coordination with Denver Rock Island ensured project operations were not interrupted. In addition, our team was forward thinking, solving challenges before they become issues.









