

Category: 2 – Meeting the Challenge of a Difficult Job —Specialty Contractor
Contractor: Industrial Constructors/Managers, Inc. (ICM)
Project Name: “Ash Bunker” project at Colorado power plant

Building a Container to Keep Millions of Pounds of Coal Ash Water Out of Our Soil and Air

In Southern Colorado, a local power plant has three turbines, which together generate 1,635 megawatts. Two of the turbines use wet ash systems and one uses a dry ash system, which are designed to allow for safe handling of the ash generated by the turbines.

Four years after the local power plant completed the dry ash station, the Environmental Protection Agency (EPA) signed the Disposal of Coal Combustion Residuals from Electric Utilities final rule, creating nationally-regulated requirements for the safe disposal of coal combustion residuals (CCRs), commonly known as coal ash, from coal-fired power plants. The regulations were created to address the risks associated with “wet ash” disposal practices and prevent the substance from contaminating ground water or air quality.

As a result of the EPA’s regulation requirements, roughly 50 coal-fired power plants around the United States must update how they dispose of coal ash, since the existing wet ash bunkers don’t meet the new regulations. Here in Colorado, the power plant owner chose Industrial Constructors/Managers, Inc. as the contractor for this project, based on ICM’s successful work history on other local projects, including its experience on numerous coal-fired power plants in the region.

ICM was responsible for constructing a concrete wet “ash bunker” that is 10 feet tall and 45 x 170 feet wide, with the ability to hold an estimated 5.7 million pounds of ash water. The work included installing the project’s foundation work, process piping and pump skids, including nearly 3,500 feet of process piping to tie the existing ash water lines through a treatment system and then back to the settling ponds.

This high-profile project offered several challenges, all revolving around a tight timeline for a large project situated in a small footprint with numerous trades working simultaneously.

Solving Problems and Meeting Challenges with an Innovative Mindset is ICM's Superpower

Due to the tight schedule to meet the EPA regulations deadline, the Ash Bunker project had to be fast-tracked to an 8 month timeframe. To overcome this challenge, ICM's project team worked efficiently with engineers from HDR to develop the issued-for-construction (IFC) drawings. ICM worked closely and carefully with HDR to strategize and provide recommendations for project efficiencies and time/cost saving construction techniques.

Material procurement was challenging as lead times for process piping, valves, controllers, tanks and skids have doubled or tripled over the past year, mostly due to Covid-related delays.

The first set of valves specified on the project had a 28-week lead time, which was not an option for this fast-tracked project. The ICM project team researched, identified and recommended another set of valves with a shorter lead time and met with the project engineering team to review the option. The engineers appreciated ICM's recommendation and revised the specifications to include the new valves.

There were additional lead time issues with the cabling and electrical components needed for the project; however, there were no viable alternatives for replacing these materials. ICM expedited the orders and kept in close communication with suppliers. In addition, the ICM team worked longer schedules and brought in additional union members from around the United States to get the job done. For nearly 60% of the project timeline, ICM crews worked 10-hour days, 6 days per week. In all, ICM had 35 workers on site – including pipefitters, carpenters, rod busters (IW) and laborers, as well as project safety leaders and managers – to meet the project's tight timeline.

Project Execution – Building a Durable, Versatile and Safe Disposal System

ICM utilized the “Big Blue” forming system from Ellis Formwork Manufacturing, a European-style clamp system comprised of a 12' x 8' panel – the largest single-piece form manufactured in the United States. It is a high-capacity system designed for concrete pressures of up to 2,000 psf, allowing for faster concrete placements and for project teams to construct larger forms quickly thanks to increased concrete pour rates. During the project's lifecycle, ICM poured roughly 1,000 yards of concrete in four ash settling zones for the bunkers.

This project required a concrete mixture with macro fiber reinforcements, which provide increased crack control. ICM had not previously worked with macro fiber reinforced concrete, so the team met with the concrete supplier to understand how the material would react.

ICM completed the concrete work a full seven days ahead of schedule and earned compliments from the project owner for quality work, close coordination and project efficiencies.

Creating a Crane-based Safety Plan to Protect the Project Team

ICM determined that an additional life-safety measure was needed for this particular project, given the depth of the bunkers being constructed. The ICM team developed a safety plan that utilized a gurney system, rescue basket and crane in the event someone fell into the bunker. All project team members on site received training so they would know how to use the rescue system if needed. Fortunately, the system was not needed for this project.

In addition to developing the site-specific gurney/crane rescue system and safety plan, ICM conducted daily safety briefings, carefully identifying work hazards and the controls needed to prevent harmful events. ICM also performed daily site and equipment inspections.

The ICM team completed the Ash Bunker project in 28,702 hours and with zero lost-time accidents and no instances of Covid-related health issues.

“It’s always exciting when we can be involved in such a large-scale project and come together as a team to meet challenges through innovative thinking and good communication, perform our role safely and deliver a high-quality result on time,” said Devyn Novak, ICM project manager for the Ash Bunker project.





