The McDuffie Coal Terminal, a part of the Alabama State Docks, initiated the entry of Alabama coal producers into the international coal market. Its three-phase design and construction enabled the State Docks to begin exporting coal even before the project was finished, earning money to finance the design and construction of the latter sections. The terminal, a ninety-six-acre facility located on McDuffie Island at the mouth of the Mobile harbor, employs around one hundred people and generates about $20.8 million a year into the state’s economy. A major force in the international coal market, McDuffie Coal Terminal has handled more than 113 million tons of coal since its completion in 1983.

The terminal brings in coal by both railroad car (it is served by six railroad companies) and barge, thanks to a computer-managed interlocking system that sequences the controls for a 3.5-mile system of conveyors, fifteen transfer towers, and ten bulk handling machines. The coal is unloaded from inland barges and railroad cars, stockpiled and loaded into ocean-going ships. The terminal’s unloading equipment includes three bucket elevator barge unloaders with capacities of five thousand tons per hour; a rotary rail car dumper that can dump twenty-five cars per hour; and a tandem rotary rail car dumper that can dump fifty standard rail cars per hour.

Storage is an important issue, since coal is received almost constantly and vessels arrive for loading at irregular times. Six storage pads at the terminal can store up to two million tons of coal. With two docks and two ship loaders, the facility can load two ships simultaneously, handling vessels ranging in size up to 150,000 dead-weight tons. The average loading time per vessel is thirty-two hours for sixty-six thousand tons of coal.

Several innovative designs were employed in the terminal during its ten-year construction period. For example, the facility features the first continuous bucket elevator barge unloader with outboard supports. This eliminates the need for the massive framework and foundations required to support conventional cantilever barge unloaders. McDuffie Terminal also pioneered the use of the hands-off barge haul system, which uses a remotely controlled clamping apparatus to attach itself to barges being unloaded. This feature vastly improves the safety of operations by eliminating the need for deck hands to work close to high-tension tow cables. The rotary car dumper at the terminal is the world’s largest of its type. It can dump two of the largest coal-carrying hopper cars, or three of the smaller coal-carrying hopper cars, now in use. These illustrations are just three of several innovative design features that distinguish the McDuffie Coal Terminal and make it one of Alabama’s finest engineering achievements.

Finally, because it serves an area as environmentally sensitive as Mobile Bay, the McDuffie Terminal was designed with particular attention to the containment of rainwater runoff from coal storage piles. An enclosing embankment, an extensive ditching system, and several pumping stations are in place to handle the runoff.

The McDuffie Coal Terminal has won the Honor Award for Engineering Excellence from the Consulting Engineers Council of Alabama.