PORT COVINGTON TERMINAL: COAL PIER NO. 4 HAER No. MD-75
1200 feet south of McComas Street, 1800 feet south of Light Street on the Patapsco River
Baltimore
Baltimore City
Maryland



PHOTOGRAPHS

WRITTEN HISTORICAL AND DESCRIPTIVE DATA

HISTORIC AMERICAN ENGINEERING RECORD
Northeast Field Area
Chesapeake/Allegheny System Support Office
National Park Service
U.S. Custom House
200 Chestnut Street
Philadelphia, PA 19106

# HISTORIC AMERICAN ENGINEERING RECORD

## PORT COVINGTON TERMINAL: COAL PIER NO. 4

HAER NO. MD-75

LOCATION: 1200 feet south of McComas Street and 1800 feet east of Light Street on the Patapsco River in the Port Covington area of the City of Baltimore, MD

BUILDER: Wellman-Seaver-Morgan Co., Cleveland, OH

DATES OF CONSTRUCTION:

High Lift Dumper built 1921
Rotary Dumper and Conveyer built 1927
Conveyor from Rotary Dumper to High Lift Dumper added 1956

PRESENT OWNER: Western Maryland Railway Company

PRESENT USE: Demolished 1988-89

SIGNIFICANCE: The Western Maryland Railway Port Covington Coal Pier is one of the last railroad coal unloading piers in Baltimore. During the Pier's operational life (1921-1974), it went from representing the state-of-the-art in east coast coal unloading facilities to complete obsolescence.

The Coal Pier's capacity to rapidly unload large quantities of coal into ships, which resulted from a combination of two types of dumpers, made the Western Maryland Railway, and in turn the Port of Baltimore, a major competitor for the transportation of coal from eastern coal fields. The Coal Pier was thus an important part of the history of the development of the Port of Baltimore.

PROJECT INFORMATION:

This documentation was undertaken in October, 1988, in accordance with a Memorandum of Agreement including CSX Transportation, Inc., as a mitigative measure prior to the demolition of the Coal Pier.

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The Coal Pier was one of the many facilities located within the former Western Maryland Railway Company's Port Covington terminal area in Baltimore, MD. Port Covington, which comprises about 185 acres, is located about 1½ miles directly south of downtown Baltimore on the peninsula dividing the Middle Branch and the Patapsco River. Port Covington is generally bounded by McComas Street to the north, Hanover Street to the west, and the Patapsco River to the south and east. Included within the terminal were a 2500-car rail yard, a five-million-bushel grain elevator, a cement elevator, a 1000-foot long covered merchandise pier, a 1500-foot long ore pier, an intermodal facility for transferring containers and trailers to and from rail cars, and assorted ancillary small buildings.

The development of Port Covington was inseparable from the development of the Western Maryland. The Western Maryland Railway Company, which operated the Coal Pier, traces its origins to 1852, when a company called the Baltimore, Carroll & Frederick Railroad was chartered by the Maryland Assembly with the purpose of connecting Carroll County and the Cumberland Valley to Baltimore. The Western Maryland began operating in 1859, and by 1861 was running trains between Union Bridge and Baltimore. In 1871, the Western Maryland was extended to Thurmont, and by 1873 had reached Hagerstown and Williamsport, where it connected with the Chesapeake & Ohio Canal. Between 1881 and 1902, the Western Maryland expanded to Shippensburg, PA (where it connected with the Reading), to Cherry Run, WV (where it connected to the B&O and gained access to heavy coal business), to Hanover and Gettysburg, PA, to Highfield, MD, and to York and Porters, PA.

In 1902, the Western Maryland came under the control of the so-called Fuller Syndicate, which was affiliated with Jay Gould. Under Gould's influence, by 1906 the Western Maryland had established new western connections. To take full advantage of the railroad's western expansion, however, port facilities at Baltimore were needed. Western Maryland accordingly built a five-mile extension from its terminus at Fulton (on the west side of Baltimore) to Port Covington. The new terminal opened for business in September, 1904, after which Port Covington expanded until it filled the 185-acre site with the facilities noted above.

Western Maryland continued its expansion after the Gould empire collapsed in 1906, reaching Connellsville, PA, in 1912, where the Western Maryland connected with the Pittsburgh & Lake Erie Railroad. This extension gave the Western Maryland the ability to act as a bridge carrier for traffic moving from the Midwest to Philadelphia, New York, New England, and Baltimore. By the 1940s, as a result of an additional connection at

Connellsville and various railroad mergers, the Western Maryland had become an integral part of a famous high-speed east-west freight service known as the "Alphabet Route" after the initials of the many railroads participating in the route. Although comprised of many railroads, the Alphabet Route was able to rival the transit times of big trunk lines. In short, by the 1950s, Western Maryland was a significant eastern trunk line. Port Covington linked this trunk railroad with the world.

Changes in the rail industry ultimately led to the Western Maryland's decline as an independent carrier. B&O bought a controlling interest in Western Maryland to protect itself from having the carrier purchased by another large trunk. In the 1960s, a wave of rail mergers changed the competitive picture, and B&O took direct control of Western Maryland's management. Abandonments of Western Maryland lines followed because many of those lines paralleled B&O lines. Finally, in 1983, B&O took operational control of the Western Maryland, which effectively ended that carrier's role as a separate carrier.

Western Maryland originally opened a coal pier on the site of the present Pier in February, 1905. The Pier's purpose was to unload cars of coal into vessels. After that original pier was almost completely destroyed by fire on September 5, 1919, it was replaced with the current Pier and High Lift Dumper for loading ships, which was completed on April 1, 1921. In 1927, the Rotary Dumper was installed inshore (and on the opposite side of the Pier) from the High Lift Dumper. The Rotary Dumper was originally used to load coal into barges.

Various alterations were made to the Coal Pier to deal with the problem of thawing coal frozen into railroad cars so it could be dumped. Prior to 1953, a small boiler plant at the Pier furnished live steam to blow on the sides of cars and warm them enough to allow the coal to flow when the car was rotated or tipped in the Dumper. Later, this obsolete boiler plant was replaced with an actual steam locomotive, equipped with a giant fan for draft. This was supplemented by electric infra-red heaters at the inshore end of the lead to the Lift Dumper. This process was abandoned as too expensive and replaced by a four-car-length thawing shed, using natural gas as fuel, equipped with under-car and side-of-car infra-red heaters. This, in turn, was replaced by an LP gas-fueled system, which used a tank car for gas storage during the season.

In 1956, a cross-over belt was installed between the loading path of the Rotary Dumper and the loading pan of the Lift Dumper. This enabled both Dumpers to feed coal to a vessel berthed on the grain elevator side of the Coal Pier.

Dredging was performed on the north side of the Coal Pier to 35 feet, enabling the berthing, and loading, of two ships at one time.

For a short while, large fixed water nozzles, connected to a high pressure pump, were used to wash out hopper cars in the Rotary Dumper either as they were being unloaded, or after they were emptied. The empty and clean cars thus provided were then used to load high grade ores, which required clean cars, on the adjacent ore pier. Because of environmental concerns, this was discontinued.

The present Coal Pier, located at the southern end of the terminal, was 950 feet long and 78 feet wide, and extended outward from the shoreline of the Patapsco River in Baltimore Harbor in an area of the City of Baltimore known as Port Covington. The Coal Pier rested on concrete piles, and had a concrete deck with timber fenders, apron, and bulkhead. The Pier's two most prominent features were the Rotary Dumper on the inshore end of the Pier and the High Lift Dumper further out on the Pier, both built of steel girders. Leading to both Dumpers were barney inclines constructed of concrete and steel. These inclines were so named because they carried the tracks upon which a device known as a "barney" or "mule" traveled. The barney or mule was used to push loaded rail cars up to the Dumpers. Each Dumper also used a structure called a "kickback," which was a dead-ended inclined track used to return empty cars to the storage yard. The Rotary Dumper's kickback was constructed of concrete and steel, while the High Lift Dumper's kickback was made of timber. Ship berths on either side of the Pier were dredged to 35 feet when the Pier was in use.

On the inshore side of the Pier was a railroad yard containing tracks for storing loaded and empty coal cars. These yard tracks connected to the Western Maryland's main line tracks, and thence to the Nation's rail system.

The Coal Pier was built by Wellman-Seaver-Morgan Company of Cleveland, OH (which remains in business today as Dravo Wellman). The Pier was constructed using then standard erection techniques. The Pier was electrically operated, using machinery obtained from the General Electric Company.

The Rotary Car Dumper was operated in conjunction with a trunk line belt conveyor. This machine was served by a separate rail gravity yard (i.e., the cars moved out of the yard by gravity without the use of a locomotive) with a capacity of 110 loaded 40-foot cars and an empty car yard with a capacity of 90 40-foot

cars. Loaded cars were brought by gravity to a mule (a steel haulage mechanism) at the foot of an incline. The mule, which was pulled by a cable powered by an electric winch, traveled on wheels on steel tracks running inside the railroad tracks upon which the coal cars rolled. As the rail car rolled onto the incline, it passed over the mule, which was in a pit below track level. After the car passed over, the mule emerged from the pit and pushed against the car's coupler. The mule pushed the cars up to the platen of the car bumper. A man rode on each car, and as the car reached the dumper, he set the car's handbrake and dismounted. After pushing the car into the platen, the mule then reversed direction and dropped down below track level to a second set of mule tracks. The mule then rode on these tracks back to pick up another loaded car at the foot of the incline.

The car dumper was supported at each end upon equalized rollers. When in operation, the car dumper began to revolve, and the movable platen shifted the loaded car over to blocks on the apron side of the car dumper. Four car clamps descended by gravity to secure the car while it was being slowly rotated to an angle of 90 degrees, insuring complete removal of the contents with minimum breakage. The coal flowed into a 75-ton receiving hopper with two outlets, which in turn fed a rubber conveyor belt 60 inches wide and 520 feet long which conveyed the coal to the loading boom extending over the vessel's hatchway, through which it was delivered to all parts of the vessel's hold by the telescopic chute and mechanical trimmer.

The empty car was pushed out of the dumper by the next loaded car and rolled by gravity further out onto the Pier. With the man again riding it, the car first went down the incline and then up until it stopped at the elevated end of the incline, which was called the "kickback." On its way up to the kickback, the car passed through an automatic spring-operated rail switch. As the car's wheels rolled into the switch during its roll away from the dumper, the wheels pushed the movable rails in the switch into the proper alignment to permit the car to continue straight through the switch toward the kickback. When the car cleared the switch, the switch's springs automatically snapped the movable rails back into their original position, which aligned the rails in the switch so that cars coming back down from the kickback would be diverted onto the track that leads down past the side of the rotary dumper toward the shore. Thus, when the car that had passed through the automatic switch came to a halt at the kickback, and then began rolling back down toward the rotary dumper, it was automatically shunted to the side of the rotary dumper as it rolled by gravity back to the empty storage yard on shore. The entire process was timed so that a car could be

dumped every two minutes. The rotary dumper had a capacity of thirty 70-ton capacity cars per hour.

The lift type of car dumper was served by a separate gravity yard with capacity of 150 loaded 40-foot cars and an empty car yard with capacity of 115 40-foot cars.

Loaded cars were released in the loaded car yard and ran by gravity to a mule which was located at the foot of the steel and concrete inclined plane leading to the car dumper. The mule, secured to a heavy steel cable leading to a powerful electrically-driven hoist drum, pushed the loaded car up the inclined plane to the platen of the car dumper, as in the case of the rotary dumper. The platen was an elevator hoisted by steel cables wound on electrically-driven winches. As the platen began to lift, the car (and the rails it was resting upon) shifted sideways to come to rest against blocks. The loaded car was then lifted to the height required to reach the car dumper pan, into which the contents of the car were carefully emptied by the inversion of the car to an angle of 90 degrees, thus insuring the complete removal of the contents. As the car was turned over, its top came to rest against cable-suspended stops, which kept the car from falling out of the platen. The coal moved slowly into a telescopic chute attached to the pan, thence through a mechanical trimmer into the hold of the vessel. The mechanical trimmer was equipped with variable speeds so that coal could be stored in the hold of the vessel in approximately the same condition as when it had been placed in the car at the mine tipple.

The now empty car was then lowered back down to the tracks on the pier, and was pushed out by the next loaded car. The empty would then roll by gravity to a kickback at the end of the Pier, and then back to the empty yard, passing in both directions through the same kind of automatic switch described for the rotary dumper.

The high lift dumper had a capacity of 30 70-ton cars per hour, and could also handle 90-ton cars.

Between 1921 and 1927, only the high lift dumper operated on the Pier. When the rotary dumper was installed in 1927, both dumpers were first used separately -- the high lift to load vessels and the rotary to load barges. With both dumpers operating, the Pier could handle 60 cars per hour. In 1956, a cross-over conveyor belt was installed between the two dumpers, permitting both to be used together for loading barges or vessels. The machinery on the Pier was electrically driven.

Although state-of-the-art when first built, the Coal Pier eventually became obsolete and was last used in 1974. That obsolescence reflected a number of factors, including the Pier's labor intensity (as many as 80 men were needed to operate the Pier in normal weather), and changes in both the vessels into which the coal was loaded and the nature of the coal business itself.

Specifically, because the Pier had a fixed loading point, the vessel had to be moved fore and aft as the loading progressed into the various holds. Large vessels required multiple access to the same holds to avoid stressing the vessel by loading one hold full while the others were either empty or partially loaded.

As vessels got larger, there was not sufficient room at the bulkhead end of the Pier to move the vessel enough to reach the rear holds. The vessel accordingly had to be pulled away from the Pier, turned around, and then reberthed to load the holds that previously could not be reached. At times, this had to be done more than once to avoid the loading stress described above. This reberthing increased the cost of operating the Pier.

Apart from increasing length and breadth, vessels also became much deeper in draft. The berth alongside the Coal Pier was eventually dredged to 40 feet, but in order not to threaten the stability of the pier pilings, a "ridge" was left next to the pilings. This required the use of spacer rafts to keep the vessel out and away from the ridge, at least during the loading process, when it exceeded the depth of the water over the ridge.

The nature of the coal business also eventually overtook the Pier. Coal cargoes are sold on a specification basis, that is, pursuant to a formula of the averages of specified percentages of various coal qualities that determine the overall quality of the coal --such as x-percent sulphur, y-percent ash, etc. As a result, all coal cargoes destined to a particular ship had to be blended by mixing the coal from various sources in a pre-determined manner to bring about the contract grade of coal. This mixing was the railroad's responsibility. Thus, when loading a vessel, cars of coal must be set up on the various loading tracks feeding the coal dumper in an order that will permit the loading of the various mine sources of coal in a way that will result in the average grade needed. This required a tremendous amount of switching in the yard behind the Pier. As vessels became larger, and cargoes reached into the 500-car level, it became almost impossible to keep up with the switching requirements. Moreover, often a specific "code" (i.e., coal from a particular source) of coal was not on hand, so that the

blending could not be properly accomplished. At times, the absence of a particular kind of coal stopped the vessel loading process until the missing ingredient arrived. These problems made it very difficult to operate the Pier in a cost-effective manner.

The obvious answer to the problems created by the blending requirements was the development of ground storage of coal, where coal is not held in cars at the terminal, but unloaded through automated dumping procedures and then transferred by belts to identified storage areas. When the vessel arrives, the coal on hand is reclaimed by either underground belts, or reclaiming bucket-type wheels and conveyed to the loading point by belts. This is the type of terminal existing and now used at the Curtis Bay Company, which is next to CSX's Curtis Bay Pier. Also, Consolidated Coal Company, at Canton, is designed for ground storage. At Port Covington, however, there was no room for ground storage.

Another factor in the obsolescence of the Port Covington facility was the problem of unloading during freezing weather (either at the loading point of the coal, or at Port Covington, or both). The initial problem was to get the coal to dump from the car, which was difficult when it had been held in cars for any length of time during below-freezing weather. Various thawing procedures were followed, as described above. Once out of the car, the coal had a tendency to freeze again and "bridge over," thereby blocking out the chute leading to the loading trimmer at the end of the loading arm. When this occurred, it at times required men to climb out in winter weather and poke through various access holes in the loading chute with crowbars.

Another significant factor in the demise of the Port Covington Coal Pier was the conversion to oil of the BG&E Gould Street Power Plant in 1972, which previously had been a destination for barge coal unloaded at the Pier. (Because of an odd rate arrangement, the cost to BG&E to have coal brought to Port Covington, loaded on barges and moved a few hundred yards to the power plant was less than it would have been for direct rail delivery.) Also, Bethlehem Steel Company's Ida May mine, a significant source of barge coal traffic for the Coal Pier, became exhausted in the 1960s.

The Coal Pier is significant as a reflection of changing coal--shipping methods and for its impact on development of both the local area and the regional center of Baltimore. The Coal Pier was part of Western Maryland's large Port Covington Terminal, and helped permit Western Maryland and Baltimore to compete for coal traffic moving from eastern coal fields to points served by water

carriers in the United States and abroad. In a promotional brochure issued in 1928, the Baltimore Association of Commerce stressed the excellence of Baltimore's port facility, and included a photograph of the Coal Pier under the heading "Baltimore's Port Facilities Rank Extra Good." A Western Maryland brochure issued circa 1928 featured a two-page spread, with three photographs, describing the Coal Pier. That brochure asserted that between 1921 and 1928, 75 percent of the coke exported through Baltimore was handled on the Coal Pier. A 1931 Western Maryland brochure listed the advantages Baltimore had as a port, including its proximity to both population and producing and consuming areas.

There are presently several other coal piers operating in the Port of Baltimore. At Curtis Bay, CSX Transportation operates two rotary dumpers, very similar to the rotary dumper at Port Covington. The principal difference between the Curtis Bay and Port Covington coal piers is the Curtis Bay pier's ability to move its unloading chute. Thus, a vessel or barge can remain stationary while the chute moves along the pier. Directly adjacent to CSX's Curtis Bay facility is the Curtis Bay Company's coal pier. That pier also uses a rotary dumper and a moving unloading chute. The Curtis Bay Company's pier also enjoys ground storage.

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