

CASE STUDY

Taking the Helm and Delivering the Goods: Sustaining Port Infrastructure for Economic Development

Since its opening, more than 80 million tons of freight have moved through the Tulsa Port of Catoosa. After undertaking ownership of a second port and adopting the name Tulsa Ports, improvements were essential to reinvigorate both sites and promote economic activity throughout the region.



Challenge

Tulsa Ports comprises two ports — the Tulsa Port of Catoosa and the Tulsa Port of Inola. The Tulsa Port of Catoosa is the primary facility for Tulsa Ports. This port is located on 2,500 acres and situated at the head of navigation for the McClellan-Kerr Arkansas River Navigation System.

The Tulsa Port of Catoosa officially opened for business in February 1970 and received its first commercial shipment in 1971. In 2019, Tulsa Ports acquired 2,000 acres in Inola, Oklahoma, through a land transfer with the Public Service Company of Oklahoma. Providing both barge and rail access, the 2,000-acre site is now home to the Tulsa Port of Inola.

Project Stats

Client

Tulsa Ports

Location

Catoosa, Oklahoma
Inola, Oklahoma

19

**TASK ORDERS APPROVED
IN THE INITIAL 30 MONTHS**

5

**TRANSPORTATION
IMPROVEMENT PROJECTS**

8

**TASK ORDERS COMPLETED
IN THE INITIAL 30 MONTHS**

Tulsa Ports, especially the Tulsa Port of Catoosa, has been an economic engine for the region since its founding, but maintaining a major industrial park requires regular maintenance, repairs and upgrades. In February 2020 — 50 years after the Tulsa Port of Catoosa began operations — Tulsa Ports entered into a master service agreement with Burns & McDonnell that included an itemized task list to address maintenance issues and improve operations at both ports. Furthermore, these upgrades will improve resiliency, enhance operations, and foster economic development by attracting new businesses to the industrial parks at both port locations.

Solution

Port operators must address storm surges and supply chain issues, while maintaining desirable property for lease and sustaining operations. Our partnership with Tulsa Ports has laid a strong foundation for the ports' future to serve as an economic engine for the Tulsa metropolitan area.

While the Port of Inola has the potential to attract new business and expand the industrial footprint in the Tulsa metropolitan area, Tulsa Ports focused considerable efforts toward rebuilding and repairing its infrastructure assets around the original port — the Tulsa Port of Catoosa.

Tulsa Port of Catoosa Projects

One of the first projects Tulsa Ports requested our help with under the master services agreement was designing and reconstructing 1,200 linear feet of concrete pavement on North Arkansas Road along the Tulsa Port of Catoosa's northern entrance. Our team provided engineering design services to reduce long-term maintenance and improve safety on the road. Specifically, the pavement was degrading because it had inferior subgrade soil. A thicker base rock was put in below the concrete pavement to improve pavement drainage and support heavy and oversized traffic. Designs for this project also included a layer of drainage rock between the subgrade soils and concrete. After improving the base layers, a 9-inch layer of concrete pavement was situated above the drainage rock and subgrade soils.

While water is a crucial component for ports, it can also create challenges for the natural and built environment around a port. At the Tulsa Port of Catoosa, riverbank stabilization is necessary to address soil sloughing. While the maturation of the port led to inevitable bank stabilization efforts, the port lost approximately 60,000 cubic yards of soil because of historic flooding in 2019. Our team provided bank stabilization designs to reestablish maintainable slopes and enhance erosion protection, which would prevent loss of material in future events. Plans also call for dredge ponds to provide additional capacity and operational controls for

regular maintenance activities. Designs for this portion of the project are complete, and Tulsa Ports is seeking funding and permitting assistance from the U.S. Army Corps of Engineers to complete stabilization efforts.

Six additional locations within the port channel were identified for emergency bank stabilization. Corrective action was necessary because of soil sloughing and stormwater erosion. The soil sloughing indicates soil movement and requires action to prevent bank failure. The Tulsa Port of Catoosa also had land that couldn't be maintained due to groundwater discharge through the face of the port channel. In partnership with a subcontractor, our team completed emergency bank stabilization design and construction.

We also partnered with a subconsultant to conduct a wasteload allocation study. This study determined the available wastewater discharge allocations flowing into the Verdigris River. Water from the river was sampled in numerous locations upstream and downstream of potential discharge locations to develop water quality models. These models helped the subconsultant determine allowable constituent loading. The team also conducted river models and submitted a report to the Oklahoma Department of Environmental Quality.

In addition to these completed projects, our team conducted fuel station site diligence for the Tulsa Port of Catoosa site, as well as designs for a towboat dock replacement. The fuel station site diligence is on two parcels of land near the entrance of the port. The long-term goal is to have a truck stop established on one parcel. Site diligence was conducted on the second parcel so a second tenant could have pertinent information.

While the towboat dock has not been rebuilt, our team provided engineering design services for the existing towboat dock, which is degrading due to flooding events. Towboat docks are floating docks, which means they are tethered in place by a cable system attached to piling below. While this type of system allows the dock to rise and fall with the water, the structural integrity can subside due to major storm or flooding events. The port is currently seeking Port Infrastructure Development Grant funding through the U.S. Department of Transportation to address these issues.

Tulsa Port of Inola Projects

In 2019, the Public Service Company of Oklahoma transferred ownership of a 2,000-acre green-field industrial park in Inola, Oklahoma, to Tulsa Ports. To prepare the industrial park for a vibrant future, our team developed a master plan that included a conceptual layout to guide future growth and

development at the industrial park. The project team and Tulsa Ports economic development staff identified 10 different target industries that would be desirable, easily supported, and relate to other industries in the area for the Inola industrial park. Businesses that move to this site would have access to rail and barge transportation with future improvements.

Results

Tulsa Ports is laying the groundwork for a bright future for the Tulsa Port of Catoosa and the Tulsa Port of Inola. Through the master service agreement with Burns & McDonnell, Tulsa Ports is realizing its vision of increasing economic development, improving its roadway network for shipping trucks, enhancing waterways for its barge traffic and expanding rail service. While work at the ports is ongoing, these efforts have put

the Tulsa Port of Catoosa and the Tulsa Port of Inola on a trajectory to serve as a combined economic, trade and supply-chain hub for the Tulsa region.

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