

Unlocked

Once a trickle, dollar flow now spurs Kentucky Lock addition.

By Pamela Glass, Washington Correspondent

After languishing in funding limbo for years, construction of new, larger locks on the busy stretch of the Tennessee River near Grand Rivers, Ky., is moving forward, thanks to a steady infusion of federal investment over the past five years.

Like many other expensive and complicated lock and dam projects along the inland waterways system, the Kentucky Lock Addition Project has been stalled by years of sparse funding from Congress. Construction began in 1998, and after many starts and stops resulting from funding hiccups and challenging river conditions, it is projected to be completed 31 years later in 2029.

A recent media tour of the site gave reporters a chance to see up close the project's progress and learn how it will improve the pace of commercial and recreational traffic at Mile 22.4 of the Tennessee River in western Kentucky, about 20 miles east of Paducah.

The lock moves both commercial and recreational vessels between the higher elevated Kentucky Lake and the Tennessee River and is considered the gateway to both the Cumberland and Tennessee Rivers. The land is owned by the Tennessee Valley Authority and the lock and dam are owned and operated by the Army Corps of Engineers.

At a projected cost of \$1.2 billion, the Kentucky Lock Addition will comprise a new 110'x1,200' lock adjacent and landward of the existing smaller 110'x600' lock. The project also includes new highway and railroad bridges across the Tennessee River and relocation of transmission towers to provide vessel clearance through the new locks,

Photo by Leon Roberts, Army Corps of Engineers, Nashville District



A Johnson Brothers Construction crew performs spot welds in March on a steel sheet pile on the completed cofferdam at the Kentucky Lock Addition Project on the Tennessee River in Grand Rivers, Ky. The Army Corps of Engineers Nashville District is constructing a new 110'x1,200' navigation lock at the Tennessee Valley Authority project.

ees to consider ways that would make their jobs more efficient and maximize their capabilities. Discussions like that led to the development of a dedicated Z-drive shop.

"Our customers in the harbor tug fleet were filling our inside machine shop with their azimuth drive units. We decided if we had the dedicated shop we could work on more units and store spares to minimize downtime," said Johnny Gaskins, VP of Production.

Lyon agree prodded the team to make sure the shop would serve not just the current generation of vessels, but whatever might be coming next. With this in mind, they added a 45-ton overhead crane to the design of the 5400 square foot shop space.

The facility is unique on the east coast giving customers the



ability to have complete rebuilds or emergency repairs done completely in-house. There is room for storage of spare units so the yard can swap out and work on a malfunctioning drive without downtime for a tug.

"We can send a truck to pick up the malfunctioning unit and install a good one without having the tug come to the yard," said Gaskins. "We have everything you need to work on these complicated drive and gear units at our fingertips."

Adam Barden runs the shop. He came to the yard straight off the tugs as a licensed engineer. He has the kind of hands-on knowledge of operations to speak directly to onboard personnel to troubleshoot. He is backed up by three fulltime technicians.

Last year, Lyon Shipyard signed a formal agreement with SCHOTTEL, manufacturer of azimuth propulsion systems to be the east coast provider of warranty services. This is another

example of Lyon's forward-looking vision: the agreement comes as the US east coast begins to ramp up several offshore wind projects, including one off the coast of Virginia. The vessels that install and service offshore wind turbines rely on azimuth drives and Lyon will be positioned mid-coast to provide service to them. For now, the SCHOTTEL agreement means that the harbor tugs using these drives along the coast can count on fast and reliable service. The shop also frees up the machine shops to expand their fabrication facilities, offering industrial solutions in house as well.

George Lyon acquired the Norfolk Shipbuilding Co.'s Brambleton yard in 2007, as part of the strategic plan he developed to keep the yard competitive and sustainable in the long term. That yard, and adjacent acreage form the nucleus of the ambitious expansion in that will add significant capacity in the competitive repair market. The centerpiece will be an 820 metric ton boat lift.

Lyon tapped another stalwart of the Norfolk marine community, Crofton Construction Services to do the infrastructure and dredging for the redevelopment of the old yard. The old Railway #3 was removed, along with a timber pier. Crofton will construct 2-200' concrete piers with full services to accommodate topside repair.

"My father and George Lyon's father worked together on several projects, and it really is an honor to be part of the next chapter of Lyon Shipyard," said Kenny Crofton.

Johnny Gaskins, reflected on the decision build a mobile boat lift and create space for working on boats either in the slings, for emergencies, pierside at the new facility or "on the hill." "We spent close to a year designing this lift," said Gaskins. "We want to be able to serve our core customers: the harbor tugs and barges as well as the military craft we bid on."

The evolution of tug design informed the design of the boat lift. Gaskins explained that as the tug fleet converted to azimuth drives, the boats have become heavier and yet, shorter.

"You need to get the slings beneath these shortened boats that have an increased tons per foot ratio, at the same time we want to lift a standard hopper barge, and the smaller response craft."

Lyon turned to U.S. Hoist of Center Moriches, NY in collaboration with Boat Lift, SRL in Italy to manufacture the mobile boat lift that will arrive in early 2022.



among other works.

Barges move about 57 million tons of commodities a year that are valued at over \$10 billion through the current lock. These include coal, grains, chemicals, steel and petroleum, as well as military equipment and NASA rockets. Officials report a recent surge in building supplies, concrete and sand, as well as diesel and gasoline, all fueled by growth in the Nashville area.

BOTTLENECKS, COSTLY DELAYS

For inland operators, the drawn-out construction schedule and small size of the lock have caused bottlenecks and costly delays. The average wait time to lock through is 10 hours or more per tow, which the Corps of Engineers says is among the highest in the country. Excessive delays can cost the industry over \$100,000 a day. The reason is the limiting size of the existing lock, which can accommodate only nine barges per

The Chippewa, a Coast Guard inland buoy tender, passes through the Kentucky Lock.

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lock, far too small to meet current and future traffic demands without significant delays.

Current tows normally contain 15 barges, “so we have to break apart a tow and lock through twice,” Zachary Langel, the Corps’ Kentucky Lock

project manager, told reporters. “Any delays are passed on to every other lock” along the river. At times, a tow could have as many as 36 barges, which requires multiple breakups, he said.

By contrast, the newer, larger lock



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Corps of Engineers photo by Leon Roberts



A Johnson Brothers work crew builds a cofferdam cell at the Kentucky Lock Addition Project in December 2020.

Corps of Engineers



A rendering of what the completed Kentucky Lock will look like. Construction on the Kentucky Lock addition began in 1998 and is projected to be completed in 2029.

will be able to handle a 15-barge tow during one lockage, which will essentially eliminate all but the smallest delays. Costs of delays “are passed on to the consumer, so there’s a big savings for all of us once the new lock conditions are online,” Langel said. “The new lock will cut delays from up to 13 hours to 30 minutes.”

Another advantage is that the older lock will remain, working in conjunction with the new lock, and it will be able to handle another six-to-nine barges.

On the day of the media visit, the *Chippewa*, a Coast Guard inland buoy tender, was locking through, followed by the towboat *Marguerite Terral*, owned by **Terral River**



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Services, Lake Providence, La., which was pushing a barge of coal. It was a perfectly sunny day, the river was calm and flat, there was no wind.

The towboat was told to wait as the Coast Guard vessel passed through, since government vessels have first priority. Traffic through the lock is prioritized. After government vessels,

passenger vessels for hire are second, followed by tugboats and other commercial vessels, and lastly by recreational craft including boats, jet skis, yachts and kayaks.

Kentucky Lock and Dam provides many benefits to the local community beyond commercial navigation, according to Caleb Skinner, navigation

manager. Many small towns along the river rely on water levels for recreational boating and fishing tournaments. The TVA has a power generation facility that uses water to supply electricity to the area, and water is needed for cooling at local coal plants.

“There are lots of things that are easily overlooked that this dam system creates the opportunity for up and down the [river] system,” Skinner said, explaining that the lock and dam are part of a broader economic network.

The project is about 45% complete and will move soon to the next big phase — building the downstream lock monoliths. Already completed are relocation of the transmission towers and bridges and construction of the upstream and downstream cofferdams, which are major construction milestones in the project.

Yet to be done are design and awarding a contract for major components of the lock, including the approach walls, buildings and bridge, Langel said.

On the day of the media visit, the downstream lock excavation was in full swing. This work will pave the way for construction of the remaining portion of the new lock chamber.



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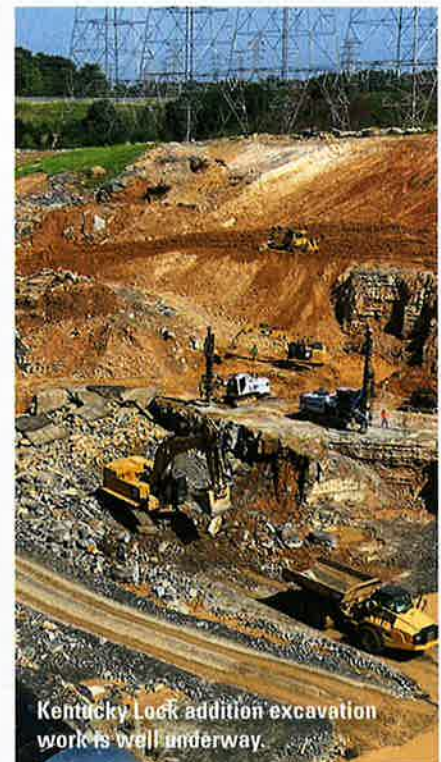



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CONSISTENT FUNDING

Inconsistent federal funding has been a big problem for the project. Kentucky Lock received small amounts over the years but never enough to keep it progressing in a meaningful way. That changed in 2014 when Congress changed the funding formula for the Inland Waterways Trust Fund, which is financed by the federal treasury and a diesel fuel tax

on the barge industry, to help complete the much-delayed and over-budget Olmsted Locks and Dam project on the Ohio River.

This change gave the Corps more funding certainty for Olmsted so that more efficient contracting and construction decisions could be made, said Deb Calhoun, senior vice president of the **Waterways Council Inc.** "As a result of the cost-share change and the



Consistent federal funding will benefit several inland waterways projects including the Kentucky Lock.

Pamela Glass

later increase in the amount of diesel fuel tax commercial operators paid into the fund, the Olmsted project was finished four years ahead of schedule with more than \$300 million saved in the process," she said.

Olmsted's completion allowed money from the fund to be directed to other waterways projects. In 2016 funds began to flow more steadily to Kentucky Lock through a combination of money from the trust fund and healthy annual appropriations from Congress. Waterways advocates hope that the infrastructure bill now under consideration will provide additional funds for Kentucky Lock and other inland projects.

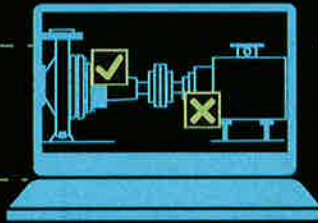
"Efficient funding has been a key factor why Kentucky lock has pushed forward," Langel said.

Barge lines are looking forward to the day when they can operate without long delays and establish more dependable transit times for their vessels.

"That will be a great benefit for us," said Oscar Harrell, vice president of vessel operations at **Ingram Barge Co.**'s Paducah location. "It's akin to upgrading the highway infrastructure for over-the-road carriers, but the difference is that [working on the rivers] we don't have any detours that we can take."

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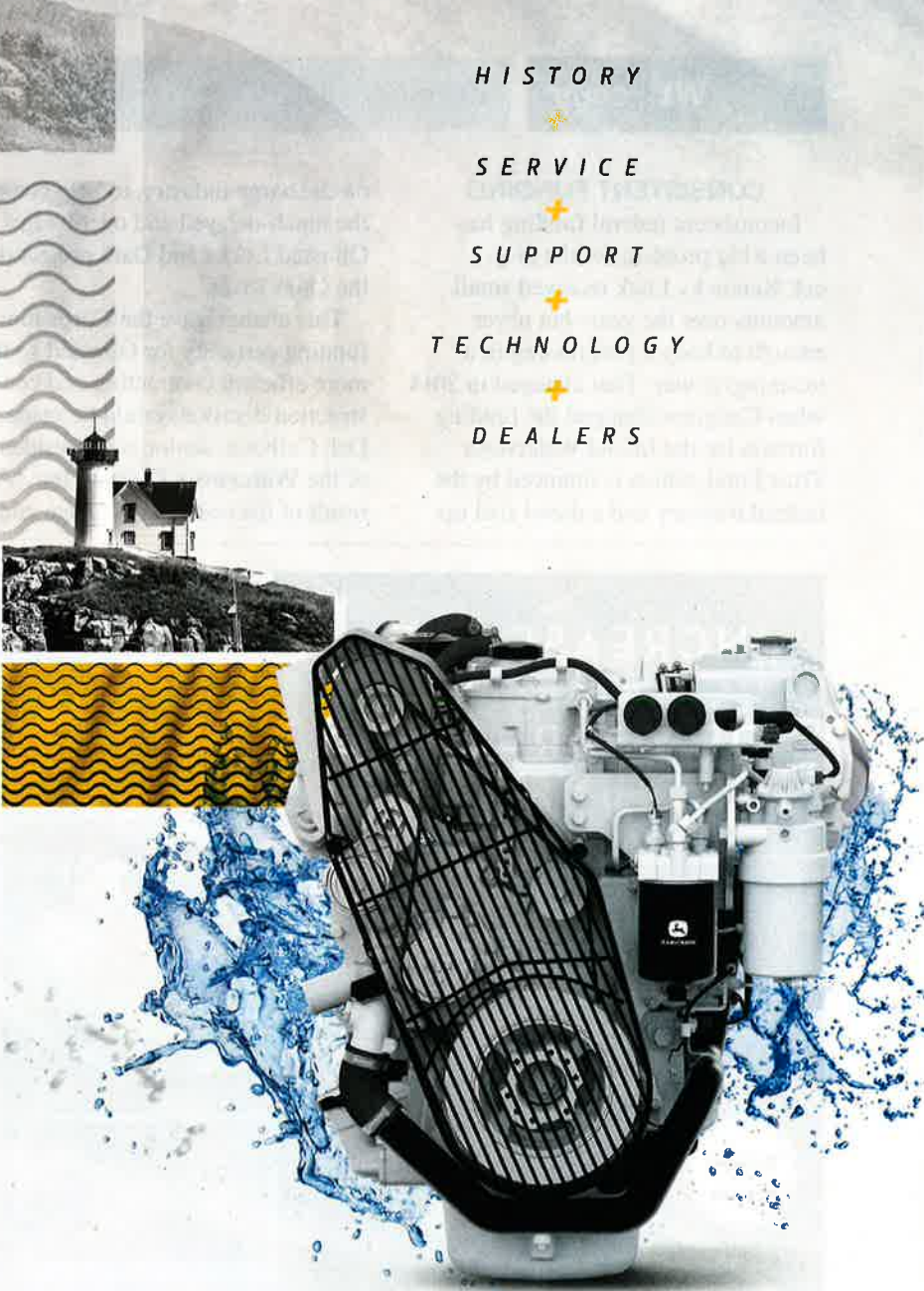


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