

# Savannah River Crossing Feasibility Study

# FINAL STUDY REPORT

## EXECUTIVE SUMMARY





## INTRODUCTION

As the fastest growing port in the nation, the Port of Savannah is a significant economic engine for the Savannah region, the state of Georgia, and the rest of the Southeast. Georgia’s deepwater ports – both Savannah and Brunswick – support more than 560,000 jobs and \$140 billion in annual revenue to the state’s economy.<sup>1</sup>

The Port of Savannah is a critical global shipping hub, and it continues to experience record-setting gains in container volume. Its container trade surged from 4,046,212 twenty-foot equivalent units (TEUs) in 2017 to 5,613,163 TEUs in 2021, a 39% increase in TEUs, which describe the capacity of container ships.<sup>2</sup> This year, August marked the busiest month ever for the Georgia Ports Authority (GPA), as the Port of Savannah handled 575,513 TEUs, an 18.5% increase over the same month in 2021.<sup>3</sup>

Despite recent global supply chain challenges, the Port of Savannah’s growth is expected to continue amid strong connectivity to commercial centers throughout the Southeast, a significant shift in container volumes from West Coast to East Coast ports, and GPA’s own investments in its operational infrastructure in recent years.

## THE ISSUE

Potentially stifling future growth is the Port’s accessibility to a generation of ever-larger ships. The Talmadge Memorial Bridge, which carries US 17 across the Savannah River, also serves as a veritable gatekeeper for ships calling on the Port of Savannah’s terminals, located upriver from the bridge, as shown in Figure



Figure ES-1: Talmadge Memorial Bridge and Port Terminals

ES-1. With a vertical clearance of 185 feet, the Talmadge Memorial Bridge effectively limits passage of larger ships that must navigate beneath the bridge to access the Port’s terminals.

To date, the largest ship to call on the Port was the CMA CGM Marco Polo in May 2021, with a capacity of more than 16,000 TEUs, as shown in Figure ES-2. Meanwhile, even larger ships (up to 23,000 TEUs and beyond) are becoming increasingly common on the world’s oceans given their economy-of-scale benefits of fuel efficiency and lower overall operating costs.

## STUDY PURPOSE

The Georgia Department of Transportation (GDOT), in partnership with GPA, initiated the Savannah River Crossing Feasibility Study in

<sup>1</sup> <https://gaports.dcatalog.com/v/Economic-Impact-FY2021/?page=1>

<sup>2</sup> <https://gaports.com/wp-content/uploads/2022/05/CY21-Annual-Container-Trade.pdf?1663763732>

<sup>3</sup> <https://gaports.com/press-releases/port-of-savannah-handles-575000-teus-in-august/>



Figure ES-2: CMA CGM Marco Polo in May 2021

Glossary of Terms	
<b>Clearance:</b>	The distance that allows a ship to pass safely under a bridge or other obstacle such as power lines.
<b>Under Keel Clearance:</b>	The distance from the bottom of the ship's hull (keel) to the bottom of the channel.
<b>Bridge Clearance:</b>	The distance from the mean high water elevation to the underside of the bridge.
<b>Mean High Water:</b>	The average of all daily tidal high water elevations observed over 19 years.
<b>Channel Depth:</b>	The distance from the mean lower low water elevation to the bottom of the channel.

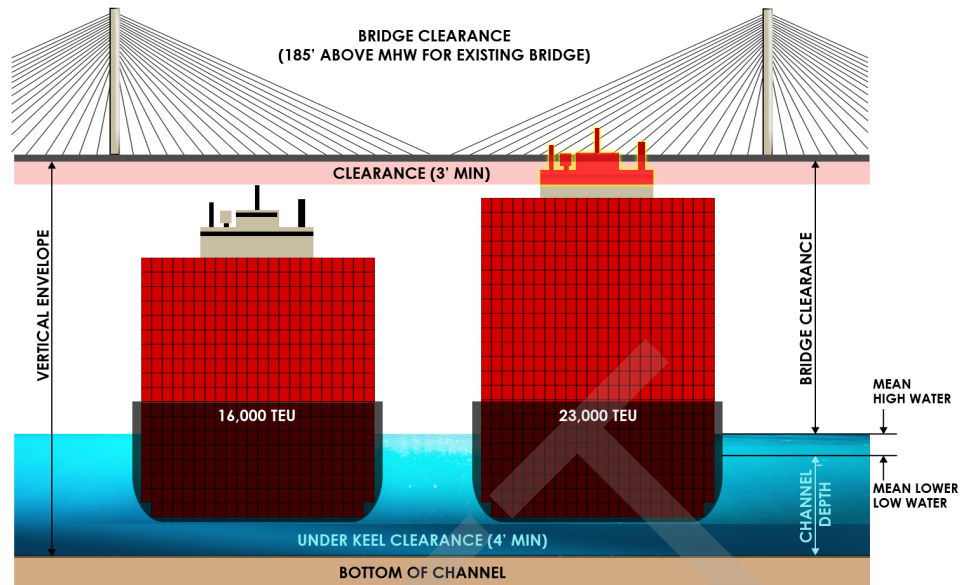


Figure ES-3: Bridge Clearance Limitations and Glossary of Terms

November 2020. The study built on the findings of GDOT’s Talmadge Memorial Bridge Air Draft Analysis, completed in late 2019.

The two-year study aimed to identify, evaluate, and present long-term feasible improvement alternatives to the bridge’s vertical clearance limitations while supporting the continued safe, efficient vehicular access along US 17, which serves as a critical thoroughfare between Savannah and Hutchinson Island. US 17 then enters South Carolina via the Back River Bridge.

Built in 1991, the 1.9-mile-long Talmadge Memorial Bridge is structurally sound and has adequate capacity for daily traffic volumes, so its condition and capacity were not the impetus for this study. Rather, the study was mainly driven by an economic need to continue the Port’s commercial attractiveness and long-term growth by addressing the bridge’s clearance limitations, as shown in Figure ES-3.

Insufficient bridge clearances have posed chal-

**The study was mainly driven by an economic need to continue the Port’s commercial attractiveness and long-term growth.**

lenges – and prompted improvements – at other East Coast ports. The Bayonne Bridge in New York/ New Jersey has a clearance of 215 feet. It was raised to this level in recent years due to a clearance limitation that hindered larger ships from calling on the Port of New York/New Jersey. The Port of Virginia in Norfolk, Virginia, has no clearance limitation because of a tunnel that carries vehicles under the river channel, allowing unobstructed terminal access for larger ships, as shown in Figure ES-4.

The Savannah Harbor Deepening Project (SHEP), completed in March 2022, has deepened the shipping channel from 42 to 47 feet, accelerating the flow of cargo to and from global destinations by allowing more efficient passage

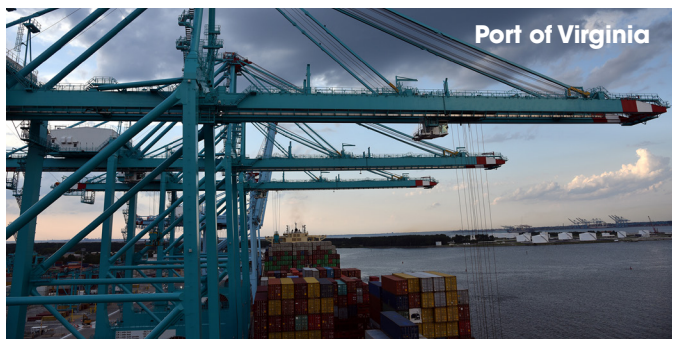


Figure ES-4: East Coast Ports that Addressed Clearance Challenges





Figure ES-5: Aerial View of Talmadge Memorial Bridge

for larger ships. Still, even with the harbor deepening, the clearance limitations of the Talmadge Memorial Bridge restrict an ever-larger fleet of ships seeking to access the Port, and failing to address these limitations may reduce the Port’s global competitiveness.

Currently, the bridge’s clearance is sufficient for ships with capacities up to 16,000-plus TEUs, but the passage of larger ships depends on a delicate balance between the bridge’s clearance, ship loads, and tidal fluctuations. An increase in clearance would improve operational efficiencies by creating larger windows of time for larger ships to arrive and depart. Figure ES-5 shows an aerial view of the bridge.

In summer 2022, GDOT initiated a bridge maintenance project to replace some of the existing cables. As part of that project, GDOT will investigate the possibility of providing an interim, incremental improvement to the bridge’s vertical clearance. The project (PI No. 0019219) will investigate modifying the cables to elevate the bridge. The height that the bridge can be raised is unknown at this time but is expected to be no more than 10 feet. As noted, this is an interim project, as it will not meet the bridge’s long-term vertical clearance requirements as outlined in this study.

## STUDY PROCESS

The study included comprehensive transportation

**In summer 2022, GDOT initiated a bridge maintenance project that may ultimately provide an interim, incremental improvement to the bridge’s vertical clearance.**

planning; projections of future transportation, shipping, and economic development needs; conceptual engineering; and identification and examination of improvement alternatives. A timeline of the study and subsequent activities are shown in Figure ES-6. The study area consisted of the Port of Savannah, Talmadge Memorial Bridge, City of Savannah, Hutchinson Island, Savannah River, and parts of Chatham County and South Carolina.

The study’s goals and objectives were developed at the beginning of the study and then refined as the study progressed. These goals, based on case studies, best practices, and subject-matter expertise, consisted of the following:

- Support the long-term economic efficiency and sustainability of the GPA and Georgia’s economy
- Meet design standards (e.g., safety, mobility)
- Minimize impacts on the built and natural environment
- Minimize impacts to cost and construction

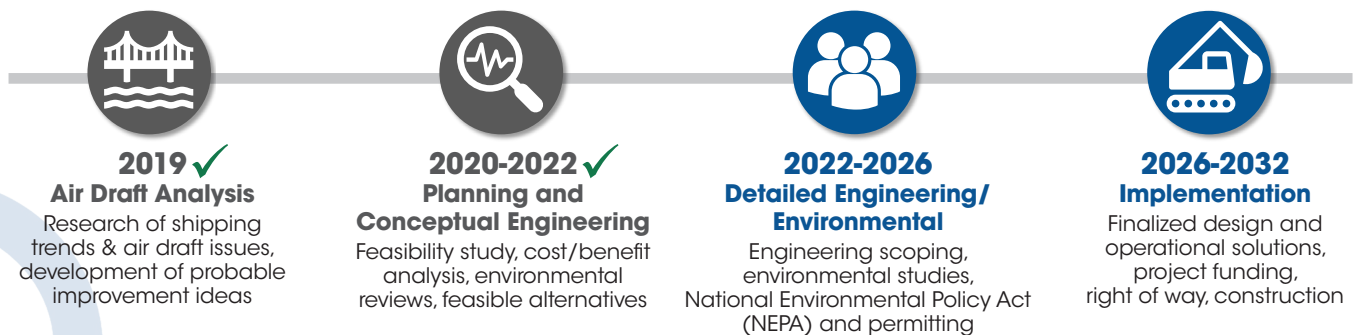


Figure ES-6: Timeline of Study and Subsequent Activities

The goals and objectives formed the framework for a three-tiered screening approach to evaluate potential alternatives. The study identified 27 alternatives to evaluate and stratified the alternatives into six categories: Tunnel; New Bridge: Same Location; New Bridge: Truman Parkway Extension; Remove Bridge and Re-Route US 17 Traffic; Modify Existing Bridge; and Downriver Port Facilities.

All 27 alternatives underwent the three-tier screening process, with the study either advancing or eliminating alternatives depending on their ability to meet certain criteria. The ultimate goal: to identify feasible long-term alternatives that best address the study's goals and objectives. Each screening tier is summarized below:

- **Tier 1 screening** evaluated each alternative against a set of fatal flaw criteria to ensure the alternative met the study's goals and objectives.
- **Tier 2 screening** evaluated each alternative on the feasibility and practicality to construct and operate, potential environmental and cultural impacts, and potential impacts on existing infrastructure and nearby properties.
- **Tier 3 screening** focused on implementing the remaining alternatives and included detailed screening for financial feasibility, benefit/cost, travel/traffic and infrastructure impacts.

## STUDY OUTCOME

Of the 27 alternatives evaluated, the study presented two feasible alternatives to advance to the next phase. They are as follows:

### New Bridge Alternative

Under this alternative, a new bridge would be constructed with a 230-foot vertical clearance, which is 45 feet more clearance than the existing bridge. The new bridge would be located adjacent to the existing bridge, as shown in Figure ES-7.

The new bridge would allow for a connection to Hutchinson Island, with ramp reconstruction at the interchange with Savannah Harbor Parkway. It would require the existing connection at West Oglethorpe Avenue to be closed and diverted to Louisville Road. This alternative would impact the existing and proposed Back River Bridges, requiring them to be partially raised and widened.

The new bridge would provide two lanes of traffic in each direction, which is the same level of capacity as the existing bridge. The two lanes would be



Figure ES-7: New Bridge Alternative

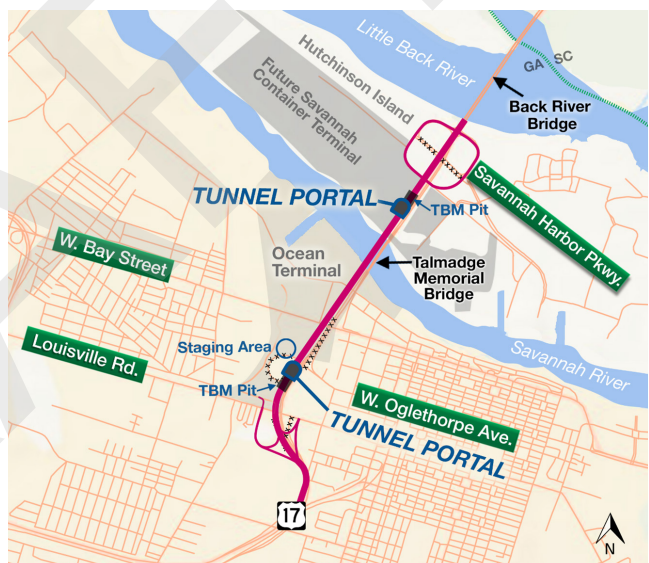


Figure ES-8: Tunnel Alternative

\*Tunnel Boring Machine

separated by a median for a total bridge width of approximately 98 feet.

The new bridge would be constructed while maintaining traffic on the existing bridge. Construction is expected to have a moderate impact to vehicular or ship traffic, with periods of lane closures (with just one lane open in each direction) and expected detours. Once the new bridge is constructed, the existing bridge would be removed.

### Tunnel Alternative

Under this alternative, a tunnel constructed under the Savannah River would negate any vertical clearance concerns. The tunnel, as shown in Figure ES-8, would be located upstream (west) of the existing bridge with access to Hutchinson Island. It would be constructed

as two parallel bores, or tube-like passages. These bores would each be approximately 50 feet in diameter and constructed 50 feet apart.

These passages would allow for a connection to Hutchinson Island but would require the existing connection at West Oglethorpe Avenue to be closed and diverted to Louisville Road. The tunnel alignment could tie into the existing and proposed Back River Bridges with minimal reconstruction.

The existing bridge provides two lanes of traffic in each direction with a barrier in the middle. Under the tunnel alternative, there would be no reduction in capacity, as two lanes of traffic would still be provided in each direction: northbound in one passage and southbound in the other.

The tunnel would be constructed while maintaining traffic on the existing bridge. Construction is expected to have a moderate impact to vehicular or ship traffic, with periods of lane closures (with just one lane open in each direction) and expected detours. Once the tunnel is constructed, the existing bridge would be removed.

## NEXT STEPS

The presentation of two feasible alternatives marked a major study milestone, but it is not the final step. As of August 2022, the study shifts to a conceptual project phase, with the alternatives evaluated under a more intense microscope.

Although no construction funding has been identified, the project will be evaluated under the National Environmental Policy Act (NEPA) in anticipation of the likelihood of some federal funding. A lead federal agency, unconfirmed but anticipated to be the Federal Highway Administration (FHWA), will oversee the NEPA process.

In addition to the lead agency, the project team will engage with other potential regulatory agencies to ascertain concerns and formulate measures to address these concerns early in project development.

Under NEPA, detailed statements that assess environmental impacts will be prepared, and the public will have an opportunity to review and comment on those evaluations.

Other stakeholders will also be engaged. They include the City of Savannah, Chatham County, Jasper County, S.C., and a number of regional agencies as well as neighborhood and Environmental Justice (EJ)

## COST / BENEFIT ANALYSIS

### New Bridge Alternative

<b>Construction estimate</b>	<b>\$1.17B*</b>
<b>Benefit</b>	Accommodates future need for vertical clearance for navigation
<b>Costs</b>	<ul style="list-style-type: none"> <li>• Construction</li> <li>• Design</li> <li>• Right-of-Way</li> </ul>

*\*Cost reported in current dollars and is based on other cable stay bridges. Demolition of the existing bridge is included in the estimate. The cost also includes allowance for PE, ROW, and Final Design and Construction Oversight under a Design-Build Procurement Scenario. Also includes 30% contingency.*

### Tunnel Alternative

<b>Construction estimate</b>	<b>\$2.01B*</b>
<b>Benefits</b>	<ul style="list-style-type: none"> <li>• Eliminates future concerns about vertical clearance</li> <li>• Minimizes impacts to environmental, community, and cultural resources</li> </ul>
<b>Costs</b>	<ul style="list-style-type: none"> <li>• Construction</li> <li>• Design</li> <li>• Right-of-Way</li> </ul>

*\*Cost reported in current dollars. Demolition of the existing bridge is included in the estimate. The cost also includes allowance for PE, ROW, and Final Design and Construction Oversight under a Design-Build Procurement Scenario. Also includes 40% contingency.*

**Under NEPA, detailed statements that assess environmental impacts will be prepared, and the public will have an opportunity to review and comment on those evaluations.**

groups. Through stakeholder engagement and/or the alternative analysis effort, other alternatives may be added for evaluation. A No-Build option will also be considered as part of the NEPA documentation.

For both the tunnel and new bridge alternatives, environmental documentation, pre-let development, and procurement are expected to start in 2022. Depending on the outcome, final design, right-of-way acquisition, and construction are anticipated to commence in 2026.