TALLEYRAND AVENUE STUDY

FINAL

North Florida TPO
Transportation Planning Organization
PLAN • FUND • MOBILIZE

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1 Introduction

Area of Study

The area of study encompasses Talleyrand Avenue, bounded by 21st Street East on the north and Hart Bridge Ramps on the south, between the St Johns River and Martin Luther King (MLK) Parkway. This report examined transportation needs for the continued development of the JAXPORT Talleyrand Marine Terminal (TMT) as well as future growth and opportunities to improve freight connections to the terminal area. Last, the report looks at opportunities to further improve connectivity across adjacent parcels and includes recommendations.

Surrounding Uses

The area of study is surrounded by established water-dependent, heavy and light industrial and commercial uses, including JAXPORT's Talleyrand Marine Terminal (TMT), as well as third-party logistics and distribution centers. Tied to these industries are also public buildings and facilities, such as JEA's Buckman Wastewater Facility and Jacksonville Fire and Rescue Station 11. Figure 1-1 shows major land owners or business operations logos within the study area.

Figure 1-1: Major parcel occupants associated with import/export trade and logistics.

2 Data and Analysis

2.1 Adjacent Parcels

The largest and most prominent owner in this area is JAXPORT, as depicted on Figure 2-2 (shown in shaded green as #2, JAXPORT Properties). JAXPORT owns the Talleyrand Marine Terminal (TMT) as well as a number of parcels adjacent to or proximate to Talleyrand Avenue.

Talleyrand Marine Terminal (TMT), along with the other two JAXPORT terminals, moved 1,033,068 TEUs (twenty-foot equivalent units, the industry standard for measuring containers) during the fiscal year ending September 30, 2017 and claimed a top spot for Vehicle Exports for the U.S. with 693,000 import and export vehicles handled in 2017. Talleyrand Marine Terminal alone handled 59,880 TEUs for fiscal year 2017. The terminal's footprint has continued to grow with additional properties recently purchased (see hatched green) on Figure 2-2. Terminal tenants continue to attract a significant volume of freight trucks.

Crowley, another major property owner, is currently relocating much of its operations to the north end of TMT with a recently expanded North entrance to TMT accelerating truck ingress and egress. The existing Crowley parcel will be assessed for future industrial/port use and future growth sometime in the future.

Southeast Toyota Distributors, a prominent tenant at TMT, maintains a strong presence on Talleyrand Avenue. As the world's largest independent distributor of Toyotas, SET operations include processing vehicles manufactured in North America for delivery and installation of accessories ordered by dealers to more than 175 independent dealerships.

Talleyrand Avenue also serves as access to other parcels that serve warehousing, raw material storage and processing, and logistics (i.e., Owens Corning, Superior, Aqua Gulf, FMC, Raleigh Mine & Industrial). See Figure 2.2 for locations. In addition, a former industrial site, south of TMT and now managed by a Multistate Environmental Trust, has been designated a Superfund site (See Figure 2-2, Item #7).

As indicated earlier, public services in the area include the JEA Buckman Wastewater Facility (#12) near the Fairfield neighborhood, JEA's largest regional wastewater plant, and Jacksonville Fire and Rescue Station 11 (#14), located near the TMT north entrance.

Figure 2-1: SE Toyota receives vehicles and installs accessories before distribution (Credit: JM Families Enterprises, LLC)

Figure 2-2: **Talleyrand Avenue Study Map (Exhibit 1)**

2.2 Freight Movements and Traffic

Freight and truck traffic is expected to significantly contribute to Talleyrand Avenue counts due to proximity to port and other industrial uses. Truck traffic growth at the Florida state line shows a yearly increase of 1 million trucks for 2015 and 2016, and 500k additional trucks for 2017, as shown on Figure 2-3.

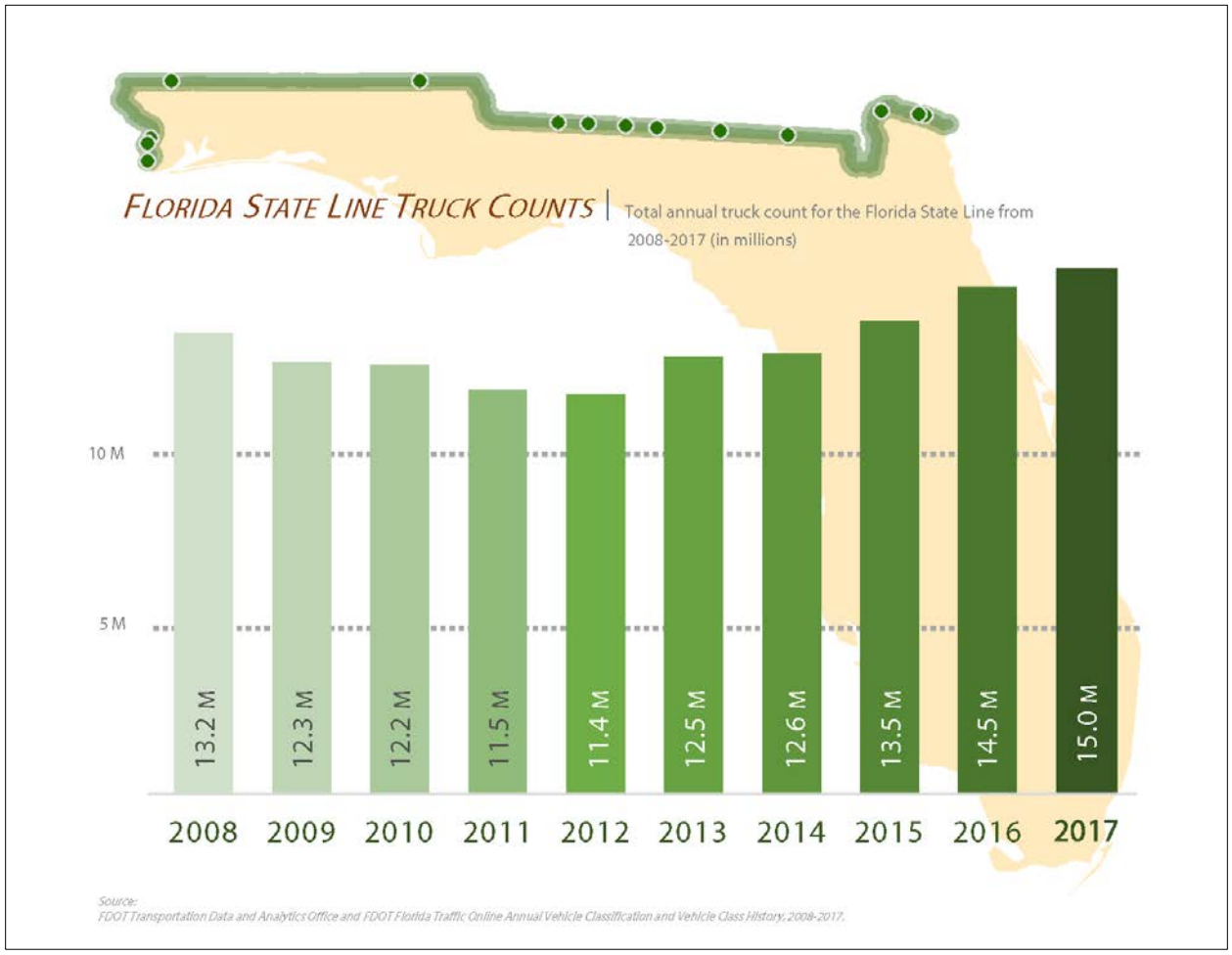


Figure 2-3: Statewide Truck Traffic Levels

It is important to understand the significance of truck traffic flows within Northeast Florida, given both the truck traffic related to the ports, rail yards, intermodal terminals, and distribution centers.

As noted in Figure 2.3, truck traffic levels have risen steadily since 2012, and have now surpassed pre-recession levels. Furthermore, truck levels entering and exiting Florida play a role in Northeast Florida given the geographical location in the state and the need for large volumes of truck traffic to traverse "through" the region destined or originating south of the Jacksonville region.

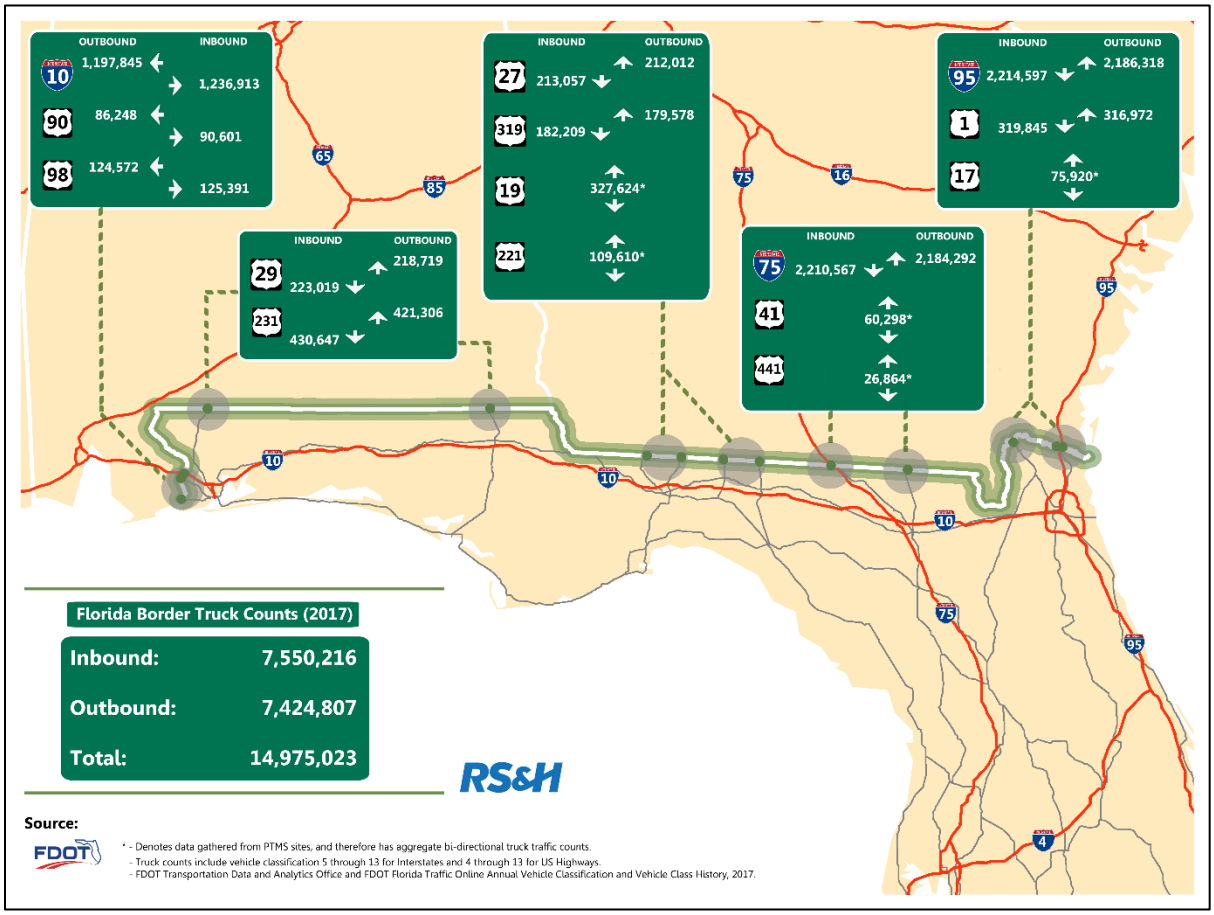


Figure 2-4: 2017 Truck Traffic Volumes on Major Facilities

Figure 2-4 depicts the level of truck traffic on specific highway/roadway facilities that cross into Florida. For Northeast Florida, Interstate 95, US 1, and US 17 represent the three most significant roadways, and where over 5.11 million trucks per year enter and exit the State. Forecasts for the State indicate that a continued increase in trucks carrying freight to and from the State will continue to increase, especially as Florida's economy continues to grow.

For highways/roadway with direct relationships to Talleyrand Avenue area, annual vehicle counts are available from the Florida Department of Transportation (FDOT) at select locations and presented on Figure 2-5. While roads leading to Talleyrand Avenue present significant volumes, the single count location south of JAXPORT entrance, on the Hart Bridge, does not seem to fully reflect freight activity (6,032 trucks/day). It should be noted that it is recommended that additional truck counts be taken and validated as existing count statistics appear under represented. Note: existing truck counts along the Hart Expressway, Emerson Street, and near TMT are inconsistent and therefore were not reported here.

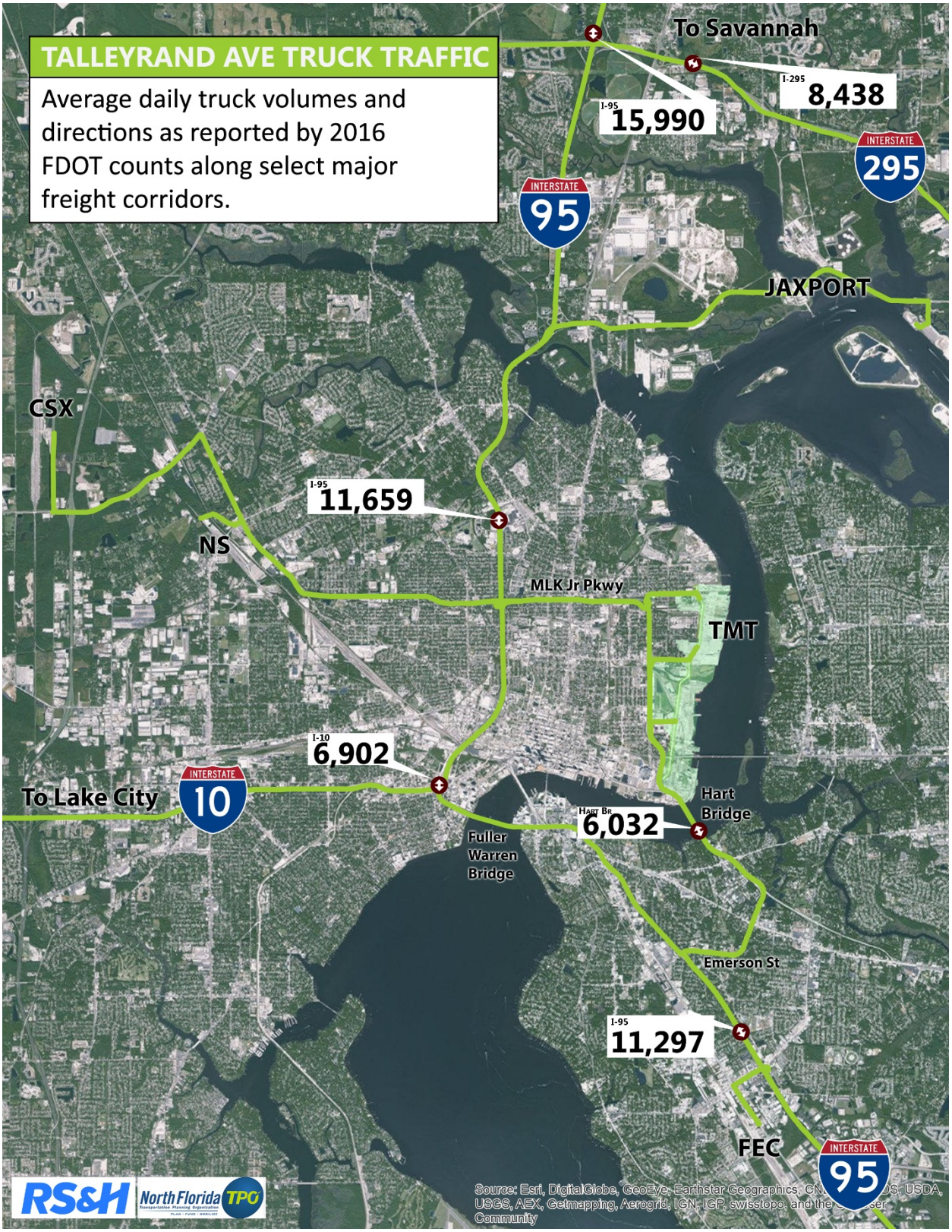


Figure 2-5: **Talleyrand Avenue Affected Truck Traffic and Routes**

With such growth, operators and partner agencies should evaluate and adopt plans to identify freight bottlenecks and relieve congestion along port routes. Truck surveys, Blue Toad, and ITS/dynamic message signs, can provide insight to responsible agencies and help truck drivers get to their destination safer, and more efficiently.

As shown in Figure 2-5, major freight routes connect local logistics centers and intermodal facilities as well as intra-state hauls to the TMT. A 2015 survey performed by the North Florida TPO found that about one in four trucks visiting JAXPORT stays local (travel distance of 25 miles or less), but 49% will travel 76 miles or more to their final destination. Consistent with these results, truck freight traffic in North Florida travel through the following facilities and routes as described below:

First, drayage traffic can originate from or destined to, rail intermodal facilities such as:

- CSXT Bulk Intermodal Facility on Pritchard Rd (w/of I-295);
- Norfolk Southern (NS) Yards along Edgewood Avenue (w/ of I-295) and
- Florida East Coast Railway (FEC) on US 1/Philips Highway

Regional and interstate freight traffic movements destined to or departing from TMT can also be related to I-95 North, west via I-10, around the I-295 beltway, or south using I-95.

Typical routes include:

- I-95 North exit to Emerson St, via Hart Bridge and MLK Pkwy
- I-95 South, exit to eastbound MLK Pkwy; and
- I-10 East, merging to I-95 North and off ramp to MLK Pkwy or thru Downtown.

Connecting to Talleyrand Avenue, vehicle operators will take the route closest to their point of interest and include:

- 21st Street – recently improved for truck movements
- 8th Street – closest access to major car distributor
- Jesse Street – closest access to former Crowley occupied facilities as well as other warehouses
- Gator Bowl Blvd – proposed improvements for Hart Bridge direct connection

Clearly, the roadways/highways servicing the Talleyrand Avenue area, including the TMT, represent both important regional facilities as well as port related access roadways. While other local roadways provide routes for port and freight related access, it is important to note that the roadway system around the TMT is currently capable of handling increased activity. However, more detailed roadway/truck count data as well as operational considerations could be warranted in the near future, especially due to the changes in operations related to Crowley and other growth industries in the area.

2.3 Existing Conditions

The existing Talleyrand Avenue corridor functions as an urban major collector, and serves both property access and traffic circulation for commercial/industrial areas. The typical section is an undivided, four-lane (4-LU) roadway with sidewalks, with a Posted Speed Limit of 35 MPH. Additionally, Talleyrand Avenue along with Jessie Street are designated Port District Roads, pursuant to F.S. 320.525, which allows port vehicles and equipment to operate on these facilities without licence tags.

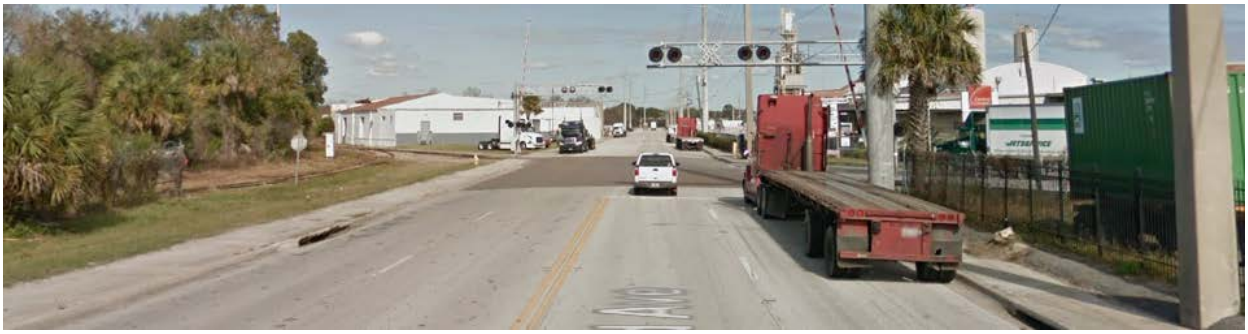


Figure 2-6: Section view of Talleyrand Avenue north of Jesse Street, looking north.

Current traffic conditions are characterized by significant truck presence and freight rail crossings. It should the noted that segments of Talleyrand Avenue leading to JAXPORT have been designated as part of the National Highway Freight Network by USDOT (Table 2-1) and as SIS Highway Connector by FDOT (Figure 2-7). These two designations are important in that it recognizes the importance of the Talleyrand Ave corridor in relation to freight movements for the region and the State. Specifically, I-95's connection to MLK Pkwy (US1/20th St Expressway) to TMT via connections noted in Figure 2-7 and Table 2-1.

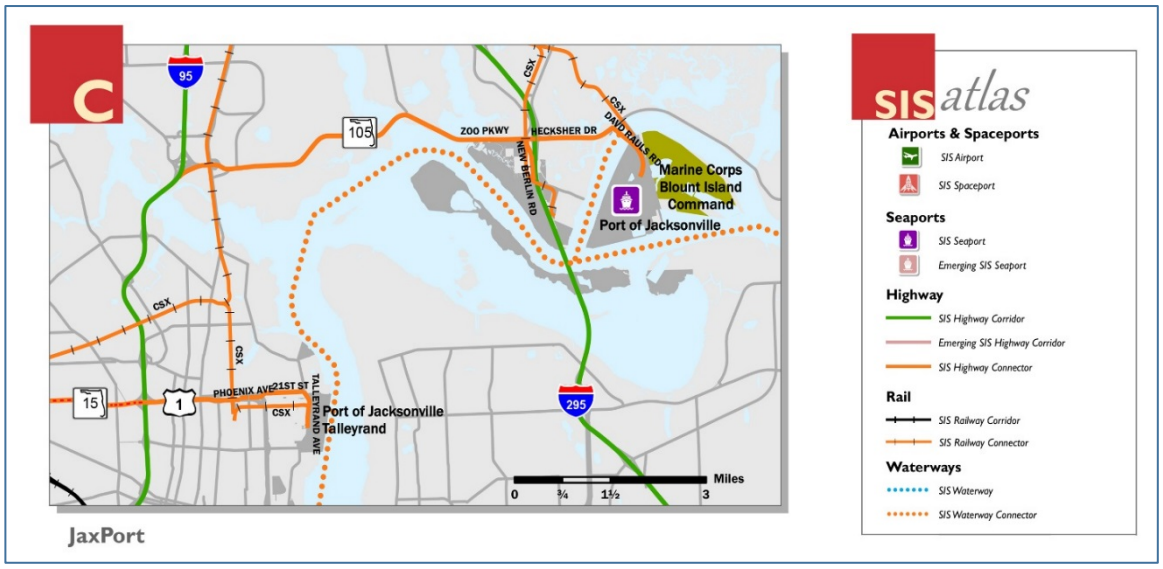


Figure 2-7: JAXPORT SIS Connector and Corridor routes

Table 2-1: USDOT NHFN Facility Designation
National Highway Freight Network (NHFN) -
PHFS Intermodal Connectors

State	Facility ID	Facility Name	Facility Description	Length (Miles)
FL	FL28P	Jacksonville Port Authority	20th St Expressway, Phoenix Ave, 21st St, N Talleyrand Ave: from I-95 to north entrance. US ALT 1, 8th St, S Talleyrand Ave: from junction of 20th St Expressway/US ALT 1 to south entrance.	4.59

Recognition in the NHFN is important in regards to potential funding priority. In fact, the MLK/I-95 interchange is scheduled for improvements in FY2023 to address geometric issues related to vertical clearances and ramp geometry. These improvements will facilitate more efficient freight truck movements related to several areas as well as TMT.

No pedestrian count information was readily available from historical data. However, the southern segment of Talleyrand Avenue is serviced by Jacksonville Transportation Authority (JTA) Route 31 as shown in Figure 2-8 below and has been in place since 2015.

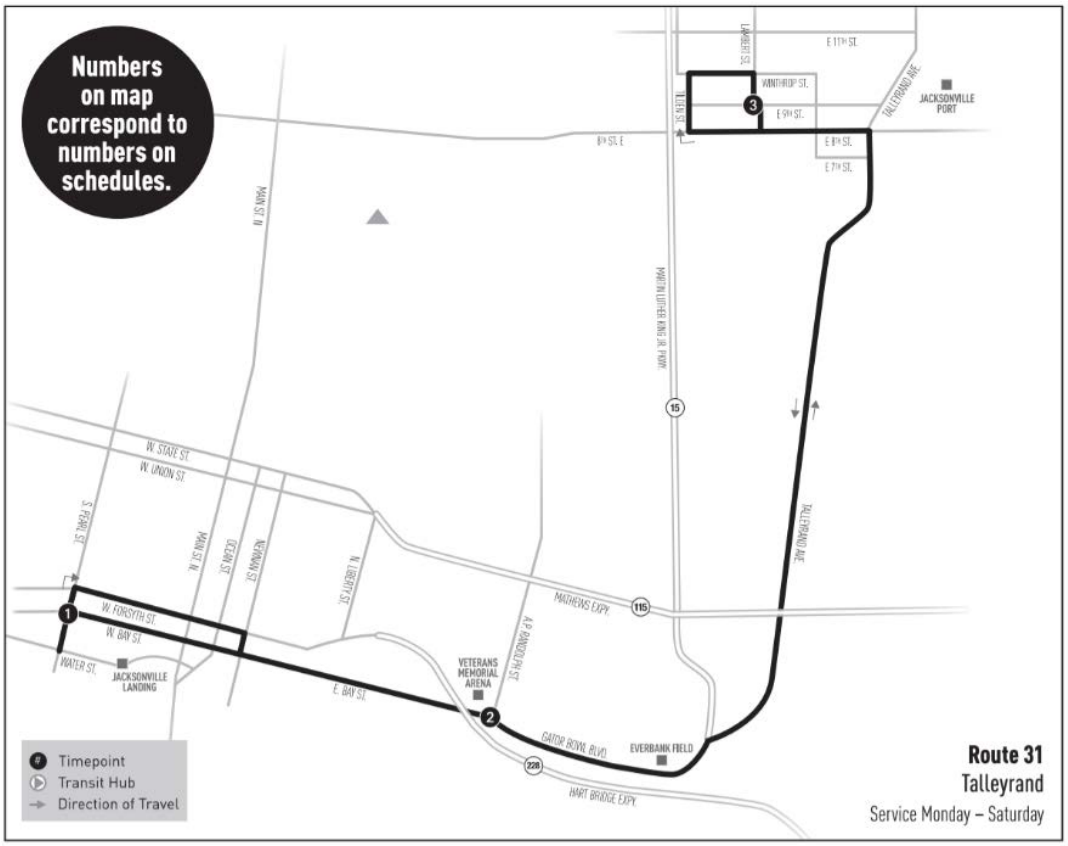


Figure 2-8: JTA Route 31 - Talleyrand Area

3 Talleyrand Avenue Bridge Concept

3.1 Description

Currently, most of the TMT is located east of Talleyrand Avenue, adjacent to the river. However, recent land acquisition west of Talleyrand Avenue could allow JAXPORT to consolidate their properties and expand gated port offerings by connecting JAXPORT owned properties across both sides of Talleyrand Avenue as well as north and south of 8th Street, where the former Crowley parcel site is located.

Figure 3-1: Current at-grade rail crossing

In order to connect JAXPORT parcels separated by Talleyrand Avenue, an **above grade** solution could allow for an overpass bridge over the existing at-grade rail line. This concept would entail elevating segments of Talleyrand Avenue so that parcels east and west of the road could be connected to allow free movement between both sides, while eliminating traffic delays resulting from the at-grade crossing and improve rail safety.

Talleyrand Avenue Bridge Typical Section Concept

The typical section along the corridor is expected to follow existing segment and right-of-way (ROW). Currently, Talleyrand Avenue is a four-lane undivided (4LU) urban highway with variable-width sidewalks on both sides. The proposed design also follows a four lane undivided (4LU) urban highway with 6-ft sidewalks within right-of-way, with a design speed of 35 mph. See Typical Section and Plan/Profile View on Figures 3-2 and 3-4, respectively.

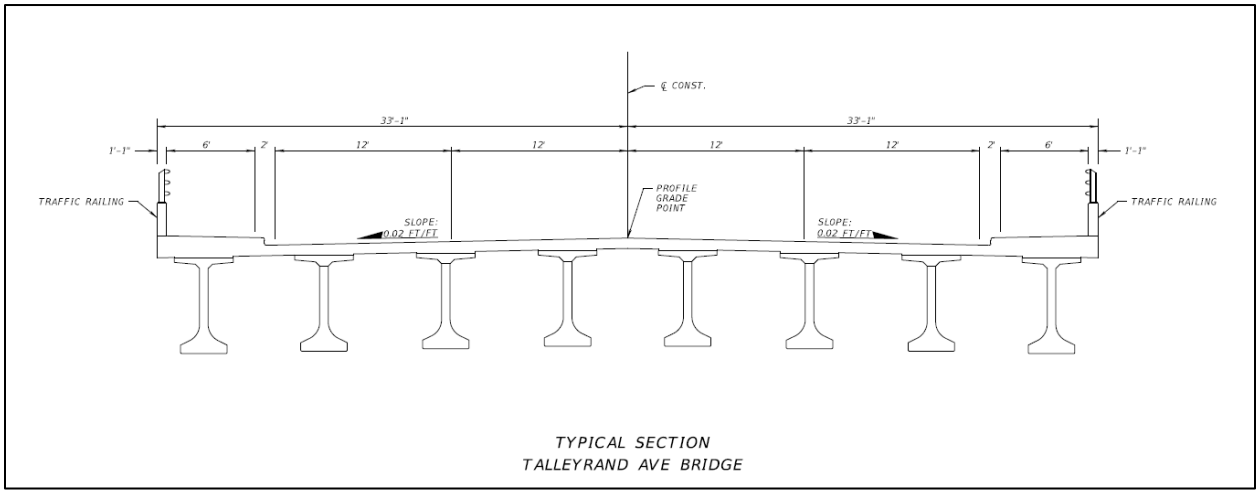


Figure 3-2: Bridge concept would maintain existing four-lane configuration

The proposed bridge structure is anticipated to be constructed within the current roadway ROW and maintain the same number of lanes (4), as well as sidewalks on both sides. The actual bridge structure proposed has a 120' opening, with Mechanically Stabilized Earth (MSE) walls, used for the approaching roadway at both ends of the bridge structure.

Connecting Port Properties beneath Bridge

A 120 ft-span bridge opening would provide two 30-ft two-way directional roadways for trucks and port equipment (see inset on Figure 3-4) while allowing for the existing rail connections to reach existing port sidings with the added benefit of one less at-grade crossing. Additionally, as Figure 3-4 depicts, 3.5% grade elevated bridge approaches would connect to the existing roadways immediately north of the main entrance to TMT (JAXPORT North Gate) and at 12th Street. Mechanically Stabilized Earth (MSE) walls are used for most of the elevated roadway portions outside of the bridge structure itself. Improvements would be required at various locations as described further below. This concept would provide 23.5' clearance over the rail tracks to allow for double stacking of containers, and a minimum of 16' clearance for vehicular traffic. A 60-ft rail ROW could allow for a future expansion of up to four sidings under the bridge structure (See Figure 3-4 inset).

Adjacent Parcels

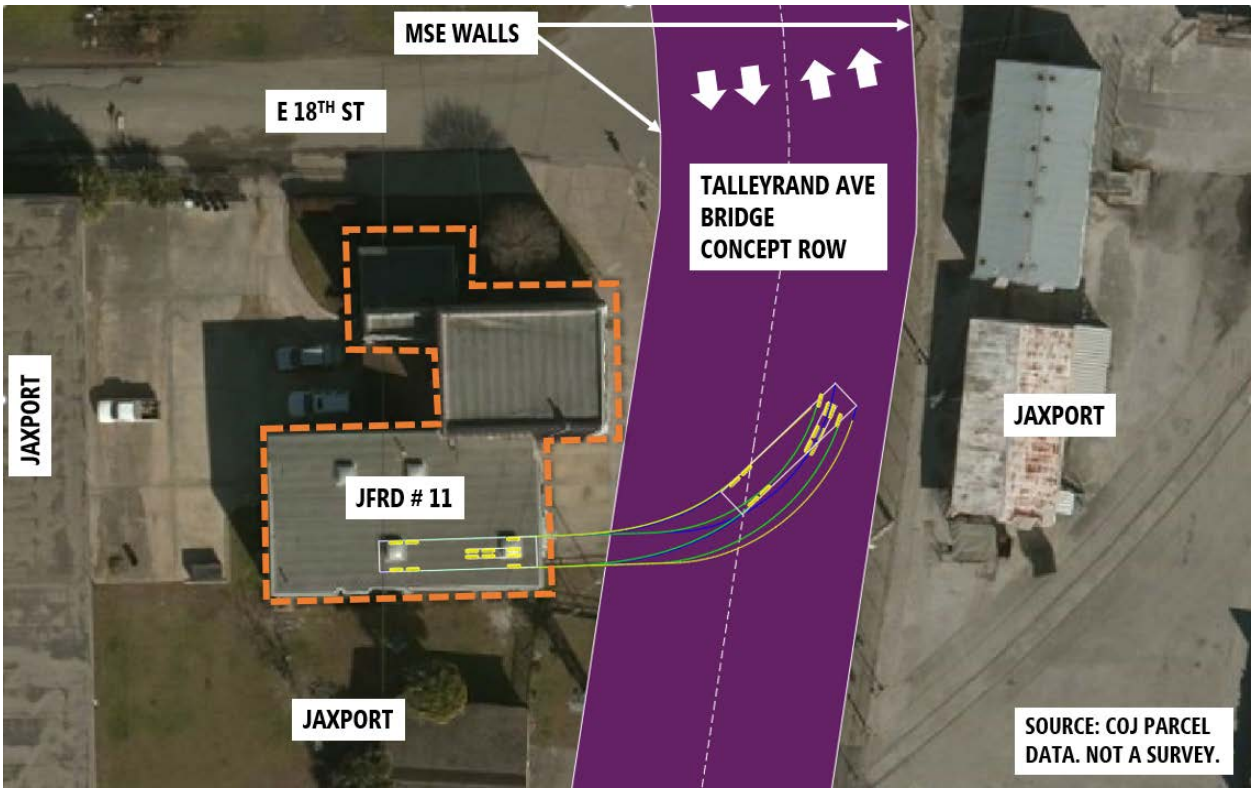
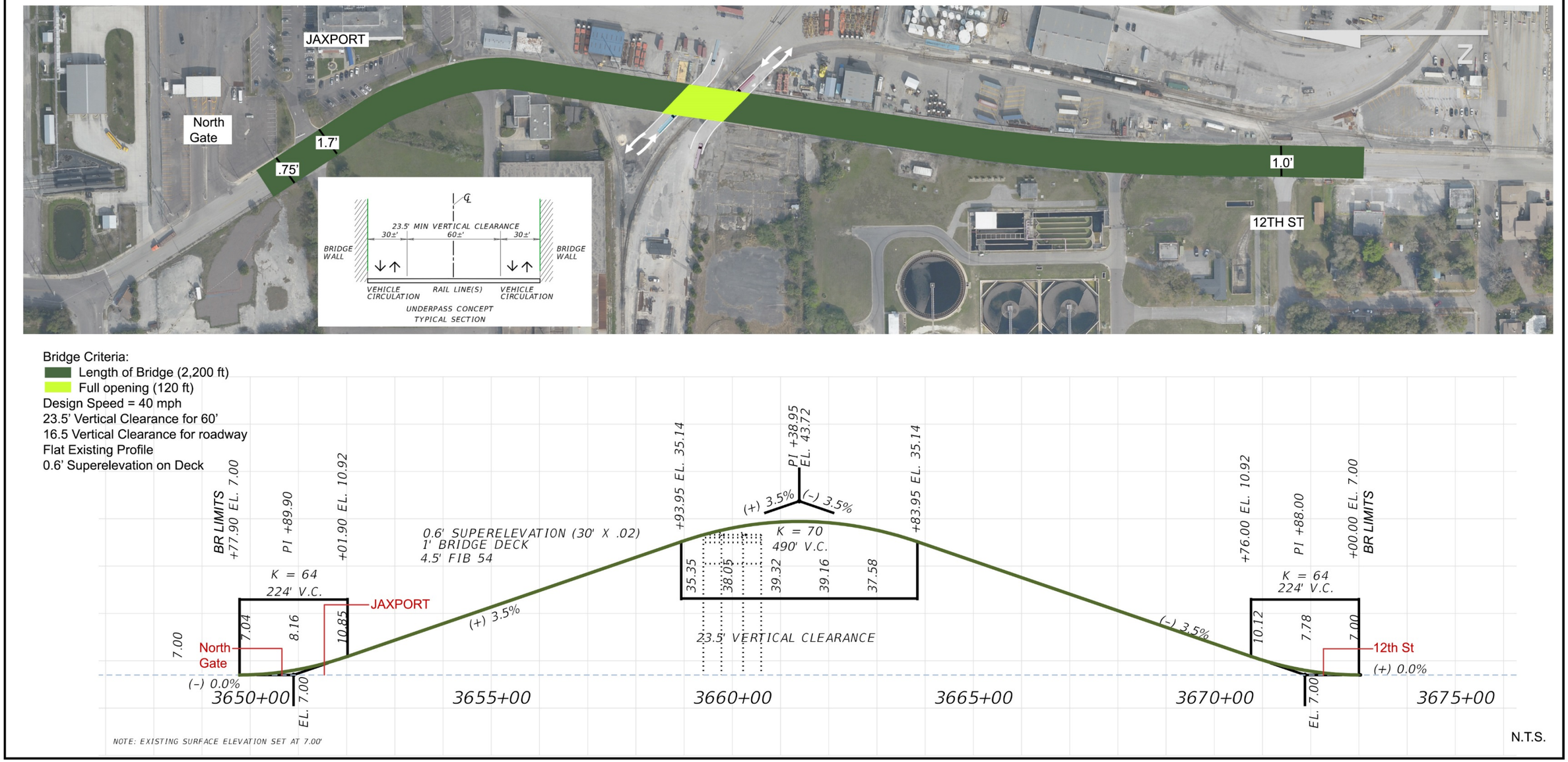


Figure 3-3: **JFRD Station turning conflict with MSE walls**

JFRD Station #11—In Figure 3-3, the purple colored areas represent elevated sections of the reconfigured Talleyrand Avenue, primarily adjacent to MSE walls. Also shown is the outline of fire equipment/vehicles turning radius tracks exiting the station, and as such, conflicting with the MSE walls (edge of purple area). Therefore, the JFRD Station # 11 would need to either be reconfigured to enter/exit through 18th Street or relocated to a nearby parcel.

JAXPORT Offices — As depicted on Figure 3-4, the JAXPORT headquarters entrance will require reconstruction to meet the new pavement elevation. The elevation differential is considered minor (< 1.7 ft on the nearest point) and would not restrict vehicle access of movement on the existing parcel entrance. At the Talleyrand Marine Terminal North Gate entrance, the roadway would be elevated at estimated 0.75 ft. from the edge of the gate and would require a similar pavement overlay transition

JEA Wastewater Treatment Plant—Mechanically Stabilized Earth (MSE) walls would block a secondary access to the Buckman Wastewater Plant from Talleyrand Avenue. However, this would not affect the main entrance to the plant which is located on a parallel City street.



Talleyrand Bridge Concept

TALLEYRAND AVENUE STUDY

Figure 3-4: Plan and Profile of bridge concept.

3.2 Estimated Cost

Table 3-1 details a present-day cost estimate for this bridge concept assuming the following general scope of work:

- Engineering and administration
- Mobilization and maintenance of traffic
- MSE-walled 4-lane bridge with sidewalks
- Assumes no additional right of way purchase

Excluding environmental cost and utility relocation, the project is estimated at $11.2 million. The estimates provided are considered conceptual for planning purposes only.

Table 3-1: Cost Estimate (2016)

Item	Pay Item Number	Units	Quantity	Unit Cost	Estimate
Bridge (132' total length)		SF	8844	145	$1,282,380
Stabilization	160-4	SY	11733.3	4.55	$53,387
OBG 6	285-706	SY	11733.3	21.25	$249,333
Sidewalk	522-1	SY	2933.3	45.46	$133,349
Superpave – 3"	334-1-12	TN	1936	81.43	$157,648
MSE Wall		SF	72600	35	$2,541,000
Embankment	120-6	CY	86044.4	6.89	$592,846
Type F C & G	520-1-10	LF	4400	27.22	$119,768
Traffic Railing Junct Slab	521-8-1	LF	4400	210	$924,000
Intersections		EA	2	200,000.00	$400,000
Concrete Removal		SY	3300	32.00	$105,600
Clearing & Grubbing		AC	4.5	21,602.00	$97,209
Unknowns – 25%					$1,664,130
Subtotal					$8,320,650
Mobilization – 10%					$832,065
Maintenance of Traffic – 15%					$1,248,098
Engineering & Administration – 10%					$832,065
Total (Estimated)					**$11,233,000**

Notes:

1. Rough order of magnitude estimate.
2. Ponds, permitting, and right-of-way cost are excluded from assessment.
3. Utility relocation is not included.
4. References FDOT BDR and FDOT Historical Cost 2016.

4 ITS & Technology Advances

4.1 Incorporate Freight Advanced Traveler Information Systems

Nationally, and in Florida, a number of innovative and transformative applications are being developed by FDOT and others to leverage connected freight data at both the truck mode and port terminal ends. An Internet of Things (IoT) application evaluated by FDOT is *freight advanced traveler information systems* (FRATIS). FRATIS is a package of applications aimed to improve the efficiency of freight operations using real-time traveler information, freight-specific dynamic travel planning and performance and drayage optimization. The FRATIS package integrates five technologies as follows:

1) **Intermodal exchange** – data sharing capability

2) **Wireless drayage updating** – sending information directly to the user through smartphones and tablets

3) **Real-time traffic monitoring** – bringing together and sharing information from traffic management centers and third parties

4) **Dynamic signage for route guidance** – provides operators moving through the network with the most efficient route considering current traffic and weather conditions, route restrictions, bridge heights and truck parking availability

5) **Freight terminal wait time** – measures queues at intermodal facilities and communicates to carriers to facilitate optimal time and resource management.

Additional information regarding the FRATIS applications can be evaluated and brought to JAXPORT for further evaluation.

4.2 Expand Bluetooth Applications (BlueTOAD)

A freight travel time data ITS solution is the expansion of BlueTOAD (Bluetooth Travel-time Origination and Destination) devices along freight corridors. This advanced traffic monitoring technology can detect anonymous Bluetooth signals from passing vehicles and trucks. Equipment involves flexible installation, and can be installed with cellular data connection and solar panel, or can be plugged into existing electrical and/or fiber infrastructure.

Matching of subsequent detections by BlueTOAD devices along the road through rigorous filtering and integrated processing can be utilized to identify spatial and temporal bottlenecks of trucks leaving the Port. These applications are being implemented by the FDOT and will provide port/truck related data communications to truck drivers to assist in arrival time management and terminal gate operations.

5 Related Projects

5.1 I-95/Emerson St Interchange

Florida Department of Transportation is evaluating improvements to I-95, including the Emerson St/I-95 interchange along with other interchanges. The Emerson St interchange improvement will aid freight traffic to and from the Talleyrand Port District. The new diverging diamond interchange under consideration offers geometric changes to curve radii and improved signal timing. These changes are expected to improve acceleration and turning issues that trucks often experience when accessing I-95 southbound from westbound Emerson Street (loop ramp).

Figure 5-1: I-95 at Emerson Street Concept

It is important to note that access to the Talleyrand Marine Terminal (TMT) via I-95 Northbound south of Jacksonville is a viable option for inbound truck traffic. This traffic would exit I-95 NB at Emerson Street, and use the Hart Expressway and bridge to enter the Port District and related terminals. However, for trucks exiting the TMT and desiring to go south on I-95, the existing Emerson Street interchange includes a tight loop ramp (NW quadrant) that impacts a truck's ability to accelerate up to interstates speeds.

This said, the proposed interchange concept shown in Figure 5-1 eliminates this loop ramp and facilitates this movement on at-grade ramps via the diverging diamond configuration, thereby providing improved I-95 SB access from the TMT area. This proposed interchange improvement may in fact ***provide the opportunity for additional freight truck traffic*** to utilize Emerson Street and Hart Expressway/bridge, and thereby provide an improved alternative route for the TMT.

5.2 INFRA Grant Application

The Florida Department of Transportation (FDOT), in cooperation with the City of Jacksonville, JAXPORT, and Jacksonville Transportation Authority (JTA), have applied for US Department of Transportation (USDOT) funding to improve freight connectivity from the Hart Expressway.

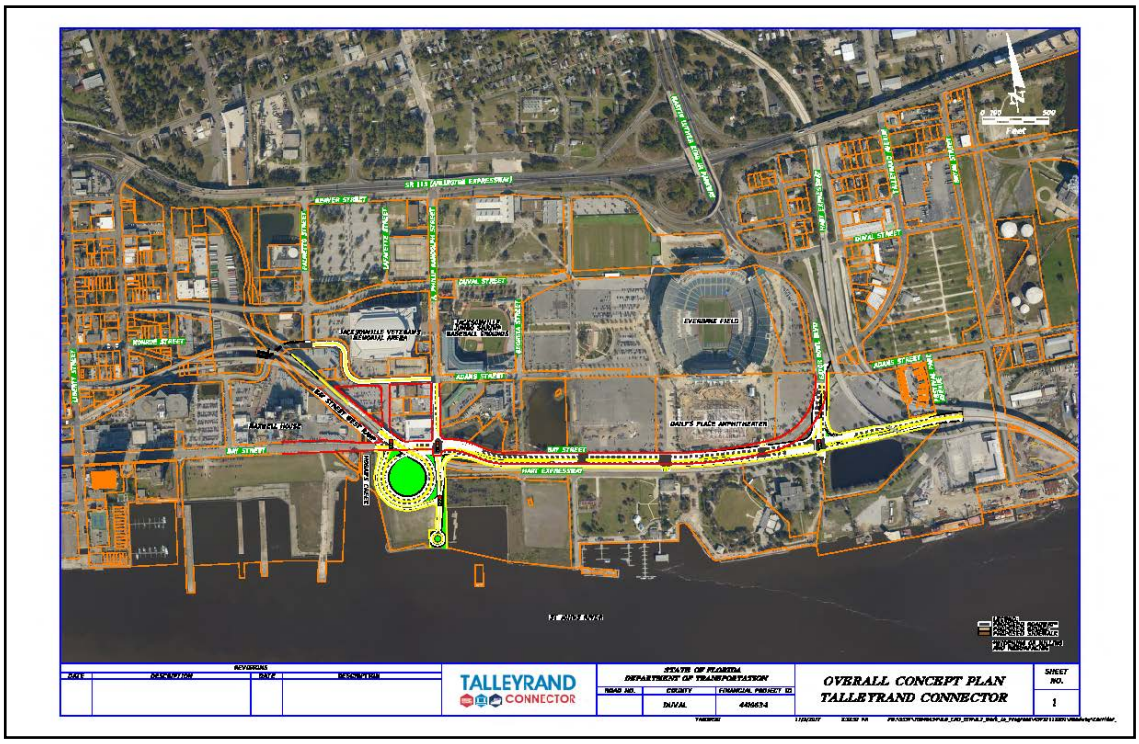
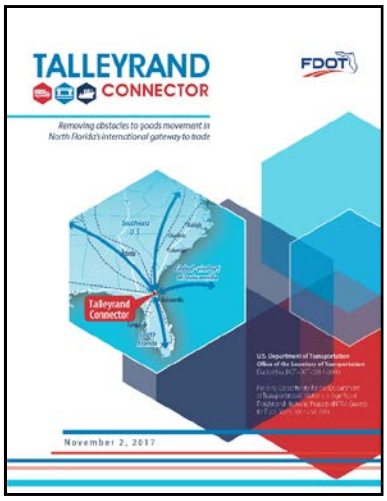


Figure 5-2: INFRA Grant Application for Hart Ramps/Improved Truck Access

Improvements include intelligent transportation system (ITS), signalization, widening, and ramp removal.



The INFRA Grant application includes the improvement of freight access to Talleyrand Avenue at its terminus with Gator Bowl Boulevard by including an extensive, fully connected right turn lane from the new at-grade intersection with Hart Expressway and Gator Bowl Boulevard onto Talleyrand Avenue.

Additionally, the grant application includes freight focused ITS signage, wayfinding and communications for communicating with freight carriers. Improving freight/truck access to the TMT and surrounding freight/distribution focused land uses will provide both clarity and order to arriving and departing freight carriers in the region.

6 Conclusions and Recommendations

6.1 Traffic

Enhancing terminal access to the Talleyrand Avenue area encompasses improving freight flows and accessibility from major thoroughfares. As such, improvements to Talleyrand Avenue should be in harmony with both rail lines leading to the Port as well as roadway/ITS improvements along freight corridors. The increasing inland distribution center (DC) movement of goods in North Florida, led by e-commerce and near-shoring manufacturing, requires access to adequate terminal space and efficient inland distribution systems, with dwell time(s) an important benchmark for effective port operations.

The increasing freight/truck traffic on I-10, I-95, I-295, Hart Expressway, and MLK Parkway continue to highlight the need for detailed freight movement counts, origins and destinations, along the North Florida transportation network. In many cases, truck surveys, Blue Toad (Bluetooth data collection), and ITS/dynamic message signs, can provide operational insights to responsible agencies and can help truck drivers get to their destinations safer and more efficiently.

Recommendations

- Develop a traffic/truck count program with the FDOT and City of Jacksonville to include both physical vehicular counts (I-95/Emerson St interchange, Hart Expressway/Bridge, MLK Pkwy, Talleyrand Ave, and area roads;
- Expansion of ongoing Bluetooth data collection at/near TMT to gain improved understanding of truck traffic flows to/from TMT area;
- Expand traffic data collection efforts to include Buckman St, Lambert St, and intersections with 8th St, 11th St, and 21st St, to gain an understanding of area traffic movements, with an emphasis on non-port traffic flows; and
- Conduct a detailed land use/parcel evaluation and update for the study area to assess improvements to port and non-port related access and circulation (Figure 2-2)

6.2 Infrastructure

As JAXPORT and port-related industries continue to diversify and expand services along Talleyrand Avenue, the City of Jacksonville, FDOT, JAXPORT, JTA and the North Florida TPO must continue to coordinate transportation infrastructure improvements that eliminate freight bottlenecks while providing mobility to North Florida residents and visitors.

Elevating Talleyrand Avenue at the existing rail crossing offers an opportunity to improve rail service, reduce travel delays, and connect adjacent port facilities. A proposed concept must consider the operational and geometric needs of port operations. This report finds that a bridge

concept is compatible with existing and future uses, with potential impacts to the existing entrance of Fire Station #11, which may require relocation.

Recommendations

Considering that stakeholders continue to revise and update roadway and facilities plans, JAXPORT could consider the following opportunities for future improvements:

- Elevating/grade separating Talleyrand Avenue south of 21st Street over railroad lines (per Figure 3-4);
- ITS improvements and applications along corridors leading to Talleyrand Ave and TMT;

In summary, the Talleyrand Avenue corridor and area facilities surrounding the Talleyrand Marine Terminal (TMT) offers opportunities to expand freight operations and provide an economic stimulus to the area around the terminal.

Significant improvements to MLK Parkway, when coupled with the recent operational changes to the TMT including new customer operations, and the proposed INFRA Grant application, *Talleyrand Connector*, offer the area several opportunities to expand freight related services/businesses.

Additionally, emerging technological advances include increasingly connected vehicles/trucks with additional means of communication between the port, the roadways, and vehicle operators. The potential of ITS and vehicle-to-infrastructure (V2I) communications to reduce congestion, limit idling and improve cargo safety, also suggests long-term plans for autonomous/connected vehicles (AV/CV) and freight infrastructure. These advances are consistent with positioning Northeast Florida as a "Smart Region", an initiative of the North Florida TPO and regional partners.

Lastly, these changes support or justify expanded evaluations for freight related land uses and improved transportation infrastructure or modifications to support the growing freight related uses. With such growth, operators and partner agencies must carefully evaluate and promote projects that provide quick access to facilities, eliminate freight bottlenecks and relieve congestion along truck routes.