Treasure Island Causeway:
Financial Assessment Report

July 2020

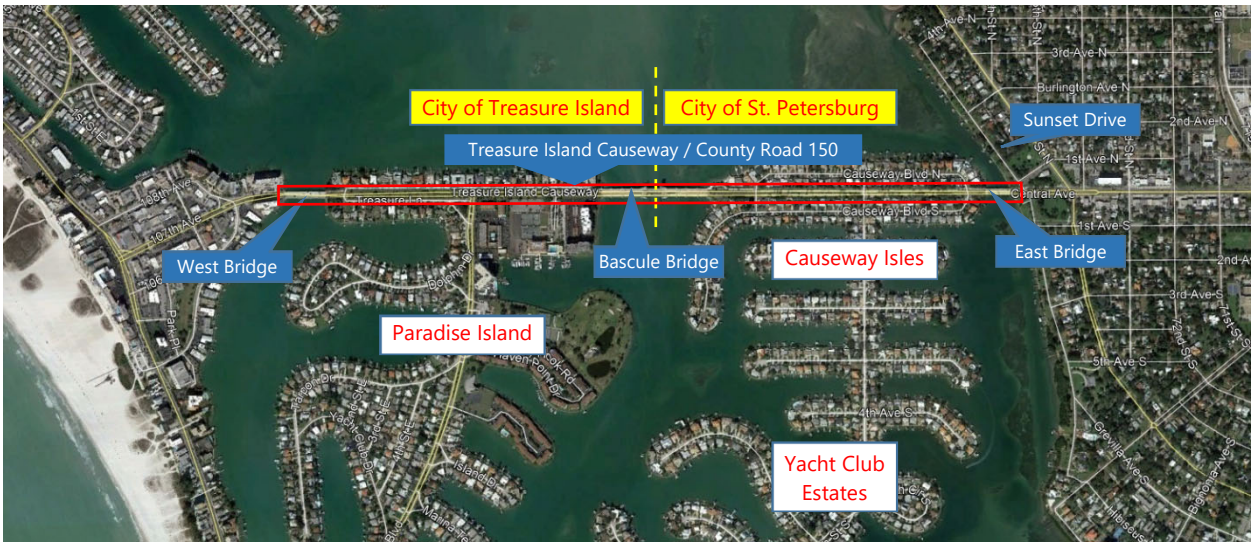
ATKINS

Contents

Appendices

The City of Treasure Island is located on a barrier island. It is joined to the St.Petersburg mainland by the Treasure Island Causeway (County Road 150), located both within the City of Treasure Island (starting at Gulf Boulevard) and in the City of St. Petersburg, extending to Sunset Drive (Figure 1). The Causeway is approximately 1.8 miles long and is comprised of three bridges, including a bascule (movable) bridge in between the two cities and two fixed bridges: one at the east end of the Causeway in St. Petersburg and one at the west end of the Causeway in Treasure Island.

Figure 1: Location of the Treasure Island Causeway



Although a portion of the Causeway is within the City of St. Petersburg, all three bridges were built by, and are owned and maintained by the City of Treasure Island.

The original Causeway and bridges were completed in 1939 and were in need of replacement by the 1990s. The City engaged Pinellas County and the State asking that they consider taking over the Causeway; however, both entities offered no interest in adding the Causeway to their roadway systems.

After a lenghty process, the City was able to obtain a $50 million Federal earmark under the Consolidated Appropriations Act of 2004 (Pub. L. 108-199) for replacement of the Causeway bascule bridge. Additionally, the City used its own funds in the amount of $10 million, along with a $5.2 million state TOPS grant, to replace the two fixed bridges on the east and west ends.

Prior to the bascule bridge replacement in 2007, the bridge was a toll facility with no Federal-aid participation. When the City accepted Federal-aid funds and removed tolling in 2007, the Causeway became a toll-free non-Interstate Federal-aid facility. As such, Federal statute restricts the City's ability to re-instate tolling on the Causeway in accordance with 23 U.S.C. 301, which states "Except as provided in section 129 of this title with respect to certain toll bridges and toll tunnels, all highways constructed under the provisions of this title shall be free from tolls of all kinds." In an email from the Federal Highway Authority (FHWA) Federal Tolling Manager dated August 18, 2017, the FHWA determined that the Causeway does not appear to qualify for tolling and stated that "Absent legislative change, there is no current legal authority to reinstate tolls on a toll-free Federal-aid highway facility that does not qualify

under 23 U.S.C. 129 or the other tolling programs." Federal legislation is not incentivizing preservation and rehabiliation, as funding sources are only made available for replacement projects. However, the City continues to take a proactive asset management approach to extend the life expectancy of its bridges.

Since tolling has ceased, the City has funded the annual recurring operating and maintenance costs of the Treasure Island Causeway with their property taxes. The operating costs averaged just over $600,000 for the past three fiscal years (2017, 2018 and 2019). Over the next 5 years, there is approximately $3.5M of capital improvements identified for the Causeway. The City can expect to pay an estimated $39 million for operations and routine maintenance and $25 million for rehabilitation, preservation and preventative maintenance (in current year dollars) for the remaining life of the Causeway and bridges (62 years). If inflation increases, and other factors are considered to increase by 3% each year, the City can expect to pay in excess of $178 million, or on average $2.8 million annually for the remaining life of the Causeway and three bridges (see Table 1).

Table 1: Treasure Island Causeway and Bridge Costs
(includes Roadway, Bascule Span, East and West Bridges)

Description	75-Year Costs	Annual Average Costs
West Bridge Costs[a]	$3,333,308	$52,729
Bascule Bridge & Causeway Roadway Costs[a]	$20,221,290	$315,405
East Bridge Costs[a]	$2,046,920	$32,355
Total Expected Causeway Rehabilitation, Preservation and Preventative Maintenance Costs[b]	$25,601,518	$400,488
Total Expected Causeway Operations & Routine Maintenance Costs[b]	$38,830,680	$616,360
Total Causeway Costs for Operations, Maintenance, Preservation and Rehabilitation (TMV @ 3%)[b]	$178,072,526	$2,826,548

Note: Year 1 is 2007 when the Bascule Bridge was Completed.

a. Costs for the West Bridge ($3,333,308), Bascule Bridge and Causeway Roads ($20,221,290) and East Bridge ($2,046,920) total $25,601,518 and includes actual costs since 2007-2019 and estimated costs through 2082. The estimated costs from year 2020 through 2082 total $25,230,757.
b. Estimated costs from 2020 through 2082.

The costs previously noted do not include the ultimate replacement of the bridges.

The costs for operation and routine maintainance, rehabilitation, preservation and prevenatative maintenance for the Causeway and bridges place an undue burden on the approximately 6,700 residents of the City, who account for approximately one-third of all the Causeway traffic. As noted in the traffic report (Appendix A), **approximately 65 percent of all daily trips on the Causeway are related to visitors on the Island**, and these trips originate and/or end outside of the City of Treasure Island.

To date, the City of Treasure Island has been fiscally responsible as demonstrated by the City Commission committing a portion of the revenue generated from the City's property taxes to the Causeway. Currently, the City commits 0.3 mills to support the Causeway and plans to increase to 0.5 mills over the next two years, which will generate approximately $1 million in property tax revenue annually. This amount represents just over 7% of the City's total General Fund Budget, which averages $13.6 million over the past three years. Without being able to toll the bridge, the City would have no option but to increase the burden of it's residents by raising taxes to operate the bridges, and to perform preventative maintenance, preservation and rehabilitation of the Causeway and bridges.

SECTION 1.0
Project Background

The City of Treasure Island is located on a barrier island and is joined to the mainland by the Treasure Island Causeway (County Road 150) located both within the City of Treasure Island (starting at Gulf Boulevard) and in the City of St. Petersburg, extending to Sunset Drive (Figure 1). The Causeway is approximately 1.8 miles long and is comprised of four travel lanes, three bridges, and man-made islands including the Treasure Island Paradise Island neighborhood and the neighborhoods of Causeway Isles and Yacht Club Estates located in the City of St. Petersburg. The Causeway's three bridges include the bascule (movable) bridge in between the two cities and two fixed bridges: one at the east end of the Causeway in St. Petersburg and one at the west end of the Causeway in Treasure Island. All three bridges were built by, owned, and maintained by the City of Tresaure Island. The Causeway, is an east-west "Urban Major Collector" that serves as the most direct and fastest evacuation route to the mainland. It is the sole means of access for residents of the Causeway Isles, Yacht Club Estates, and Paradise Island neighborhoods.

Two other bridges provide access to the rest of the City: one is located at the north end of the City over John's Pass and the other is at the south end of the City over Blind Pass. Both bridges are owned and maintained by the State of Florida along Gulf Boulevard (State Road 699).

The original Causeway and bridges were completed in 1939. To repay the bonds that funded the construction of the Causeway and its three bridges, a toll system was established. Toll booths were set up just east of the bascule bridge inside the municipal limits of the City of St. Petersburg. Frequent-use passes were sold, while all others paid a per-trip user fee. By the 1990s, it became increasingly clear that the three bridges were at the end of their useful life and needed to be replaced. Annual inspections resulted in severe weight limits being placed on the bascule bridge. The City engaged Pinellas County and the State asking that they consider taking over the Causeway; however, both entities responded to indicate there was no interest in adding the Causeway to their roadway systems.

After a lengthy process, the City was able to obtain an appropriation from Congress in the amount of $50 million to be put towards the replacement of the bascule bridge. Additionally, the City used its own funds in the amount of $10 million, along with a $5.2 million state TOPS grant, to replace the two fixed bridges on the east and west ends.

Replacement of the east and west fixed bridges began in June 2003 and was completed in December 2004. Replacement of the bascule bridge began in January 2005 and was completed in August 2007. Tolling was terminated by an act of the City Commission in 2006, at the request of Congressman Young, who was instrumental in securing the $50 million in federal funding. **At this time, prior to the recession, it was believed that there would be future federal appropriations available to cover major maintentance needs for the bridges**. However, the Florida Department of Transportation has determined that per the City's funding agreement related to the $50 million Federal earmark, ***the City must operate and maintain the Causeway***.

As a result, the City has absorbed annual operating costs of the Treasure Island Causeway with property taxes within their General Fund. The operating costs averaged $600,000 over the past two years. Additionally, the City has raised the committed portion of the millage rate for fiscal year (FY) 2020 to .30 mills, which is approximately $580,500 annually, to fund the current Causeway capital projects underway. Over the next 5 years, there is approximately $3.5M of capital maintenance required for the Treasure Island Causeway.

As noted in the City of Treasure Island's FY 2020 Budget, the City recognizes "…that the committed funds for the Treasure Island Causeway and bridge is not yet funded at a level to provide for the resources necessary to maintain the Causeway, much less replace the Bascule Bridge." Even with the financial due dilligence of the City, it is not enough to cover the future costs associated with the Causeway's preservation and rehabilitation. The Treasure Island Causeway serves a number of local and regional purposes and is a hurricane evacuation route for the barrier islands. It provides one of only a handful of connections to the mainland and is the most direct connection to the beaches from the City of St. Petersburg. **As noted earlier, the City of Treasure Island bears the sole burden of operating, maintaining/preserving and rehabilitating the Causeway; although this connection not only provides access to the citizens of Treasure Island, but also to the residents of the City of St. Petersburg and visitors of St. Pete Beach, Madeira and Redington Beaches, to name only a few.** Approximately 65 percent of the traffic along the Causeway have origins and destinations outside of the City of Treasure Island. The Causeway not only provides local access between the mainland and the island, but it serves a regional need providing tourist and surrounding area residents access to the barrier islands. ***As such, in an equitable environment, the costs should be shared by the surrounding Cities and State, including access to federal funding sources by having the designation or classification of the causeway changed.***

SECTION 2.0
Project Overview

The City of Treasure Island has approximately 6,700 residents or about 2,200 households and bears the sole financial responsibility for a moveable bridge. According to the national bridge inventory database, there are seven moveable bridges where a city/ municipal highway agency has primary responsibility for maintenance. All are posted for load restriction with the exception of two bridges – the Treasure Island Causeway and the Broad Causeway Draw Bridge which is owned by the Town of Bay Harbor Islands.

Funding necessities for the Treasure Island Causeway consist of the funds needed for preventative maintenance and rehabilitation of the three bridges, including around-the-clock bridge tenders for the bascule bridge operations, and all other Causeway activities such as maintenance of the roadway, drainage, lighting, and landscaping. To evaluate funding necessary to operate, maintain and rehab the Causeway, the City undertook the development of this long-term financial review.

This report evaluates the long-term costs to support the future operations, preventative maintenance, capital improvement and rehabilitation of the Causeway, as well as the City's abiltity to cover those costs.

SECTION 3.0
Existing Conditions

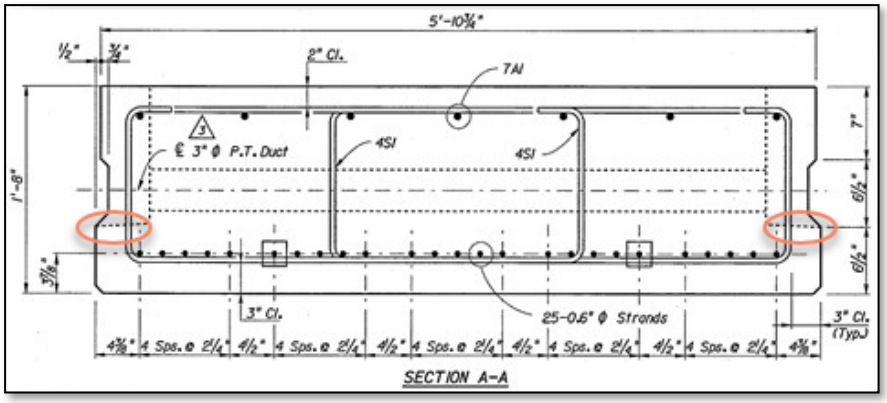
The following section documents the existing conditions along the Causeway.

3.1. Bridge Conditions

Bridge inspection reports were reviewed for the Causeway bridges. The inspections were conducted in 2018 for the bascule bridge and 2017 for the east and west bridges. Based on the history of the older Causeway bridges that have since been replaced, it can be noted that the newer Causeway bridges may also be susceptible to similar forms of deterioration. The rate of deterioration is difficult to predict; however, it is comforting to know that the existing bridges have a thicker concrete cover for the superstructure elements and that a number of fatigue prone details appear to have been eliminated in the newer bascule design.

The East Causeway Bridge, West Causeway Bridge, and approach bridges to the bascule span were given a National Bridge Inventory (NBI) rating of "7 – Good Condition" and "8 – Very Good Condition" for the deck, superstructure, and substructure elements (on a scale of "0 – Failed Condition" to "9 – Excellent Condition"). These ratings are considered typical for the age and design type of bridge throughout the State of Florida. The primary load carrying superstructure elements of these bridges are non-standard prestressed slab units (PSU) and Florida prestressed bulb-tees. In the past, other bridge owners have observed longitudinal cracking in the deck topside due to the behavior of the PSU superstructure. The most recent inspection reports did not observe this type of cracking in the deck for the PSU superstructure. However, corrosion staining and cracking was noted in the underside of the PSU superstructure. Staining is likely to be occurring from the pocket closure pours at the precast interface due to poor sealing/bonding (see locations circled in red in Figure 2). More information will need to be gathered to determine the source of corrosion staining in order to suggest a mitigation strategy that can be programmed into the current financial plan.

Figure 2: Possible Source of Corrosion Staining



Source: Excerpt from Plan Sheet No. A-21, Project#: CTIR-02-85

Based on a field review in September of 2019, the undersides of the non-standard PSU members exhibited wet spots most likely caused by small watercraft ("rooster tail" of jet ski) passing underneath the bridge. This suggests that the undersides of PSU members could potentially undergo a wet-dry cycle, potentially causing cracks to form in the concrete cover. Based on internet research, the primary purpose of the "rooster tail" in Yamaha jet skis are for visibility. In conversation with the Treasure Island Police Officer, they have also observed many jet skis drive at fast speeds underneath the fixed bridges, in which the bridge may hinder visibility of the jet ski to nearby boaters.

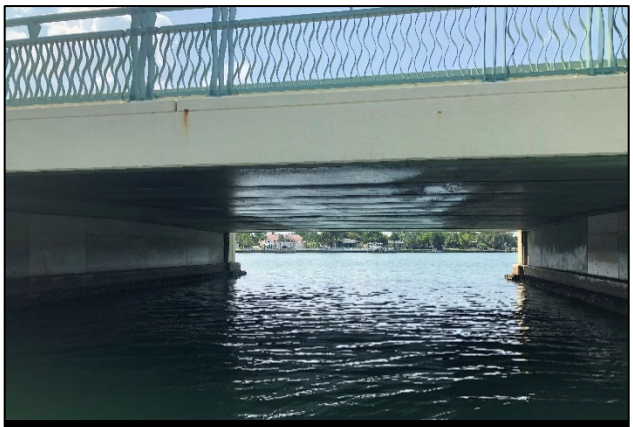
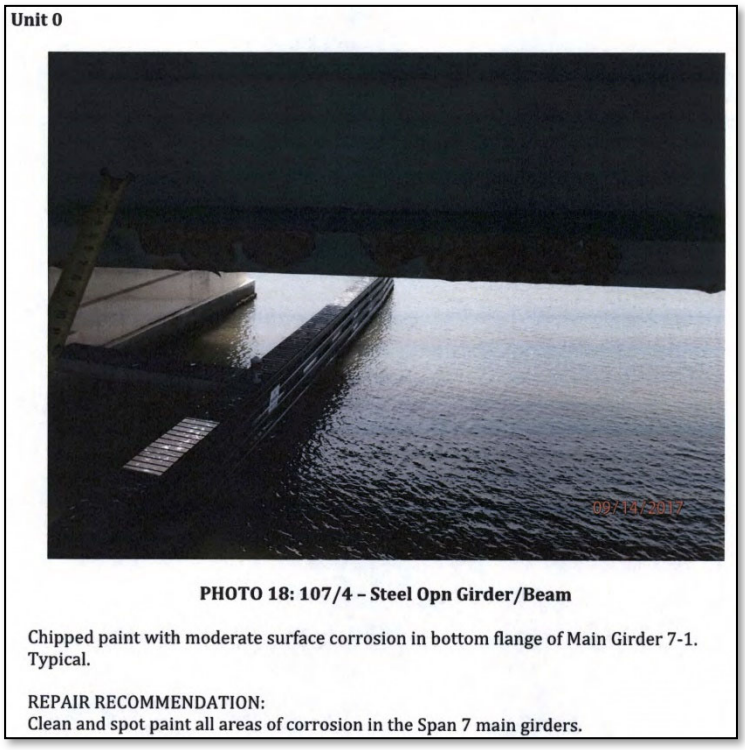


Photo Showing Wet Spots at Underside of East Causeway

Photo Showing Minor Cracking/ Efflorescence and Previous Repairs at Underside of East

The primary defense for the steel bascule span against corrosion is the three-coat inorganic zinc-rich paint system that was applied to the steel elements. The most recent inspection report noted 36 square feet of area that exhibited moderate active corrosion and cracking in paint on the main steel girders of the bascule leaf (Figure 3). The paint system on the corners, edges, and tips of the main girders bottom flange and trunnion girder hatches was noted as chipped/ scraped and/or peeling in isolated areas with minor to moderate surface corrosion. Also, many of the fasteners on the main girders were noted as having light oxidation around their perimeter.

Figure 3: Excerpt from 2017 Bridge Inspection Report



Source: September 29, 2017, Regular NBI Report for Bridge# 157801

3.2. Functional Classification

Functional classification refers to the role of a roadway in moving vehicles through a network of highways. Functional classification carries with it expectations about roadway design, including its speed, capacity and relationship to existing and future land use development. The Causeway is currently classified by FDOT as an "Urban Major Collector" roadway. This classification designates the corridor as an urban corridor that serves both land access and traffic circulation in higher density residential areas. The collector gathers traffic from local roads and funnels them to the arterial network.

3.3. Federal Aid Classification

The FDOT roadway ID for the Treasure Island Causeway (CR 150) is 15180500. The bascule bridge is inspected annually with Federal Funds by the District 7 Structures Maintenance Office. The Causeway is classified in the Bridge Inspection Report as an "Urban Collector" and is not considered part of the National Highway System (NHS). This roadway is eligible for federal aid from FHWA for disaster recovery and other purposes. The Causeway is not on the STRAHNET (Strategic Highway Network), which is a highway that is considered critical to the Department of Defense's (DoD's) domestic operations. The bascule bridge crosses over an intracoastal waterway as defined by the United States Coast Guard.

3.4. Access Management Classification

Access management is the coordinated planning, regulation, and design of access between roadways and land development. It promotes the efficient and safe movement of people and goods by reducing conflicts on the roadway system and at its interface with other modes of travel. The Causeway does not have an FDOT access classification. It is the designated evacuation route off Treasure Island in the event of a hurricane or other disaster. Access is limited to the City of Treasure Island and St. Petersburg on both ends of the Causeway, and the communities of Paradise Island and South Causeway Isles between the bridges.

3.5. Existing Land Use

The Causeway connects the City of Treasure Island and the mainland (St. Petersburg). Existing land uses in the areas north and south of the Causeway primarily consist of residential and commercial (marinas /docks/boat storage) uses. The west side of the Causeway is primarily retail with restaurants and connects to the Gulf Boulevard mixed use commerical/hotels and recerational areas.

3.6. Typical Sections

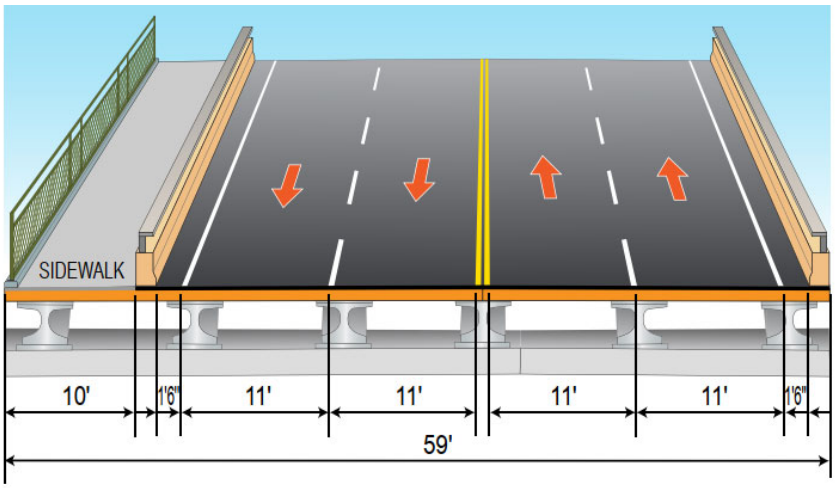
There are varying typicals for the three bridge and the roadway sections along the Causeway, as described in the following sections.

3.6.1. Bridge Typical Sections

There are varying existing typicals for the three bridge sections, including the east fixed bridge, center bascule bridge and the west fixed bridge.

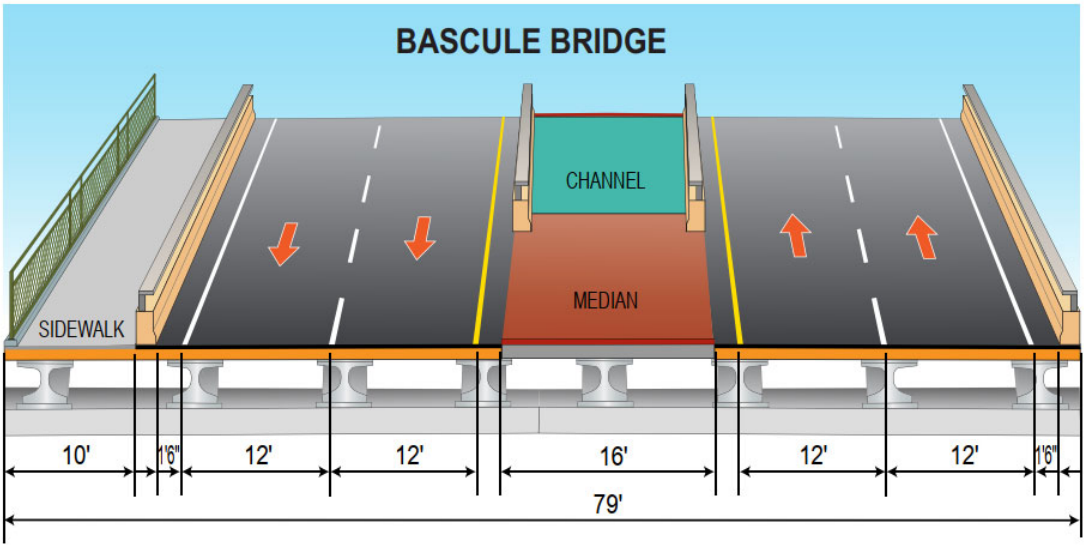
- The east fixed bridge (Figure 4) has four 11-foot wide travel lanes (two in each direction), no median, and a 10-foot wide shared used path on the north side of the bridge. A two-foot high and 1.5-foot wide concrete barrier separates the travel lanes from the shared use path. The bridge spans approximately 240-feet from end to end.

Figure 4: Typical Section of East Bridge



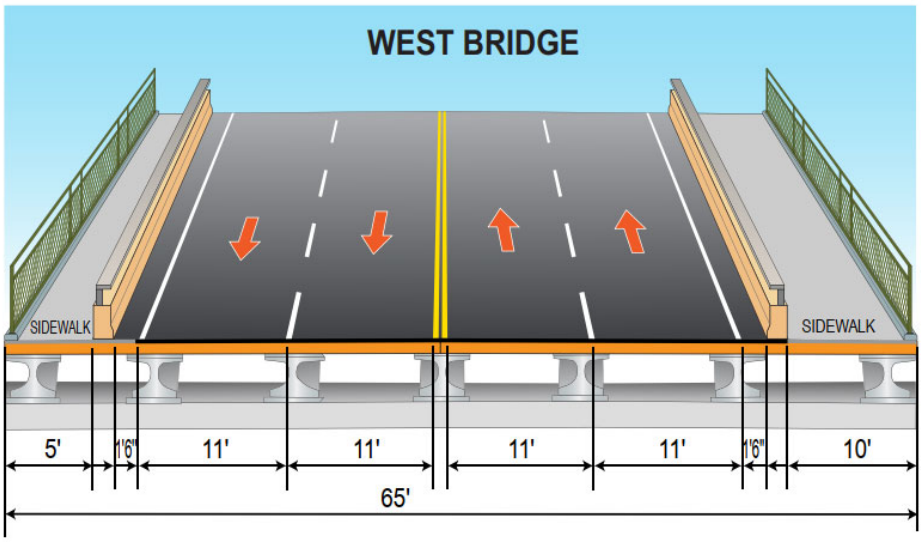
- The bascule bridge (center bridge, Figure 5) is a median separated facility with two 12-foot wide travel lanes in each direction, and a 10-foot wide shared use path on the north side of the bridge. The median is approximately 16-feet wide and the shared-use path is separated from the travel lane by a two-foot high and 1.5-foot wide concrete barrier. The bridge spans approximately 1,000-feet from end to end; the concrete fixed approach spans are approximately 400-feet long on both sides of the steel moveable bascule spans (drawbridge).

Figure 5: Typical Section of Bascule Bridge



- The west fixed bridge (Figure 6) has four 11-foot wide travel lanes (two in each direction), no median, a 10-foot wide shared used path on the south side of the bridge, and a five-foot wide sidewalk on the north side of the bridge. A two-foot high and one-foot wide concrete barrier separates the travel lanes from the shared use path and sidewalk. The bridge spans approximately 400-feet from end to end.

Figure 6: Typical Section of West Bridge

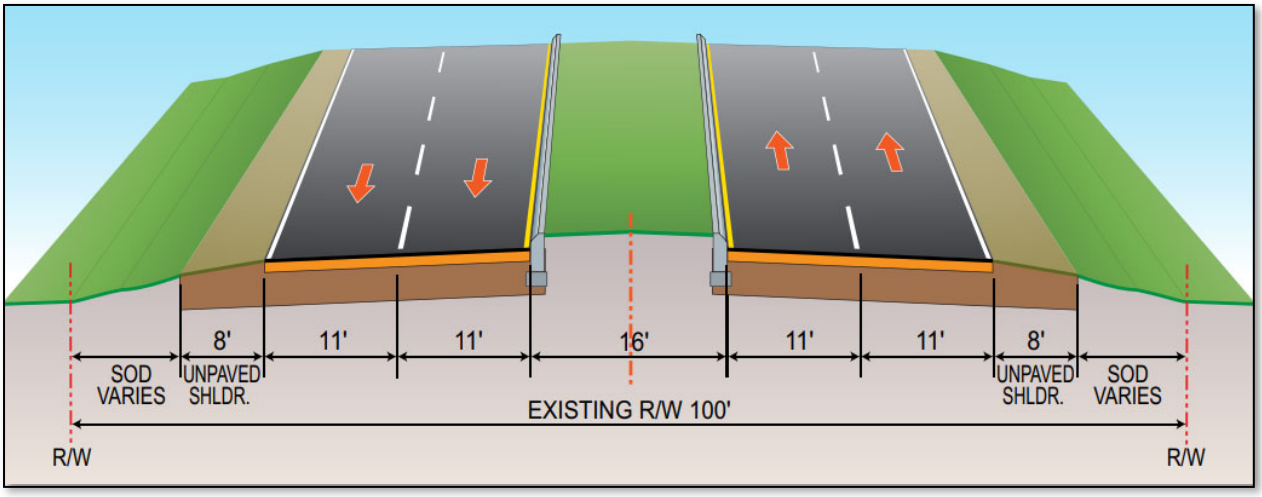


3.6.2. Roadway Typical Sections

There are varying existing typicals for the roadway segments between the bridge sections.

- Roadway segment between the east and bascule bridges (Figure 7): This half-mile segment is four-lanes (two in each travel direction), separated by an 16-foot landscaped median. The travel lanes are 11-feet wide. There are no pedestrian or bicycle facilities, with the exception of a small segment approaching the bascule bridge from the east, which has a 10-foot wide shared use path on the north side of the roadway.

Figure 7: Typical Section of Roadway Segment between East and Bascule Bridges



- Roadway segment between the bascule and west bridges (Figure 8): Similar to the eastern roadway segment, this half-mile segment is also four-lanes (two in each travel direction), separated by an 16-foot landscaped median. The travel lanes are 11-feet wide. There are no pedestrian or bicycle facilities, with the following exceptions (Figure 9):
    - A small segment west of the bascule bridge, which has a 10-foot wide shared use bicycle/pedestrian path on the north side of the roadway and a 20-foot wide shared use bicycle/pedestrain/vehicle path extending west.
    - A small segment east of the west bridge from the east, which includes a 20-foot wide shared used bicycle/pedestrain/vehicle path on the both sides of the roadway, and a six-foot wide sidewalk on the north side of the roadway.

Figure 8: Typical Section of Roadway Segment between Bascule and West Bridges

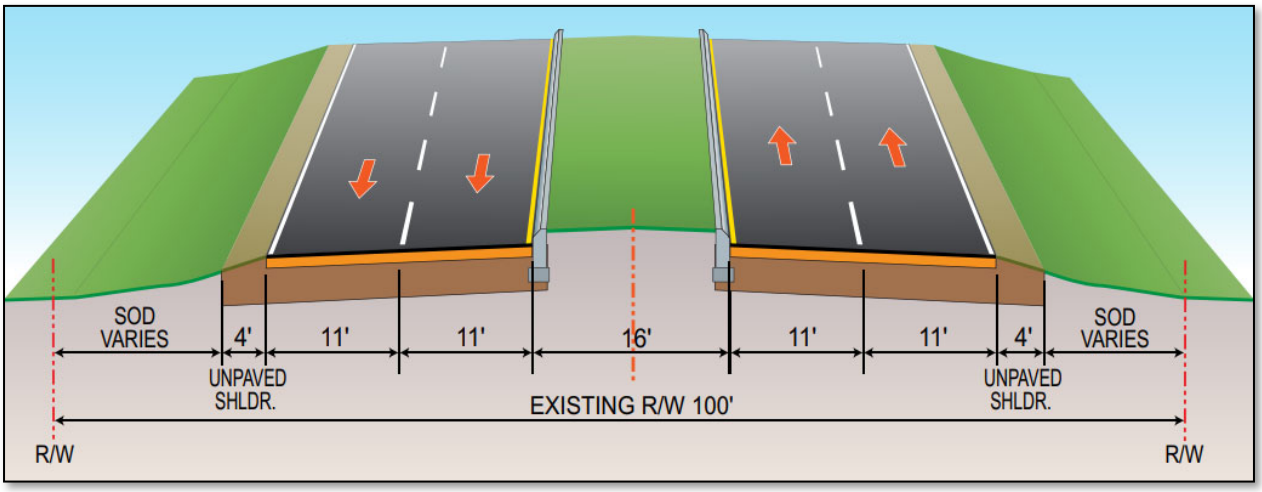
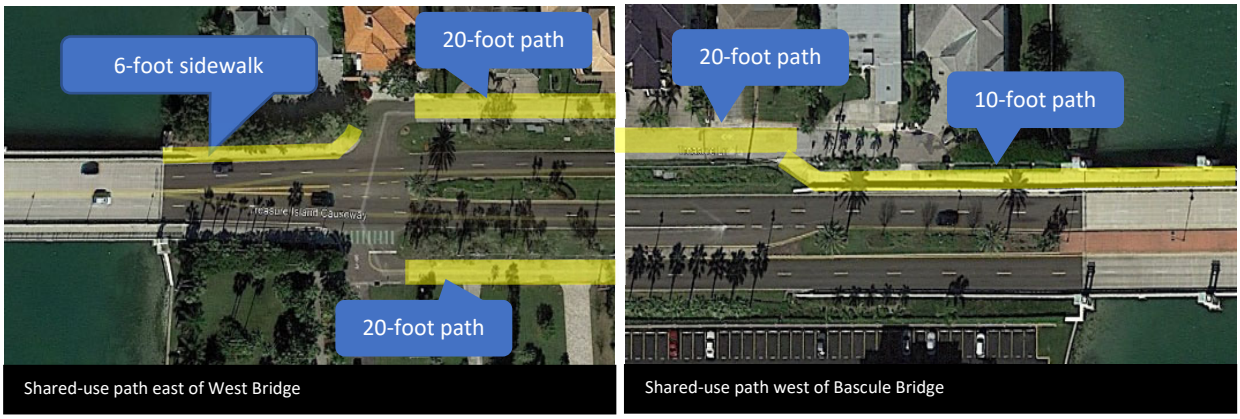


Figure 9: Pedestrian/Bicycle Facilities between East and Bascule Bridges



3.7. Lighting

Conventional street lighting exists as follows:

- Lighting is spaced approximately every 50 feet along the north side of the east bridge.
- Lighting is generally spaced approximately every 80 feet along the median, from the east bridge to the west bridge. The distance between light poles on either side of the bascule bridge leafs, is approximately 230 feet.
- Lighting is spaced approximately every 50 feet along the south side of the west bridge.

The City is currently in the process of replacing all of the lighting along the Causeway.

3.8. Existing Pavement Condition

According to the pavement condition data provided by the City of Treasure Island's engineering consultant, the pavement condition of the Causeway varies along the entire length of the corridor. The pavement on the east and west bridges are rated in "Satisfactory" condition, the bascule bridge is rated

in “Good” condition, and the roadway segments in between are rated in “Fair” of “Poor” condition. The segment between the east and bascule bridges is in the worst condition (“Poor”) and is scheduled to be replaced in FY2021.

The decking on all three bridges are concrete pre-cast panels (the bascule bridge decks are concrete and steel) with asphalt approach roadways.

3.9. Bridge Data

3.9.1. Bridge Inspection Report Summary

The National Bridge Inventory (NBI) ratings for each bridge component, as well as the overall Performance Rating, Health Index, and Sufficiency Rating for each year, are summarized in Table 2.

Table 2: Bridge Inspection Report Ratings

Bridge Component	West Fixed Bridge (2017 Report)	Bascule Bridge (2018 Report)	East Fixed Bridge (2017 Report)
Deck	7 (good)	8 (very good)	7 (good)
Superstructure	7 (good)	7 (good)	7 (good)
Substructure	7 (good)	8 (very good)	7 (good)
Channel	7 (minor damage)	7 (minor damage)	7 (minor damage)
Health Index	99.85	93.67	99.91
Sufficiency Rating	75.2	81.2	75.2
Structurally Deficient	No	No	No
Functionally Obsolete	Yes	No	Yes

Source: FDOT Bridge Inspection Reports for Bridge Numbers 157801, 157821 and 157841.

Condition ratings are used to describe the existing, in-place bridge as compared to the as-built condition, and include the following:

- Deck – Describes the overall condition rating of the deck. The condition of the surface/protective systems, joints, expansion devices, curbs, sidewalks, parapets, fascia, bridge rail and scuppers are not included in the rating, but the condition will be noted in the inspection form (“0 – Failed Condition” to “9 – Excellent Condition”).

- Superstructure – Describes the physical condition of all the structural members. The condition of the bearings, joints, paint system, etc. will not be included in the rating except for extreme situations, but the condition will be noted in the inspection form (“0 – Failed Condition” to “9 – Excellent Condition”).

- Substructure – Describes the physical condition of piers, abutments, piles, fenders, footings or other components (“0 – Failed Condition” to “9 – Excellent Condition”).

- Channel and channel protection – Describe the physical condition that is associated with the flow of the water through the bridge which include the stream stability and the condition of the hydraulic countermeasures.

- Health Index – A tool that measures the overall condition of a bridge. The health index typically includes about 10 to 12 different elements that are evaluated by the department of transportation. A lower health index means that more work would be required to improve the bridge to an ideal condition. A health index below 85 generally indicates that some repairs are needed, although it does not mean the bridge is unsafe. A low health index may also indicate that it would be more economical to replace the bridge than to repair it.

- Sufficiency rating – A tool that is used to help determine whether a bridge that is structurally deficient or functionally obsolete should be repaired or just replaced. The sufficiency rating considers several factors, only about half of which relate to the condition of the bridge itself. The sufficiency ratings for bridges are part of a formula used by the Federal Highway Administration when it allocates federal funds to the states for bridge replacement.

- Structurally deficient – Refers to a bridge where significant load carrying elements are found to be in poor or worse condition due to deterioration and/or damage, or the adequacy of the waterway opening provided by the bridge is determined to be extremely insufficient to the point of causing intolerable traffic interruptions. The FDOT believes a bridge should undergo a series of repairs or replacement within the next six years. The department's policy is to repair or replace all the structurally deficient state-owned bridges during that time. The department also recommends that local governments follow the same schedule for their structurally deficient bridges.

- Functionally Obsolete - Bridge does not meet current road design standards. For example, some bridges are "functionally obsolete" because they were built at a time when lane widths were narrower than the current standard. The East and West Causeway bridges are considered functionally obsolete because the outside shoulder width does not meet the minimum 10’-0” required for divided collector roadways (FDOT Design Manual, Topic #625-000-002, Section 260).

3.9.2. Bridge Clearance

Navigational Vertical Clearance refers to the space allowed for the passage of any marine craft along the waterway underneath the bridge. In the case of a swing or bascule bridge, the vertical clearance shall be measured with the bridge in the closed position (i.e., open to vehicular traffic). The Navigational Horizontal Clearance is the minimum horizontal clearance between fenders, if any, or the clear distance between piers or bents. Roadway Horizontal and Vertical Clearance refers the largest available clearance for the movement of wide and tall loads across the bridge. This is field is applicable for over-lane sign structures, high mast light poles and traffic signal mast arms. The bridge clearances are listed in Table 3.

Table 3: Bridge Clearance

Clearance	West Fixed Bridge	Bascule Bridge	East Fixed Bridge
Roadway Horizontal Clearance	50 feet	26.3 feet	50 feet
Roadway Vertical Clearance	None	18.8 feet	None

Clearance	West Fixed Bridge	Bascule Bridge	East Fixed Bridge
Navigational Horizontal Clearance	0 feet	99.6 feet	0 feet
Navigational Vertical Clearance	0 feet	20.5 feet	0 feet

Source: Office of Coast Survey, NOAA.

3.9.3. Bridge Openings

Per 117.287 Code of Fedreal Regualtions (CFR), "(g) The draw of the Treasure Island Causeway bridge, mile 119.0 shall open on signal except that from 7 a.m. to 7 p.m. the draw need open on the hour, 20 minutes after the hour and 40 minutes after the hour Monday through Friday and on the quarter hour and three quarter hour on Saturday, Sunday and Federal holidays." As a result, the bascule bridge is staffed 24 hours a day, seven days a week.

The bridge openings are timed throughout the day at pre-determined intervals. The City initiated the use of timed bridge openings in September 2014. As a result, the number of annual bridge openings has generally declined from 3,399 openings in 2007 to 1,670 openings in 2019; or on an average of 9.32 to 4.58 openings per day. Average statistics over the 13-year time period are summarized Table 4.

Table 4: Annual Bridge Openings

Year	Bridge Openings	Average per Day
2007	3,399	9.32
2008	3,196	8.76
2009	3,179	8.71
2010	2,573	7.05
2011	2,704	7.41
2012	2,885	7.91
2013	2,466	6.76
2014	2,210	6.06
2015	1,972	5.41
2016	2,109	5.78
2017	2,010	5.50
2018	1,721	4.72
2019	1,670	4.58

Source: City of Treasure Island.

3.9.4. Traffic Signals

A traffic signal is located on each side of the bascule bridge, including signal-controlled stop gates at the drawbridge openings. Per the FDOT Bridge Inspection Report dated September 25, 2018, both traffic signal mast arms have isolated areas of minor surface corrosion.

A third traffic signal is located at the intersection of Paradise Boulevard and the Causeway, which is also the financial responsibility of the City.

3.10. Traffic Data

See Appendix A.

SECTION 4.0
Financial Overview

The following sections documents the financial investment needed for maintenance and rehabilitation of the Treasure Island Causeway over the next 75 years.

4.1. Financial Data

As part of the financial study, the City of Treasure Island provided historical records and data for review, including the following spreadsheets and reports:

- 2017 and/or 2018 Regular NBI Bridge Inspection Reports for the two fixed and bascule bridges
- As-built plans for the Causeway
- Conceptual Quantities & Cost Estimates by EC Driver (2003)
- July 2001 Existing Conditions Report
- Capital Improvement Program Project Sheets FY2020 through FY 2024
- Capital Causeway Cost spreadsheets for FY 2011 through FY 2017
- Treasure Island Bascule Bridge Maintenance Spreadsheet by AECOM and Atkins (May 2017)
- Confidential Bridge Inspections Reports
- Bridge Equipment Hierarchy Spreadsheet
- Operating and Maintenance Cost Reports for FY 2011 through FY 2019
- Bascule Bridge Openings Spreadsheets and Bridge Counts by Year Document

Together, the data provided background information on the various bridge components and their costs, operating and maintenance costs (including salaries), the 5-year Capital Improvement projects along the Causeway, and miscellaneous bridge-related background information (i.e. number of annual bridge openings, causeway enhancements, etc.). The spreadsheet provided by the City is based on a cyclical schedule, predicting when certain elements typically deteriorate or need to be replaced.

The operations and routine maintenance, rehabilitation, preservation and preventative maintenance needs of the Treasure Island Causeway were reviewed and verified by Atkins as part of this analysis.

4.1.1. Capital Improvement Program

The City's Capital Improvement Program (CIP) for FY 2020 through FY 2024 identifies approximately $3.5 million of Causeway improvement projects. On average, the City has budgeted $3.3 million for each five-year period since 2016 for Causeway capital improvement projects. It is anticipated that over the life of the bridges, future capital improvement projects, including rehabilitation, bridge preservation, and preventative maintenance projects, will be needed along the Causeway.

4.2. Source of Financial Review Framework

The primary focus for the scope of this financial assessment was to identify the short and long-term costs related to the preventative maintenance and rehabilitation of the Treasure Island Causeway (including bridges and roadway). The roadway costs were derived from the FDOT Long-Range Estimates (LRE) and FDOT pay-item historical cost data. The bridge costs were obtained from the City of Treasure Island and compared against expert opinions from local bridge owners, engineers, and manufacturers with the

knowledge of how various bridge elements deteriorate over time given the location and design of the bridge.

The City of Treasure Island Causeway Bridge Maintenance spreadsheet was updated to include roadway and bridge costs per the 12-month statewide moving average unit costs, from June 1, 2018 through May 5, 2019, using the FDOT Basis of Estimates (BOE) Manual and the Historical Costs. If a pay-item cost was not available in this time frame (i.e. no projects were let with the desired pay-item costs) previous year historical cost estimates were used from January 2017. Columns were added to the spreadsheet identifying the FDOT pay-item used for each maintenance item and notes were added describing the logic behind assigning cost and quantity to certain maintenance items.

4.3. Financial Assessment of the Causeway Bridges

FHWA defines asset management as a "strategic and systematic process of operating, maintaining, and improving physical assets, with a focus on both engineering and economic analysis based on quality information, to identify a structured sequence of maintenance, repair, rehabilitation and replacement actions that will sustain a desired state of good repair over the life cycle of the assets at a minimum practical cost."

This assessment divides costs expected throughout the lifespan of the bridge into six sub-categories, including operations (personnel/other costs), routine maintenance, bridge preservation, preventative maintenance, rehabilitation and replacement; defined in the following subsections. For the purposes of this analysis, the sub-categories were grouped into two major categories – activities eligible for federal funding (rehabilitation, preservation and preventative maintenance) and activities not eligible for federal funding (operations and routine maintenance). Replacement was not considered as part of this analysis.

4.3.1. Operations (Personnel/Other Causeway Costs)

This section refers to cost of resources used to maintain the Causeway, including administrative costs, salaries of the bridge tenders, public works management, grounds maintenance, and mechanics, as well as a portion of other public works staff who maintain the roadway/grounds of the Causeway and allocation of staff mechanics that assist in maintaining the equipment.

4.3.2. Routine Maintenance

Routine maintenance is work that is performed in reaction to an event, season, or activities that are done for short-term operational need that do not have preservation value. This work requires regular attention, and should the Causeway become eligible for federal funding later, routine maintenance would not eligible for federal funding.

4.3.3. Bridge Preservation

Bridge preservation includes actions or strategies that prevent, delay, or reduce deterioration of bridges or bridge elements; restore the function of existing bridges; keep bridges in good or fair condition; and extend their service life. Preservation actions may be cyclic (at pre-determined intervals) or condition-driven (in response to known defects).

4.3.4. Preventative Maintenance

Preventative maintenance is a cost-effective means of extending the service life of highway bridges, including both cyclical and condition-based activities. Cyclical maintenance activities are performed on a pre-determined interval aimed at preserving and delaying deterioration of bridge elements or component conditions. This includes deck sealers, cleaning of decks, joints, drains, superstructure and substructure elements that slows the deterioration of concrete and steel elements that would otherwise be accelerated by debris, bird droppings, and contaminants. Condition-based maintenance activities are those identified through an inspection process that are performed in response to known defects to improve the condition of that portion of the element but may not result in an increase in the component condition rating.

Preventative maintenance can significantly reduce the amount of funds needed for repair and rehabilitation projects. Based on conversation, analysis of the budget for Capital Improvement Projects and expenditures, as well as the results of the bridge inspection reports provided by FDOT, the City is actively maintaining the bridges in their inventory. For this financial assessment, preventative maintenance items were subdivided into major and minor items with associated costs. The frequency of the major items is dependent on available funding and the extent deterioration/degradation. The frequency of the minor items is recommended every five years.

4.3.5. Rehabilitation

Rehabilitation involves major work required to restore the structural integrity of a bridge, as well as work necessary to correct major safety defects. Rehabilitation projects provide complete or nearly complete restoration of bridge elements or components. These projects require significant engineering resources for design, a lengthy completion schedule, and considerable costs. Examples include partial or complete deck replacement, superstructure replacement and substructure/culvert strengthening or replacement.

Costs were calculated for bridge items based on the expected service life for each element. All items for future rehabilitation and repair projects were categorized based on type of bridge element and associated with an FDOT pay-item number.

The East Causeway, the approaches to the Bascule Span, and the West Causeway Bridges were designed using similar bridge elements and likewise have similar maintenance items for future rehabilitation. All quantities were checked and updated against the quantities identified in the inspection report for each bridge.

4.3.6. Replacement

Replacement is defined as the total replacement of an existing bridge with a new facility constructed in the same general traffic corridor. **Replacement was not contemplated for this review.**

4.4. Financial Assessment of the Causeway Roadway Elements

The roadway elements of the Treasure Island Causeway are included in the total Causeway costs, including maintaining the landscaping along the roadway, pavement rehabilitation, drainage improvements, traffic signals, etc. As noted earlier, the pavement conditions along some roadway segments on the Causeway roads are in need of repair.

4.5. Potential Funding Sources

The following section summarizes the available sources of funding that the Treasure Island Causeway bridges may be eligible.

b. Federal Grants
   - **i. Local Agency Program (LAP) -** provides towns, cities and counties funds to develop, design, and construct transportation facilities with federal funds. FDOT is the steward of the federal funds and is responsible for oversight of funded projects on behalf of the Federal Highway Administration (FHWA.)

c. State Grant Programs
   - i. **County Incentive Grant Program (CIGP)** – available for county owned transportation facilities located on the State Highway System (SHS) or which relieves traffic congestion on the SHS.
   - ii. **Small County Outreach Program (SCOP)** – available to assist small county governments in repairing or rehabilitating county bridges, paving unpaved roads, addressing road-related drainage improvements, resurfacing or reconstructing county roads, or constructing capacity safety improvements on county roads. Funds are available to counties that have a population of 200,000 or less.
   - iii. **Small County Outreach Program for Municipalities and Communities (SCOP "Municipalities") -** is available to Rural Areas of Opportunity designated under *Section 288.0656(7)(a), Florida Statutes (F.S.)*. The transportation facility must be publicly owned and maintained. Funds are available to assist in the repair and rehabilitation of bridges, paving unpaved roads; addressing road-related drainage improvements; resurfacing or reconstruction of roads and constructing safety improvements to roads.
   - iv. **Small County Road Assistance Program (SCRAP)** - assist small county governments in resurfacing and reconstructing county roads. Funds are available to counties available to counties that have a population of 75, 000 or less.
   - v. **Transportation Regional Incentive Program (TRIP)** - provides funding to improve regionally significant transportation facilities in regional transportation areas defined by Florida Statute. State funds are available throughout Florida to provide incentives for local governments and the private sector to help pay for critically needed projects that benefit regional travel and commerce.

It is recommended that the City of Treasure Island contact an FDOT District 7 Program Administrator to assist them in determining what types of aid the might qualify for. An additional resource for funding is the FDOT Program and Resource Plan for Fiscal Years 2018/19 through 2022/23. The Program and Resource Plan (Plan) provides planned commitment levels by year for each of the department's programs. The program levels form the basis for the Department's Finance Plan, Tentative Five-Year Work Program, and Legislative Budget Request. Per the Plan, Title 23 United States Code, Section 133, requires bridges off the SHS and off the Federal Highway System (FHS) set-aside an amount not less than 15 percent of the State's FY 2009 Highway Bridge Program apportionment for bridge inspection programs and replacement and rehabilitation projects prioritized for funding on the statewide local bridge replacement ranking formula. These funds are allocated on a statewide basis using the ACBZ/BRTZ fund code (Bridge Program Statewide Advanced Construction Funds). First priority for funds will be bridge inspection programs. The department will use any remaining funds for replacement and

rehabilitation projects prioritized for funding on the statewide local bridge replacement ranking formula listing. Below are the policies for use of the federal funds which are set-aside for this purpose:

- Bridges in Rural Areas of Opportunity or in counties eligible for SCOP or SCRAP will be funded 100% from the set-aside with no match required. Once a programmed project is eligible, it will remain eligible.

- For bridges that do not qualify for the above funding, the engineering costs will be the owners' responsibility. All other phases (excluding in-house phases) are to be split 75% Federal (from the set-aside) and 25% owner up to a total project cost of $5 million (limiting federal participation on each bridge to $3.75 million). This limitation excludes in-house phases. If a design phase is programmed 100% owner, the amount above 25% will be credited towards their match required for the other phases.

- Bridges on toll roads do not qualify for funding under this program.

- Exception requests may be directed to the Chief Engineer for consideration by the Secretary.

Other district managed federal funds may be used to fund bridges which are not funded with the set-aside funding with the approval from the central office Work Program Development and Operations Office.

The Treasure Island Causeway roadway elements are currently not eligible for federal funding for maintenance and rehabilitation, as the roadway is currently not a part of the SHS or FHS.

SECTION 5.0
Conclusion

The purpose of this report is to identify and verify costs to operate and maintain the Treasure Island Causeway for the remainder of the life of the bascule bridge (62 years). This report further breaks down the maintenance costs into categories identified by the Federal Highway Authority (FHWA) Bridge Preservation Guide (Spring 2018) so that funding opportunities could be identified and pursued by the City. Categories with the potential for federal funding include rehabilitation, bridge preservation and preventative maintenance. Lastly, this report provides an overall description of the Treasure Island Causeway, its condition and the maintenance items required to keep the City's assets in good working condition to serve the City and surrounding communities.

For the purposes of this analysis and as noted earlier, the costs related to the Causeway are summarized and grouped based on the FHWA categories with the potential for funding from the FHWA through FDOT, including rehabilitation, bridge preservation and preventative maintenance. Table 5 and Figure 10 show a snapshot of the total cumulative costs by year for each Causeway element and by category based on federal funding eligibility; operations and routine maintenance (not eligible for federal funding) and rehabilitation, bridge preservation and preventative maintenance (eligible for federal funding). A detailed spreadsheet and chart are included in Appendix B.

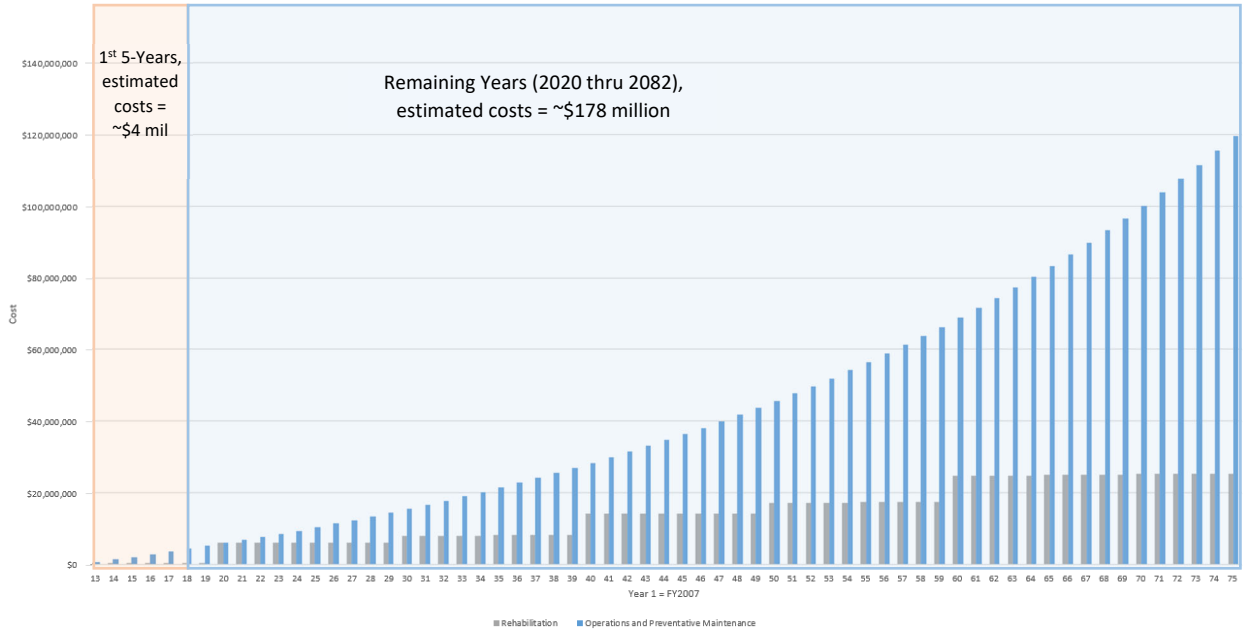
Table 5: Treasure Island Causeway and Bridge Costs
(includes Roadway, Bascule Span, East and West Bridges)

Description	Total Costs	Cost per Year				Annual Average Costs
		FY2025 (year 18)	FY2035 (year 28)	FY2050 (year 43)	FY2082 (year 75)	
West Bridge Costs[a]	$3,333,308					$52,729
Bascule Bridge & Causeway Roadway Costs[a]	$20,221,290					$315,405
East Bridge Costs[a]	$2,046,920					$32,355
Total Expected Causeway Rehabilitation, Preservation and Preventative Maintenance Costs[b]	$25,230,757	$95,122	$6,114,041	$14,003,584	$25,601,518	$400,488
Total Expected Causeway Operations & Routine Maintenance Costs[b]	$38,830,680	$3,698,160	$9,861,760	$19,107,160	$38,830,680	$616,360
Total Costs for Operations, Maintenance and Rehabilitation of the Causeway (TMV @ 3%)[b]	$178,072,526	$4,087,854	$19,946,171	$54,775,327	$178,072,526	$2,826,548

Note:
Year 1 is 2007 when the Bascule Bridge was Completed.
Costs per year are cumulative costs (i.e. cost for year 2035 includes all costs from current year 2020 to 2035).

a. Costs for the West Bridge ($3,333,308), Bascule Bridge and Causeway Roads ($20,221,290) and East Bridge ($2,046,920) total $25,601,518 and includes actual costs since 2007-2019 and estimated costs through 2082.
b. Estimated costs from 2020 through 2082.

Figure 10: Treasure Island Causeway Cumulative Costs by Year

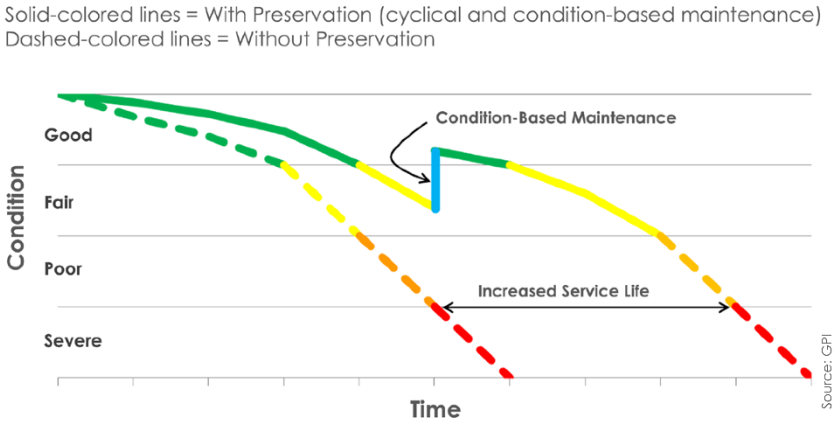


Based on the analysis, it is estimated that the costs for rehabilitation, preservation and preventative maintenance of the Causeway (roadway and bridges) throughout the lifespan of 75 years will total roughly $25,231,000 in current dollars.

The operating and routine maintenance costs averaged just over $600,000 in the past three fiscal years (2017, 2018 and 2019). Over the next 5 years, there is approximately $3.5M of capital improvements identified for the Causeway; and for the remaining life of the Causeway bridges (62 years), the City can expect to pay an estimated $39 million for operations and routine maintenance in current year dollars. As noted earlier, replacement costs are not included in this analysis. **If inflation, price increases, and other factors are considered to increase by 3% each year, the City can expect to pay in excess of $178 million or on average $2.6 million annually for the remaining life of the Causeway and three bridges.**

It is the City's responsibility to maintain the Causeway and bridges in good repair and to keep up with deterioration. Research has shown that when an asset management program with cyclical/condition-based preventative maintenance is not enforced by asset owners, the service life is significantly reduced (Figure 11). Unfortunately, this cost makes up the largest portion of the cost needed to maintain the Causeway*. If the budget does not support this item, the City will be forced to take a "no action" based approach to maintaining the Causeway.*

Figure 11: Bridge Life Expectancy



Note: In Figure 10, the leftmost line represents a service life of a bridge without bridge preservation. The lack of preventative maintenance activities allows debris and chemicals to attack the bridge elements, thereby deteriorating and leading to a shorter service life. The rightmost line represents the same bridge with both cyclical and condition-based (blue vertical line) preventative maintenance activities applied when the bridge elements are in Good and Fair condition. The comparison shows longevity of a bridge's service life in a bridge preservation program.

The City of Treasure Island has been fiscally responsible as demonstrated by the City Commission committing a portion of the revenue generated from property taxes to the Causeway. Currently, the City commits just over 7% of the its total General Fund Budget, which averages $13.6 million over the past three years. Without being able to toll the bridge, the City would have no option but to increase the burden of it's residents by raising taxes to operate the bridges, and to perform preventative maintenance and rehabilitation of the Causeway and bridges.

As noted earlier, the Treasure Island Causeway serves a number of local and regional purposes and is a hurricane evacuation route for the barrier islands. It provides a direct connection between the City of St. Petersburg and Treasure Island and as such is the most direct route for access to the barrier islands and the amenities they offer.

The Treasure Island Causeway not only provides local access between the mainland and the island, but it serves a regional need providing tourist and surrounding area residents (approximately 65 percent of the traffic utilizing the Causeway) access to the barrier islands. As such, in an equitable environment, the costs should be shared by the surrounding Cities and State, including access to federal funding sources by having the designation or classification of the Causeway changed to a State facility. Adding the bridge to SHS could change the bridge eligibility for rehabilitation, preservation and preventative maintenance under the state Bridge Repair Program.

Appendix A – 2017 Traffic Analysis (CDMSmith)

City of Treasure Island
Traffic and Revenue Study

Presentation on Traffic Characteristics

August 1, 2017

Introduction

The City of Treasure Island (CoTI) has a financial obligation to fund the Treasure Island Causeway from Sunset Drive in Saint Petersburg to Gulf Boulevard in Treasure Island. This includes maintaining the three bridges on the Causeway, providing staff and support for the operation of the bascule bridge, as well as support all other Causeway activities such as maintenance of the roadway, drainage, lighting, and landscaping. Phase IA, of the **Treasure Island Causeway Identification of Funding Solutions Project,** assigned to the Atkins Consultant Team, was to provide an evaluation of funding alternatives and a long-term financial plan to support the future operation, maintenance and capital improvements of the Causeway.

The purpose of this memorandum is to document traffic characteristics established during the beginning of this Project. These results were presented to the Treasure Island City Commission on August 1, 2017. Historical traffic count information comes from several sources, including the Florida Department of Transportation (FDOT) and Forward Pinellas, the metropolitan planning organization for Pinellas County.

Screen-Line Analysis

Traffic counts at the bridges crossing the screenline running between the barrier islands and the mainland is one way to look at traffic patterns related to the Causeway. The crossings of this screenline, from south to north, are the Pinellas Bayway, the Corey Causeway, the Treasure Island Causeway and the Tom Stuart Causeway, as shown in **Figure 1**. Essentially all vehicular traffic between the barrier islands and the mainland must use one of these bridges.

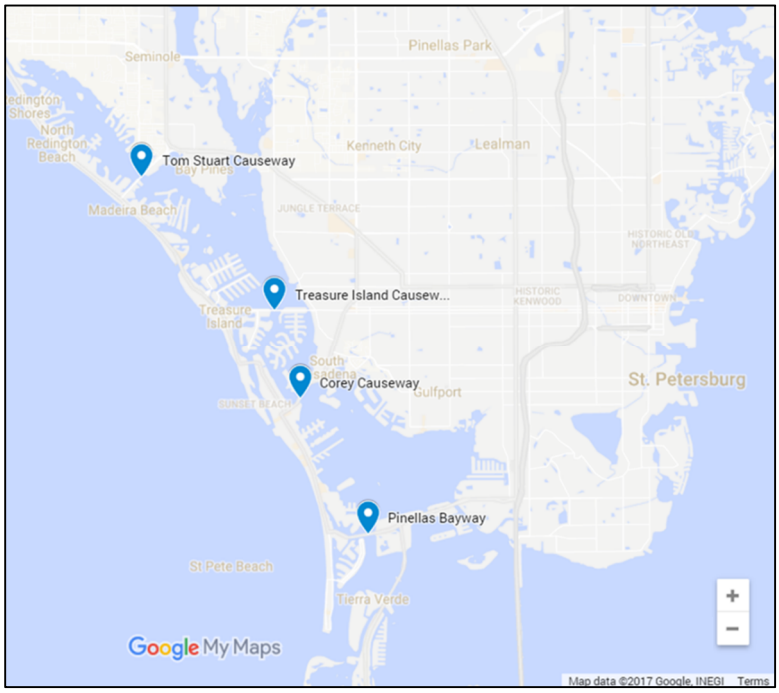


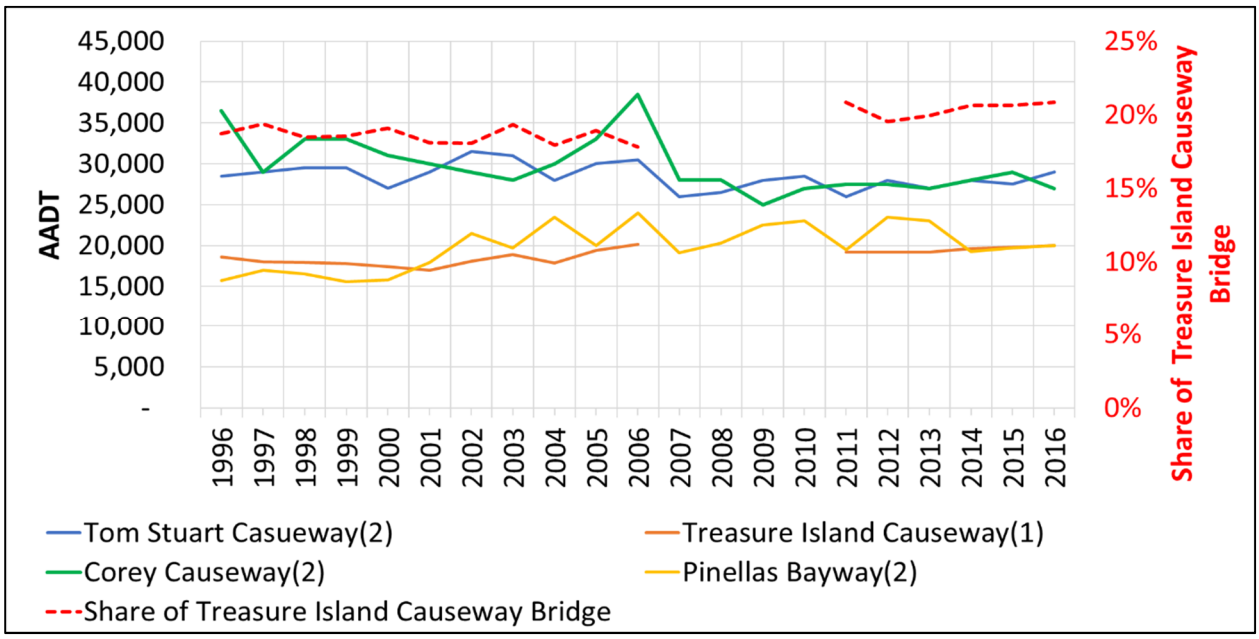
Figure 1: Screenline Count Locations

Figure 2 contains a depiction of the 20-year history of traffic volumes using the four bridges crossing this screenline. The traffic volumes shown are the average annual daily traffic (AADT). The numbers shown are a combination of counts and estimates developed from the traffic counts by the Florida Department of Transportation.

Traffic volumes on the screenline have been stable during this 20-year period. The traffic volume on the Causeway was approximately 18,600 in 1996 and 20,000 in 2016, roughly 20% of the total screenline traffic.

Presentation on Traffic Characteristics

August 1, 2017



Notes:
(1) Traffic volumes for 2012 through 2016 are estimates from FDOT
(2) All years based on counts from FDOT

Figure 2: Historical Counts on the Screenline

Traffic Counts

Traffic counts were collected during May 2017 as part of this study. Traffic counts included spot counts, classification counts and intersection turning movement counts. These were designed to provide information for the planned traffic and revenue study. An important result from the count program was the establishment of the average daily traffic (ADT). **Table 1** shows a summary of traffic counts while **Figure 3** shows some of these traffic counts on a map. The 2017 ADT on the Treasure Island Causeway was 20,200 vehicles per day on the western end and 23,200 vehicles per day on the eastern end.

Location	Count
Tom Stuart Causeway	26,800
Gulf Blvd between 120th Ave and 119th Ave	18,400
Bridge on 116th East of 117th Ave	6,100
Bridge on 112th East of Gulf Blvd	3,500
Paradise Blvd South of Treasure Island Causeway	4,400
79th St South of Causeway Blvd	4,300
Gulf Blvd between 102nd Ave and 101st Ave	16,000
Gulf Blvd South of FL 699/Gulf Blvd	5,600
Harrell Ave South of FL 699/Blind Pass Rd	300
Corey Causeway/Pasadena Ave S	25,500
John's Pass Bridge on Gulf Blvd	18,500
Treasure Island Causeway between 108th Ave and Paradise Blvd	20,200
Blind Pass Bridge East of Harrell Ave	14,200
Treasure Island Causeway between 79th St and Sunset Dr	23,200

Table 1: 2017 ADT from Traffic Counts

Presentation on Traffic Characteristics

August 1, 2017

The traffic counts at the other two screenline locations were consistent with historical traffic counts. The ADT at the Tom Stuart Causeway was 26,800 vehicles per day. The ADT at the Blind Pass Bridge was 14,200 vehicles per day.

The ADT on Gulf Boulevard at the John's Pass Bridge was 18,500 vehicles per day. Near 120th Avenue (north of the Causeway), the ADT on Gulf Boulevard was 18,400 vehicles per day. Near 102nd Avenue (south of the Causeway), the ADT on Gulf Boulevard was 16,000 vehicles per day.

The ADT on Paradise Boulevard South of the Causeway was 4,400 vehicles per day. The ADT on 79th Street South of the Causeway was 4,300 vehicles per day.

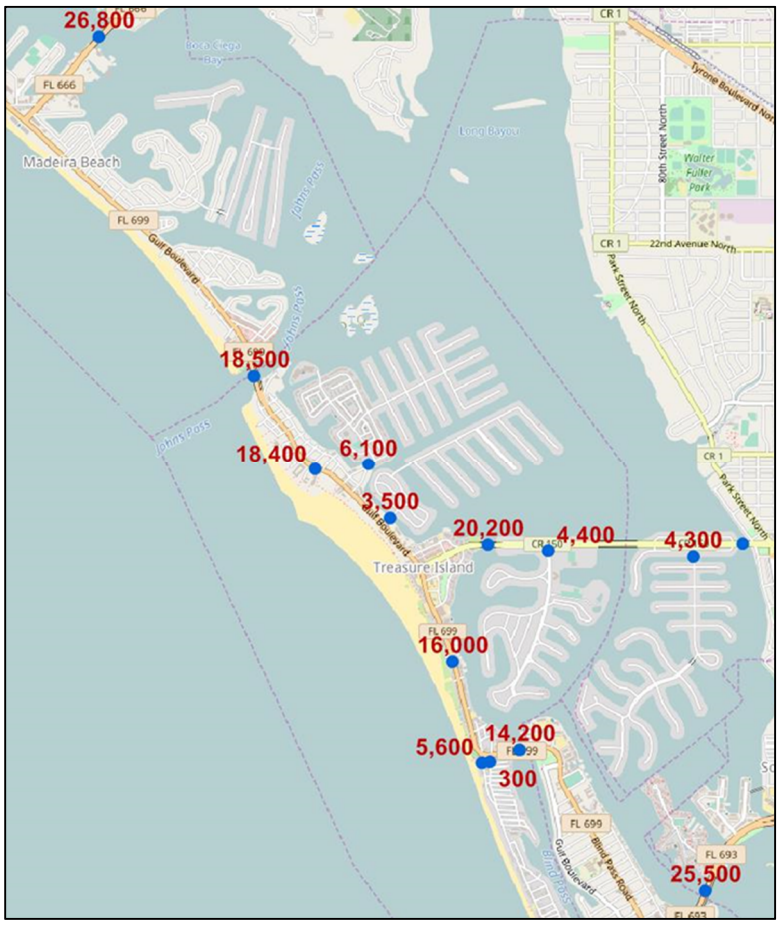


Figure 3: 2017 ADT from Traffic Counts

Origin/Destination Patterns

Recent transportation planning studies have benefitted from the use of "big data." StreetLight Data, Inc., is one such data analytics firm. They obtain, index and process over 100 billion anonymized location records each month from smart phones and navigation devices in connected cars and commercial vehicles. They have this data going back many years. Adding context from numerous other sources like digital road network data and parcel data, StreetLight develops a view into North America's vast network of roads, bike lanes and sidewalks. Using their proprietary data processing programs, StreetLight transforms trillions of location data points over time into contextualized, aggregated, and normalized travel patterns. They validate the patterns using thousands of traffic counters and embedded sensors and enrich them further using other data sources.

The Consultant Team downloaded and summarized Streetlight origin-destination data. The data summarized travel during calendar year 2016, distinguishing between peak and off-peak seasons (defined by reference to data from the permanent count locations). The data purchased was designed to address travel patterns in the City and on the Causeway, specifically traffic movements between the City, Paradise Boulevard, Causeway Isles and the mainland. The pattern of travel is described as

movements between traffic analysis zones, or TAZs, and movements through pass-through zones (developed for this purpose). As shown in **Figure 4**, Zones 1 and 2 are origin/ destination zones and Zones 3 through 6 are pass-through zones. Combining this information with traffic count data, the result was a trip table describing the present-day pattern of vehicle trips in the City and across the Causeway. In summary:

Figure 4: Zone Boundaries

- 24% of all vehicle trips originating in or destined to the City of Treasure Island (for this analysis Zone 1) are internal trips, i.e., vehicles moving between places within the City
- 76% of all vehicle trips originating in or destined to the City (Zone 1) leave or enter through one of the three bridges
    - 47% of all vehicle trips use the Treasure Island Causeway (Zone 6)
        - Of the vehicle trips using the Causeway, 2% travel to and from the South Causeway Isles (Zone 2) and the remaining 44% come from or are destined to the mainland (Zone 3)
    - 16% of all vehicle trips use the John's Pass Bridge (Zone 5)
    - 13% of all vehicle trips use the Blind Pass Bridge (Zone 4)

Clearly, vehicle trips on the Causeway and in the City are a mix of trips by residents and visitors.

Presentation on Traffic Characteristics

August 1, 2017

Select-Link Analysis

Another way to look at the travel pattern data is called select-link analysis at a pass-through zone. The idea is to track the origin/destination patterns of vehicle trips passing through a specific point in the transportation network.

In this instance, the selected link used is the segment of the Causeway on the eastern boundary of the City of Treasure Island. As shown in **Figure 5**, all vehicle trips of interest (100%) pass through this location. On the west side:

- 80% of all vehicle trips using the Causeway are to/from the City
- 13% of all vehicle trips using the Causeway are to/from points north as they pass through the John's Pass Bridge
- 6% of all vehicle trips using the Causeway are to/from points south as they pass through the Blind Pass Bridge

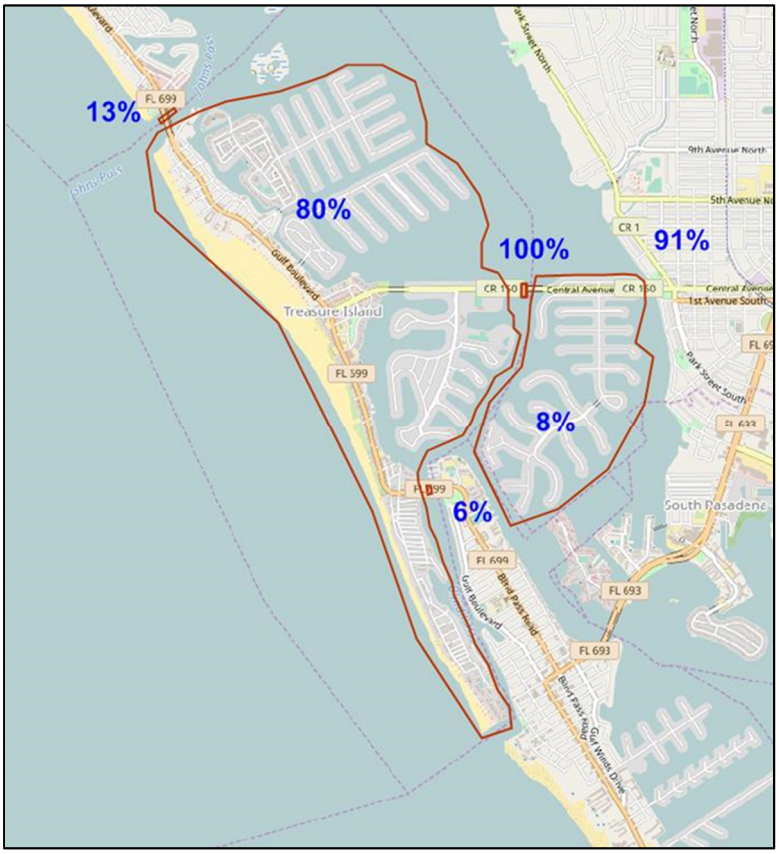


Figure 5: Select-Link Analysis

On the east side:

- 8% of all vehicle trips using the Causeway are to/from Causeway Isles
- 91% of all vehicle trips using the Causeway are to/from the mainland

Except for the traffic passing through the City exiting at the John's Pass and Blind Pass Bridges, this analysis has little to say about the proportion of traffic on the Causeway by residents and visitors to the City.

Presentation on Traffic Characteristics

August 1, 2017

Pushing the data and select-link analysis a bit further, the City was divided into four smaller TAZs, shown in **Figure 6**:

- 37% of all vehicle trips using the Causeway are to/from Zone 1
- 44% of all vehicle trips using the Causeway are to/from Zones 2, 3 and 4
- 19% of all vehicle trips using the Causeway are trips passing through and exiting via the John's Pass and Blind Pass Bridges

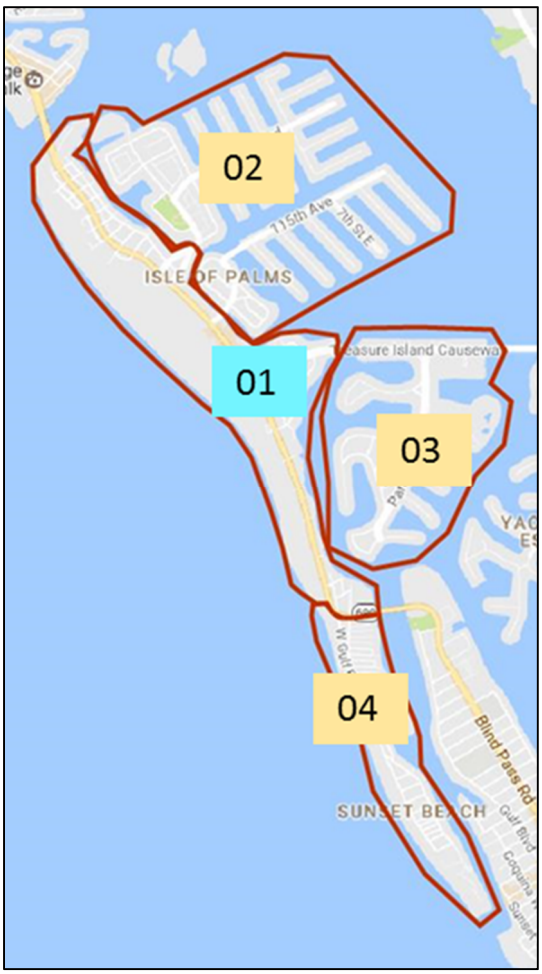


Figure 6: More Detailed City Zones

In this disaggregated zone system, the vehicle trips beginning and ending in Zone 1 are mostly beach and commercial trips by visitors. The vehicle trips beginning and ending in Zones 2, 3 and 4 are predominately made by residents. Recognizing the weakness of these assumptions about the travel pattern data, the Consultant Team estimated that 50% to 60% of vehicle trips on the Causeway were made by visitors.

Other Data and Analyses

StreetLight provided what was at the time relatively new data from devices utilizing Location Based Services (LBS). Typically, these are applications that require precise locations, such as weather and maps/directions. StreetLight identified the "residential" location of people making trips as the regular, night-time location of the device. From the LBS data, the data indicated between 60% and 70% of the vehicle trips on the Causeway were trips made by visitors, i.e., people who do not live in the City.

The Consultant Team completed validation of a project-specific version of the Tampa Bay Regional Planning Model (TBRPM), the travel demand model used by FDOT to plan transportation improvement projects. The validation year was 2017. The origin/destination zones are part of the model. We performed select-link analysis of the same segment on the Causeway using the project-specific model. The results produced the estimate that between 60% and 65% of the vehicle trips on the Causeway were made by visitors, i.e., people who do not live in the City.

Appendix B – FDOT Pay Item Cost History, 12-Month Moving Areas Averages

The opinions used to develop and forecast the bridge costs were derived from the following sources:

- John Clark, FDOT District Structures Maintenance Offices, FDOT Central Office located in Tallahassee, Florida. John Clark is the Bridge Maintenance and Repair Engineer for the State of Florida.
- Jim Jacobsen, FDOT District 1 and 7 (covering 17 counties, including Pinellas), Structures Maintenance Engineer.
- Will Watts, FDOT Chief Engineer with a background as a Structures Maintenance Engineer for District 2, serving eighteen counties in Northeast Florida.

The following budgets in **Error! Reference source not found.** for were suggested for fixed and moveable bridges. These totals for these bridges are reflected in Appendix B of this report under FDOT Annual Estimate.[1]

Table 5: FDOT Annual Estimate

Bridge Type	Bridge Tenders	Preventative/ Cyclical Maintenance	Rehabilitation
Single, Twin Leave (full time tender)	$175,000	$75,000	$145,000 (with 11-year return cycle)
Two Span, Twin Leave (full time tender)	$175,000	$125,000	$145,000 (with 11-year return cycle)
Fixed Bridges	N/A	$0.10 per Square Foot	$0.26 per Square Foot

Mr. Jacobsen was contacted to discuss a rough estimate for cyclical and rehabilitation funds typically budgeted for fixed and moveable bridges. Mr. Jacobsen's estimates were similar to Mr. Clark's estimates and mentioned that FDOT was spending more than they had expected for rehabilitation of the John's Pass Bascule Bridge that carries traffic onto Treasure Island from Madeira Beach.

Mr. Watts previously reviewed the City's 2017 financial data spreadsheet and provided comments based on personal experience and current (2017) FDOT pay-items for many of the preventative maintenance items listed.

Appendix B –Detailed Financial Analysis Spreadsheets

TMV = 3%

TREASURE ISLAND CAUSEWAY and BRIDGE COSTS
(INCLUDES BASCULE SPAN, EAST AND WEST BRIDGES)

Year 1 = 2007 (Bascule Bridge Complete)

WEST BRIDGE*	TOTAL 75 YEARS COST (CURRENT DOLLARS)	FY2020 13	FY2021 14	FY2022 15	FY2023 16	FY2024 17	FY2025 18	FY2026 19	FY2027 20	FY2028 21	FY2029 22	FY2030 23	FY2031 24	FY2032 25	FY2033 26	FY2034 27	FY2035 28	FY2036 29	FY2037 30	FY2038 31
1.0 Superstructure	$ 2,804,791	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 738,559	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
2.0 Substructure	$ 364,688	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 81,290	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
3.0 Roadway Lighting	$ 79,830	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 11,404	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 11,404	$ -
4.0 Trellises	$ 24,000	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 8,000	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
5.0 Utility Hangers	$ 60,000	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 20,000	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
6.0 Roadway	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
TOTAL WEST BRIDGE COSTS	**$ 3,333,308**	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 859,253	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 11,404	$ -

BASCULE BRIDGE*	TOTAL 75 YEARS COST (CURRENT DOLLARS)	FY2020 13	FY2021 14	FY2022 15	FY2023 16	FY2024 17	FY2025 18	FY2026 19	FY2027 20	FY2028 21	FY2029 22	FY2030 23	FY2031 24	FY2032 25	FY2033 26	FY2034 27	FY2035 28	FY2036 29	FY2037 30	FY2038 31
STRUCTURAL																				
1.0 Control House	$ 186,030	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 36,750	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 2,050	$ -
2.0 Approach Spans	$ 4,567,460	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 1,344,269	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
3.0 Bascule Span	$ 4,706,500	$ -	$ -	$ 72,000	$ -	$ -	$ -	$ -	$ 1,267,800	$ -	$ -	$ -	$ -	$ 72,000	$ -	$ -	$ -	$ -	$ 72,000	$ -
4.0 Fender System	$ 1,441,200	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 217,200	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
5.0 Counterweight	$ 146,000	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 30,000	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
6.0 Live Load Shoes	$ 145,479	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 48,493	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
7.0 Trellises	$ 96,000	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 32,000	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
8.0 Utility Hangers	$ 60,000	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 20,000	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
9.0 Roadway	$ 982,604	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 327,535	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
TOTAL STRUCTURAL COSTS	$ 12,331,273	$ -	$ -	$ 72,000	$ -	$ -	$ -	$ -	$ 3,324,047	$ -	$ -	$ -	$ -	$ 72,000	$ -	$ -	$ -	$ -	$ 74,050	$ -
MECHANICAL																				
1.0 Trunnions	$ 16,800	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 2,400	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 2,400	$ -
2.0 Span Locks	$ 335,400	$ -	$ -	$ 3,000	$ -	$ -	$ -	$ -	$ 19,800	$ -	$ -	$ -	$ -	$ 3,000	$ -	$ -	$ -	$ -	$ 123,000	$ -
3.0 Hydraulic System	$ 1,246,450	$ 150	$ 150	$ 8,150	$ 150	$ 150	$ 150	$ 150	$ 121,750	$ 150	$ 150	$ 150	$ 150	$ 8,150	$ 150	$ 150	$ 150	$ 150	$ 366,750	$ 150
TOTAL MECHANICAL COSTS	$ 1,598,650	$ 150	$ 150	$ 11,150	$ 150	$ 150	$ 150	$ 150	$ 143,950	$ 150	$ 150	$ 150	$ 150	$ 11,150	$ 150	$ 150	$ 150	$ 150	$ 492,150	$ 150
ELECTRICAL																				
1.0 Electrical System	$ 288,500	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 5,500	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 136,000	$ -
2.0 Lighting	$ 216,176	$ 530	$ 530	$ 2,822	$ 530	$ 530	$ 530	$ 530	$ 40,104	$ 530	$ 530	$ 530	$ 530	$ 2,822	$ 530	$ 530	$ 530	$ 530	$ 10,372	$ 530
3.0 Emergency Generator	$ 538,490	$ -	$ -	$ 500	$ -	$ -	$ -	$ -	$ 1,950	$ -	$ -	$ -	$ -	$ 500	$ -	$ -	$ -	$ -	$ 263,660	$ -
4.0 Submarine Cable Assembly	$ 1,173,328	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 586,664	$ -
5.0 Programmable Logic Controller (PLC) Hardware	$ 625,572	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 208,524	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
6.0 Programmable Logic Controller (PLC) Programming	$ 24,500	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 3,500	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 3,500	$ -
7.0 Limit Switches & Transducer	$ 74,200	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 17,000	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 5,800	$ -
8.0 Control Console	$ 596,000	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 128,000	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 53,000	$ -
9.0 Control Panel/Motor Controller	$ 300,000	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 150,000	$ -
10.0 Navigation Aid	$ 137,050	$ -	$ -	$ 3,500	$ -	$ -	$ -	$ -	$ 28,150	$ -	$ -	$ -	$ -	$ 3,500	$ -	$ -	$ -	$ -	$ 6,150	$ -
11.0 Fiber Optic	$ 102,000	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 34,000	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
12.0 Fiber Optic Cabinets (Near & Far Side)	$ 1,242,000	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 406,000	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 6,000	$ -
13.0 Movable Bridge Traffic Signals (Type I)(2 Lane)	$ 63,700	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 10,300	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 8,200	$ -
14.0 Movable Bridge Gates (Traffic)	$ 159,900	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 53,300	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
15.0 Movable Bridge Gates (Sidewalk)	$ 66,600	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 22,200	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
16.0 Lightning Protection & Grounding (Point Discharge)	$ 109,500	$ -	$ -	$ 500	$ -	$ -	$ -	$ -	$ 34,500	$ -	$ -	$ -	$ -	$ 500	$ -	$ -	$ -	$ -	$ 500	$ -
17.0 Lightning Protection & Grounding (Surge Supression) (4 Leaf)	$ 150,500	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 21,500	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 21,500	$ -
18.0 A/C Systems	$ 96,250	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 13,750	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 13,750	$ -
19.0 Sump Pump/Oil Water Seperator	$ 173,350	$ -	$ -	$ 50	$ -	$ -	$ -	$ -	$ 57,050	$ -	$ -	$ -	$ -	$ 50	$ -	$ -	$ -	$ -	$ 450	$ -
20.0 CCTV System	$ 123,000	$ -	$ -	$ 1,200	$ -	$ -	$ -	$ -	$ 16,200	$ -	$ -	$ -	$ -	$ 1,200	$ -	$ -	$ -	$ -	$ 16,200	$ -
21.0 Communications (PA System)	$ 30,750	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 10,250	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
TOTAL ELECTRICAL COSTS	$ 6,291,367	$ 530	$ 530	$ 8,572	$ 530	$ 530	$ 530	$ 530	$ 1,111,778	$ 530	$ 530	$ 530	$ 530	$ 8,572	$ 530	$ 530	$ 530	$ 530	$ 1,281,746	$ 530
TOTAL BASCULE BRIDGE & CAUSEWAY ROADWAY COSTS	**$ 20,221,290**	$ 680	$ 680	$ 91,722	$ 680	$ 680	$ 680	$ 680	$ 4,579,775	$ 680	$ 680	$ 680	$ 680	$ 91,722	$ 680	$ 680	$ 680	$ 680	$ 1,847,946	$ 680

EAST BRIDGE*	TOTAL 75 YEARS COST (CURRENT DOLLARS)	FY2020 13	FY2021 14	FY2022 15	FY2023 16	FY2024 17	FY2025 18	FY2026 19	FY2027 20	FY2028 21	FY2029 22	FY2030 23	FY2031 24	FY2032 25	FY2033 26	FY2034 27	FY2035 28	FY2036 29	FY2037 30	FY2038 31
1.0 Superstructure	$ 1,578,416	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 378,238	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
2.0 Substructure	$ 339,632	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 72,938	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
3.0 Roadway Lighting	$ 59,872	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 8,553	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 8,553	$ -
4.0 Trellises	$ 24,000	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 8,000	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
5.0 Utility Hangers	$ 45,000	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 15,000	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
6.0 Roadway	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
TOTAL EAST BRIDGE COSTS	**$ 2,046,920**	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 482,729	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 8,553	$ -

TOTAL EXPECTED REHAB, PRES & PREV MAINTENANCE FOR CAUSEWAY	**$ 25,230,757**	$ 680	$ 680	$ 91,722	$ 680	$ 680	$ 680	$ 680	$ 5,921,757	$ 680	$ 680	$ 680	$ 680	$ 91,722	$ 680	$ 680	$ 680	$ 680	$ 1,867,903	$ 680
TOTAL EXPECTED OPS. & ROUTINE MAINTENANCE FOR CAUSEWAY	**$ 38,830,680**	$ 616,360	$ 616,360	$ 616,360	$ 616,360	$ 616,360	$ 616,360	$ 616,360	$ 616,360	$ 616,360	$ 616,360	$ 616,360	$ 616,360	$ 616,360	$ 616,360	$ 616,360	$ 616,360	$ 616,360	$ 616,360	$ 616,360
TOTAL REHAB + O&M WITH TMV @ 3%	**$ 178,072,526**	$ 617,040	$ 635,551	$ 751,204	$ 674,256	$ 694,484	$ 715,318	$ 736,778	$ 8,041,059	$ 781,648	$ 805,097	$ 829,250	$ 854,128	$ 1,009,556	$ 906,144	$ 933,328	$ 961,328	$ 990,168	$ 4,106,109	$ 1,050,469

* Includes years 2007 - 2019.

TREASURE ISLAND CAUSEWAY and BRIDGE COSTS
(INCLUDES BASCULE SPAN, EAST AND WEST BRIDGES)

WEST BRIDGE*	TOTAL 75 YEARS COST (CURRENT DOLLARS)	FY2039 32	FY2040 33	FY2041 34	FY2042 35	FY2043 36	FY2044 37	FY2045 38	FY2046 39	FY2047 40	FY2048 41	FY2049 42	FY2050 43	FY2051 44	FY2052 45	FY2053 46	FY2054 47	FY2055 48	FY2056 49
1.0 Superstructure	$ 2,804,791	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 738,559	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
2.0 Substructure	$ 364,688	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 81,290	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
3.0 Roadway Lighting	$ 79,830	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 11,404	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
4.0 Trellises	$ 24,000	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 8,000	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
5.0 Utility Hangers	$ 60,000	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 20,000	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
6.0 Roadway	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
TOTAL WEST BRIDGE COSTS	**$ 3,333,308**	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 859,253	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -

BASCULE BRIDGE*	TOTAL 75 YEARS COST (CURRENT DOLLARS)	FY2039 32	FY2040 33	FY2041 34	FY2042 35	FY2043 36	FY2044 37	FY2045 38	FY2046 39	FY2047 40	FY2048 41	FY2049 42	FY2050 43	FY2051 44	FY2052 45	FY2053 46	FY2054 47	FY2055 48	FY2056 49
STRUCTURAL																			
1.0 Control House	$ 186,030	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 36,750	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
2.0 Approach Spans	$ 4,567,460	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 1,344,269	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
3.0 Bascule Span	$ 4,706,500	$ -	$ -	$ -	$ 72,000	$ -	$ -	$ -	$ -	$ 1,267,800	$ -	$ -	$ -	$ -	$ 72,000	$ -	$ -	$ -	$ -
4.0 Fender System	$ 1,441,200	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 217,200	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
5.0 Counterweight	$ 146,000	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 30,000	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
6.0 Live Load Shoes	$ 145,479	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 48,493	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
7.0 Trellises	$ 96,000	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 32,000	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
8.0 Utility Hangers	$ 60,000	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 20,000	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
9.0 Roadway	$ 982,604	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 327,535	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
TOTAL STRUCTURAL COSTS	$ 12,331,273	$ -	$ -	$ -	$ 72,000	$ -	$ -	$ -	$ -	$ 3,324,047	$ -	$ -	$ -	$ -	$ 72,000	$ -	$ -	$ -	$ -
MECHANICAL																			
1.0 Trunnions	$ 16,800	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 2,400	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
2.0 Span Locks	$ 335,400	$ -	$ -	$ -	$ 3,000	$ -	$ -	$ -	$ -	$ 19,800	$ -	$ -	$ -	$ -	$ 3,000	$ -	$ -	$ -	$ -
3.0 Hydraulic System	$ 1,246,450	$ 150	$ 150	$ 150	$ 8,150	$ 150	$ 150	$ 150	$ 150	$ 121,750	$ 150	$ 150	$ 150	$ 150	$ 8,150	$ 150	$ 150	$ 150	$ 150
TOTAL MECHANICAL COSTS	$ 1,598,650	$ 150	$ 150	$ 150	$ 11,150	$ 150	$ 150	$ 150	$ 150	$ 143,950	$ 150	$ 150	$ 150	$ 150	$ 11,150	$ 150	$ 150	$ 150	$ 150
ELECTRICAL																			
1.0 Electrical System	$ 288,500	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 5,500	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
2.0 Lighting	$ 216,176	$ 530	$ 530	$ 530	$ 2,822	$ 530	$ 530	$ 530	$ 530	$ 40,104	$ 530	$ 530	$ 530	$ 530	$ 2,822	$ 530	$ 530	$ 530	$ 530
3.0 Emergency Generator	$ 538,490	$ -	$ -	$ -	$ 500	$ -	$ -	$ -	$ -	$ 1,950	$ -	$ -	$ -	$ -	$ 500	$ -	$ -	$ -	$ -
4.0 Submarine Cable Assembly	$ 1,173,328	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
5.0 Programmable Logic Controller (PLC) Hardware	$ 625,572	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 208,524	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
6.0 Programmable Logic Controller (PLC) Programming	$ 24,500	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 3,500	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
7.0 Limit Switches & Transducer	$ 74,200	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 17,000	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
8.0 Control Console	$ 596,000	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 128,000	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
9.0 Control Panel/Motor Controller	$ 300,000	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
10.0 Navigation Aid	$ 137,050	$ -	$ -	$ -	$ 3,500	$ -	$ -	$ -	$ -	$ 28,150	$ -	$ -	$ -	$ -	$ 3,500	$ -	$ -	$ -	$ -
11.0 Fiber Optic	$ 102,000	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 34,000	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
12.0 Fiber Optic Cabinets (Near & Far Side)	$ 1,242,000	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 406,000	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
13.0 Movable Bridge Traffic Signals (Type I)(2 Lane)	$ 63,700	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 10,300	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
14.0 Movable Bridge Gates (Traffic)	$ 159,900	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 53,300	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
15.0 Movable Bridge Gates (Sidewalk)	$ 66,600	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 22,200	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
16.0 Lightning Protection & Grounding (Point Discharge)	$ 109,500	$ -	$ -	$ -	$ 500	$ -	$ -	$ -	$ -	$ 34,500	$ -	$ -	$ -	$ -	$ 500	$ -	$ -	$ -	$ -
17.0 Lightning Protection & Grounding (Surge Supression) (4 Leaf)	$ 150,500	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 21,500	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
18.0 A/C Systems	$ 96,250	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 13,750	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
19.0 Sump Pump/Oil Water Seperator	$ 173,350	$ -	$ -	$ -	$ 50	$ -	$ -	$ -	$ -	$ 57,050	$ -	$ -	$ -	$ -	$ 50	$ -	$ -	$ -	$ -
20.0 CCTV System	$ 123,000	$ -	$ -	$ -	$ 1,200	$ -	$ -	$ -	$ -	$ 16,200	$ -	$ -	$ -	$ -	$ 1,200	$ -	$ -	$ -	$ -
21.0 Communications (PA System)	$ 30,750	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 10,250	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
TOTAL ELECTRICAL COSTS	$ 6,291,367	$ 530	$ 530	$ 530	$ 8,572	$ 530	$ 530	$ 530	$ 530	$ 1,111,778	$ 530	$ 530	$ 530	$ 530	$ 8,572	$ 530	$ 530	$ 530	$ 530
TOTAL BASCULE BRIDGE & CAUSEWAY ROADWAY COSTS	**$ 20,221,290**	$ 680	$ 680	$ 680	$ 91,722	$ 680	$ 680	$ 680	$ 680	$ 4,579,775	$ 680	$ 680	$ 680	$ 680	$ 91,722	$ 680	$ 680	$ 680	$ 680

EAST BRIDGE*	TOTAL 75 YEARS COST (CURRENT DOLLARS)	FY2039 32	FY2040 33	FY2041 34	FY2042 35	FY2043 36	FY2044 37	FY2045 38	FY2046 39	FY2047 40	FY2048 41	FY2049 42	FY2050 43	FY2051 44	FY2052 45	FY2053 46	FY2054 47	FY2055 48	FY2056 49
1.0 Superstructure	$ 1,578,416	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 378,238	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
2.0 Substructure	$ 339,632	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 72,938	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
3.0 Roadway Lighting	$ 59,872	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 8,553	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
4.0 Trellises	$ 24,000	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 8,000	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
5.0 Utility Hangers	$ 45,000	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 15,000	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
6.0 Roadway	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
TOTAL EAST BRIDGE COSTS	**$ 2,046,920**	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 482,729	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -

TOTAL EXPECTED REHAB, PRES & PREV MAINTENANCE FOR CAUSEWAY	**$ 25,230,757**	$ 680	$ 680	$ 680	$ 91,722	$ 680	$ 680	$ 680	$ 680	$ 5,921,757	$ 680	$ 680	$ 680	$ 680	$ 91,722	$ 680	$ 680	$ 680	$ 680
TOTAL EXPECTED OPS. & ROUTINE MAINTENANCE FOR CAUSEWAY	**$ 38,830,680**	$ 616,360	$ 616,360	$ 616,360	$ 616,360	$ 616,360	$ 616,360	$ 616,360	$ 616,360	$ 616,360	$ 616,360	$ 616,360	$ 616,360	$ 616,360	$ 616,360	$ 616,360	$ 616,360	$ 616,360	$ 616,360
TOTAL REHAB + O&M WITH TMV @ 3%	**$ 178,072,526**	$ 1,081,983	$ 1,114,443	$ 1,147,876	$ 1,356,758	$ 1,217,782	$ 1,254,315	$ 1,291,945	$ 1,330,703	$ 14,523,048	$ 1,411,743	$ 1,454,095	$ 1,497,718	$ 1,542,650	$ 1,823,370	$ 1,636,597	$ 1,685,695	$ 1,736,266	$ 1,788,354

* Includes years 2007 - 2019.

TREASURE ISLAND CAUSEWAY and BRIDGE COSTS
(INCLUDES BASCULE SPAN, EAST AND WEST BRIDGES)

WEST BRIDGE*	TOTAL 75 YEARS COST (CURRENT DOLLARS)	FY2057 50	FY2058 51	FY2059 52	FY2060 53	FY2061 54	FY2062 55	FY2063 56	FY2064 57	FY2065 58	FY2066 59	FY2067 60	FY2068 61	FY2069 62	FY2070 63	FY2071 64	FY2072 65	FY2073 66	FY2074 67	FY2075 68
1.0 Superstructure	$ 2,804,791	$ 589,112	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 738,559	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
2.0 Substructure	$ 364,688	$ 120,819	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 81,290	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
3.0 Roadway Lighting	$ 79,830	$ 11,404	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 11,404	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
4.0 Trellises	$ 24,000	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 8,000	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
5.0 Utility Hangers	$ 60,000	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 20,000	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
6.0 Roadway	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
TOTAL WEST BRIDGE COSTS	**$ 3,333,308**	$ 721,336	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 859,253	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -

BASCULE BRIDGE*	TOTAL 75 YEARS COST (CURRENT DOLLARS)	FY2057 50	FY2058 51	FY2059 52	FY2060 53	FY2061 54	FY2062 55	FY2063 56	FY2064 57	FY2065 58	FY2066 59	FY2067 60	FY2068 61	FY2069 62	FY2070 63	FY2071 64	FY2072 65	FY2073 66	FY2074 67	FY2075 68
STRUCTURAL																				
1.0 Control House	$ 186,030	$ 69,630	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 36,750	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
2.0 Approach Spans	$ 4,567,460	$ 534,653	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 1,344,269	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
3.0 Bascule Span	$ 4,706,500	$ 111,100	$ -	$ -	$ -	$ -	$ 72,000	$ -	$ -	$ -	$ -	$ 1,267,800	$ -	$ -	$ -	$ -	$ 72,000	$ -	$ -	$ -
4.0 Fender System	$ 1,441,200	$ 789,600	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 217,200	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
5.0 Counterweight	$ 146,000	$ 56,000	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 30,000	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
6.0 Live Load Shoes	$ 145,479	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 48,493	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
7.0 Trellises	$ 96,000	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 32,000	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
8.0 Utility Hangers	$ 60,000	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 20,000	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
9.0 Roadway	$ 982,604	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 327,535	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
TOTAL STRUCTURAL COSTS	$ 12,331,273	$ 1,560,983	$ -	$ -	$ -	$ -	$ 72,000	$ -	$ -	$ -	$ -	$ 3,324,047	$ -	$ -	$ -	$ -	$ 72,000	$ -	$ -	$ -
MECHANICAL																				
1.0 Trunnions	$ 16,800	$ 2,400	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 2,400	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
2.0 Span Locks	$ 335,400	$ 3,000	$ -	$ -	$ -	$ -	$ 3,000	$ -	$ -	$ -	$ -	$ 139,800	$ -	$ -	$ -	$ -	$ 3,000	$ -	$ -	$ -
3.0 Hydraulic System	$ 1,246,450	$ 46,750	$ 150	$ 150	$ 150	$ 150	$ 8,150	$ 150	$ 150	$ 150	$ 150	$ 441,750	$ 150	$ 150	$ 150	$ 150	$ 8,150	$ 150	$ 150	$ 150
TOTAL MECHANICAL COSTS	$ 1,598,650	$ 52,150	$ 150	$ 150	$ 150	$ 150	$ 11,150	$ 150	$ 150	$ 150	$ 150	$ 583,950	$ 150	$ 150	$ 150	$ 150	$ 11,150	$ 150	$ 150	$ 150
ELECTRICAL																				
1.0 Electrical System	$ 288,500	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 141,500	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
2.0 Lighting	$ 216,176	$ 10,372	$ 530	$ 530	$ 530	$ 530	$ 2,822	$ 530	$ 530	$ 530	$ 530	$ 40,104	$ 530	$ 530	$ 530	$ 530	$ 2,822	$ 530	$ 530	$ 530
3.0 Emergency Generator	$ 538,490	$ 660	$ -	$ -	$ -	$ -	$ 500	$ -	$ -	$ -	$ -	$ 264,950	$ -	$ -	$ -	$ -	$ 500	$ -	$ -	$ -
4.0 Submarine Cable Assembly	$ 1,173,328	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 586,664	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
5.0 Programmable Logic Controller (PLC) Hardware	$ 625,572	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 208,524	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
6.0 Programmable Logic Controller (PLC) Programming	$ 24,500	$ 3,500	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 3,500	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
7.0 Limit Switches & Transducer	$ 74,200	$ 5,800	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 17,000	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
8.0 Control Console	$ 596,000	$ 53,000	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 128,000	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
9.0 Control Panel/Motor Controller	$ 300,000	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 150,000	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
10.0 Navigation Aid	$ 137,050	$ 6,150	$ -	$ -	$ -	$ -	$ 3,500	$ -	$ -	$ -	$ -	$ 28,150	$ -	$ -	$ -	$ -	$ 3,500	$ -	$ -	$ -
11.0 Fiber Optic	$ 102,000	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 34,000	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
12.0 Fiber Optic Cabinets (Near & Far Side)	$ 1,242,000	$ 6,000	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 406,000	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
13.0 Movable Bridge Traffic Signals (Type I)(2 Lane)	$ 63,700	$ 8,200	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 10,300	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
14.0 Movable Bridge Gates (Traffic)	$ 159,900	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 53,300	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
15.0 Movable Bridge Gates (Sidewalk)	$ 66,600	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 22,200	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
16.0 Lightning Protection & Grounding (Point Discharge)	$ 109,500	$ 500	$ -	$ -	$ -	$ -	$ 500	$ -	$ -	$ -	$ -	$ 34,500	$ -	$ -	$ -	$ -	$ 500	$ -	$ -	$ -
17.0 Lightning Protection & Grounding (Surge Supression) (4 Leaf)	$ 150,500	$ 21,500	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 21,500	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
18.0 A/C Systems	$ 96,250	$ 13,750	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 13,750	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
19.0 Sump Pump/Oil Water Seperator	$ 173,350	$ 450	$ -	$ -	$ -	$ -	$ 50	$ -	$ -	$ -	$ -	$ 57,050	$ -	$ -	$ -	$ -	$ 50	$ -	$ -	$ -
20.0 CCTV System	$ 123,000	$ 16,200	$ -	$ -	$ -	$ -	$ 1,200	$ -	$ -	$ -	$ -	$ 16,200	$ -	$ -	$ -	$ -	$ 1,200	$ -	$ -	$ -
21.0 Communications (PA System)	$ 30,750	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 10,250	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
TOTAL ELECTRICAL COSTS	$ 6,291,367	$ 146,082	$ 530	$ 530	$ 530	$ 530	$ 8,572	$ 530	$ 530	$ 530	$ 530	$ 2,247,442	$ 530	$ 530	$ 530	$ 530	$ 8,572	$ 530	$ 530	$ 530
TOTAL BASCULE BRIDGE & CAUSEWAY ROADWAY COSTS	**$ 20,221,290**	$ 1,759,215	$ 680	$ 680	$ 680	$ 680	$ 91,722	$ 680	$ 680	$ 680	$ 680	$ 6,155,439	$ 680	$ 680	$ 680	$ 680	$ 91,722	$ 680	$ 680	$ 680

EAST BRIDGE*	TOTAL 75 YEARS COST (CURRENT DOLLARS)	FY2057 50	FY2058 51	FY2059 52	FY2060 53	FY2061 54	FY2062 55	FY2063 56	FY2064 57	FY2065 58	FY2066 59	FY2067 60	FY2068 61	FY2069 62	FY2070 63	FY2071 64	FY2072 65	FY2073 66	FY2074 67	FY2075 68
1.0 Superstructure	$ 1,578,416	$ 443,701	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 378,238	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
2.0 Substructure	$ 339,632	$ 120,819	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 72,938	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
3.0 Roadway Lighting	$ 59,872	$ 8,553	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 8,553	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
4.0 Trellises	$ 24,000	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 8,000	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
5.0 Utility Hangers	$ 45,000	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 15,000	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
6.0 Roadway	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
TOTAL EAST BRIDGE COSTS	**$ 2,046,920**	$ 573,073	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 482,729	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -

TOTAL EXPECTED REHAB, PRES & PREV MAINTENANCE FOR CAUSEWAY	**$ 25,230,757**	$ 3,053,624	$ 680	$ 680	$ 680	$ 680	$ 91,722	$ 680	$ 680	$ 680	$ 680	$ 7,497,421	$ 680	$ 680	$ 680	$ 680	$ 91,722	$ 680	$ 680	$ 680
TOTAL EXPECTED OPS. & ROUTINE MAINTENANCE FOR CAUSEWAY	**$ 38,830,680**	$ 616,360	$ 616,360	$ 616,360	$ 616,360	$ 616,360	$ 616,360	$ 616,360	$ 616,360	$ 616,360	$ 616,360	$ 616,360	$ 616,360	$ 616,360	$ 616,360	$ 616,360	$ 616,360	$ 616,360	$ 616,360	$ 616,360
TOTAL REHAB + O&M WITH TMV @ 3%	**$ 178,072,526**	$ 10,955,735	$ 1,897,264	$ 1,954,182	$ 2,012,808	$ 2,073,192	$ 2,450,456	$ 2,199,449	$ 2,265,433	$ 2,333,396	$ 2,403,398	$ 32,551,638	$ 2,549,765	$ 2,626,258	$ 2,705,045	$ 2,786,197	$ 3,293,209	$ 2,955,876	$ 3,044,552	$ 3,135,889

* Includes years 2007 - 2019.

TREASURE ISLAND CAUSEWAY and BRIDGE COSTS
(INCLUDES BASCULE SPAN, EAST AND WEST BRIDGES)

WEST BRIDGE*	TOTAL 75 YEARS COST (CURRENT DOLLARS)	FY2076 69	FY2077 70	FY2078 71	FY2079 72	FY2080 73	FY2081 74	FY2082 75	Average Annual Cost
1.0 Superstructure	$ 2,804,791	$ -	$ -	$ -	$ -	$ -	$ -	$ -	
2.0 Substructure	$ 364,688	$ -	$ -	$ -	$ -	$ -	$ -	$ -	
3.0 Roadway Lighting	$ 79,830	$ -	$ 11,404	$ -	$ -	$ -	$ -	$ -	
4.0 Trellises	$ 24,000	$ -	$ -	$ -	$ -	$ -	$ -	$ -	
5.0 Utility Hangers	$ 60,000	$ -	$ -	$ -	$ -	$ -	$ -	$ -	
6.0 Roadway	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	
TOTAL WEST BRIDGE COSTS	**$ 3,333,308**	$ -	$ 11,404	$ -	$ -	$ -	$ -	$ -	$ 52,729

BASCULE BRIDGE*	TOTAL 75 YEARS COST (CURRENT DOLLARS)	FY2076 69	FY2077 70	FY2078 71	FY2079 72	FY2080 73	FY2081 74	FY2082 75	Average Annual Cost
STRUCTURAL									
1.0 Control House	$ 186,030	$ -	$ 2,050	$ -	$ -	$ -	$ -	$ -	
2.0 Approach Spans	$ 4,567,460	$ -	$ -	$ -	$ -	$ -	$ -	$ -	
3.0 Bascule Span	$ 4,706,500	$ -	$ 72,000	$ -	$ -	$ -	$ -	$ 72,000	
4.0 Fender System	$ 1,441,200	$ -	$ -	$ -	$ -	$ -	$ -	$ -	
5.0 Counterweight	$ 146,000	$ -	$ -	$ -	$ -	$ -	$ -	$ -	
6.0 Live Load Shoes	$ 145,479	$ -	$ -	$ -	$ -	$ -	$ -	$ -	
7.0 Trellises	$ 96,000	$ -	$ -	$ -	$ -	$ -	$ -	$ -	
8.0 Utility Hangers	$ 60,000	$ -	$ -	$ -	$ -	$ -	$ -	$ -	
9.0 Roadway	$ 982,604	$ -	$ -	$ -	$ -	$ -	$ -	$ -	
TOTAL STRUCTURAL COSTS	$ 12,331,273	$ -	$ 74,050	$ -	$ -	$ -	$ -	$ 72,000	
MECHANICAL									
1.0 Trunnions	$ 16,800	$ -	$ 2,400	$ -	$ -	$ -	$ -	$ -	
2.0 Span Locks	$ 335,400	$ -	$ 3,000	$ -	$ -	$ -	$ -	$ 3,000	
3.0 Hydraulic System	$ 1,246,450	$ 150	$ 46,750	$ 150	$ 150	$ 150	$ 150	$ 8,150	
TOTAL MECHANICAL COSTS	$ 1,598,650	$ 150	$ 52,150	$ 150	$ 150	$ 150	$ 150	$ 11,150	
ELECTRICAL									
1.0 Electrical System	$ 288,500	$ -	$ -	$ -	$ -	$ -	$ -	$ -	
2.0 Lighting	$ 216,176	$ 530	$ 10,372	$ 530	$ 530	$ 530	$ 530	$ 2,822	
3.0 Emergency Generator	$ 538,490	$ -	$ 660	$ -	$ -	$ -	$ -	$ 500	
4.0 Submarine Cable Assembly	$ 1,173,328	$ -	$ -	$ -	$ -	$ -	$ -	$ -	
5.0 Programmable Logic Controller (PLC) Hardware	$ 625,572	$ -	$ -	$ -	$ -	$ -	$ -	$ -	
6.0 Programmable Logic Controller (PLC) Programming	$ 24,500	$ -	$ 3,500	$ -	$ -	$ -	$ -	$ -	
7.0 Limit Switches & Transducer	$ 74,200	$ -	$ 5,800	$ -	$ -	$ -	$ -	$ -	
8.0 Control Console	$ 596,000	$ -	$ 53,000	$ -	$ -	$ -	$ -	$ -	
9.0 Control Panel/Motor Controller	$ 300,000	$ -	$ -	$ -	$ -	$ -	$ -	$ -	
10.0 Navigation Aid	$ 137,050	$ -	$ 6,150	$ -	$ -	$ -	$ -	$ 3,500	
11.0 Fiber Optic	$ 102,000	$ -	$ -	$ -	$ -	$ -	$ -	$ -	
12.0 Fiber Optic Cabinets (Near & Far Side)	$ 1,242,000	$ -	$ 6,000	$ -	$ -	$ -	$ -	$ -	
13.0 Movable Bridge Traffic Signals (Type I)(2 Lane)	$ 63,700	$ -	$ 8,200	$ -	$ -	$ -	$ -	$ -	
14.0 Movable Bridge Gates (Traffic)	$ 159,900	$ -	$ -	$ -	$ -	$ -	$ -	$ -	
15.0 Movable Bridge Gates (Sidewalk)	$ 66,600	$ -	$ -	$ -	$ -	$ -	$ -	$ -	
16.0 Lightning Protection & Grounding (Point Discharge)	$ 109,500	$ -	$ 500	$ -	$ -	$ -	$ -	$ 500	
17.0 Lightning Protection & Grounding (Surge Supression) (4 Leaf)	$ 150,500	$ -	$ 21,500	$ -	$ -	$ -	$ -	$ -	
18.0 A/C Systems	$ 96,250	$ -	$ 13,750	$ -	$ -	$ -	$ -	$ -	
19.0 Sump Pump/Oil Water Seperator	$ 173,350	$ -	$ 450	$ -	$ -	$ -	$ -	$ 50	
20.0 CCTV System	$ 123,000	$ -	$ 16,200	$ -	$ -	$ -	$ -	$ 1,200	
21.0 Communications (PA System)	$ 30,750	$ -	$ -	$ -	$ -	$ -	$ -	$ -	
TOTAL ELECTRICAL COSTS	$ 6,291,367	$ 530	$ 146,082	$ 530	$ 530	$ 530	$ 530	$ 8,572	
TOTAL BASCULE BRIDGE & CAUSEWAY ROADWAY COSTS	**$ 20,221,290**	$ 680	$ 272,282	$ 680	$ 680	$ 680	$ 680	$ 91,722	$ 315,405

EAST BRIDGE*	TOTAL 75 YEARS COST (CURRENT DOLLARS)	FY2076 69	FY2077 70	FY2078 71	FY2079 72	FY2080 73	FY2081 74	FY2082 75	Average Annual Cost
1.0 Superstructure	$ 1,578,416	$ -	$ -	$ -	$ -	$ -	$ -	$ -	
2.0 Substructure	$ 339,632	$ -	$ -	$ -	$ -	$ -	$ -	$ -	
3.0 Roadway Lighting	$ 59,872	$ -	$ 8,553	$ -	$ -	$ -	$ -	$ -	
4.0 Trellises	$ 24,000	$ -	$ -	$ -	$ -	$ -	$ -	$ -	
5.0 Utility Hangers	$ 45,000	$ -	$ -	$ -	$ -	$ -	$ -	$ -	
6.0 Roadway	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	
TOTAL EAST BRIDGE COSTS	**$ 2,046,920**	$ -	$ 8,553	$ -	$ -	$ -	$ -	$ -	$ 32,355

TOTAL EXPECTED REHAB, PRES & PREV MAINTENANCE FOR CAUSEWAY	**$ 25,230,757**	$ 680	$ 292,239	$ 680	$ 680	$ 680	$ 680	$ 91,722	$ 400,488
TOTAL EXPECTED OPS. & ROUTINE MAINTENANCE FOR CAUSEWAY	**$ 38,830,680**	$ 616,360	$ 616,360	$ 616,360	$ 616,360	$ 616,360	$ 616,360	$ 616,360	$ 616,360
TOTAL REHAB + O&M WITH TMV @ 3%	**$ 178,072,526**	$ 3,229,966	$ 4,898,851	$ 3,426,671	$ 3,529,471	$ 3,635,355	$ 3,744,415	$ 4,425,797	$ 2,826,548

* Includes years 2007 - 2019.