Local Concept Development Study for Cape May County Route 619 (Ocean Drive) Bridge (Structure No. 3100-003) Located over Townsends Inlet

Sea Isle City and Borough of Avalon

Navigation Impact Report

MARCH 2026

PREPARED BY:

Michael Baker INTERNATIONAL

MICHAEL BAKER INTERNATIONAL, INC.

300 AMERICAN METRO BOULEVARD

HAMILTON, NJ 08619

Contents

Appendices

I. Introduction

1. Purpose of This Report

The purpose of the Navigation Impact Report (NIR) is to aid in the determination of the reasonable needs of navigation on Townsends Inlet as they relate to the Cape May County Route 619 (Ocean Drive) Bridge (Structure No. 3100-003) located over Townsends Inlet (Townsends Inlet Bridge). The NIR is being prepared in accordance with the Memorandum of Agreement (MOA) between the United State Coast Guard (USCG) and the Federal Highway Association (FHWA). Per this MOA, the USCG has federal jurisdiction over the Townsends Inlet navigable channel, and therefore any crossing must accommodate the reasonable needs of navigation in order to be eligible for a bridge permit.

The first two sections of this report describe the existing conditions of navigation on Townsends Inlet, including physical features of the inlet, condition of navigable channels, current and future navigation needs, marine traffic, bridge opening frequencies, vessel clearance restrictions, vessel dimensions, surrounding land uses, and local opinions and boating behaviors collected through public outreach. The third section of this report outlines the purpose and need of the Townsends Inlet Bridge project. The fourth section (under development pending input from the USCG) details the Alternatives Analysis, which includes the development of bridge alternatives, and the development of the Comparison of Alternatives Matrix. This section includes the results of a vessel height sensitivity analysis, which delineates how various bridge heights could affect maritime movement on Townsends Inlet.

2. Townsends Inlet Bridge Local Concept Development Study

A Local Concept Development (LCD) Study is being performed for the Cape May County Route 619 (Ocean Drive) Bridge (Structure No. 3100-003) Located over Townsends Inlet (Townsends Inlet Bridge). The Townsends Inlet Bridge spans Townsends Inlet in a south-north direction connecting the Borough of Avalon to Sea Isle City in Cape May County. The bridge spans over an entryway to the Intracoastal Waterway. Along the Intracoastal Waterway to the south is the Ingram Thorofare Bridge (Avalon Boulevard). The Ingram Thorofare Bridge is a fixed bridge with a vertical clearance of 35 feet above MHW. Along the Intracoastal Waterway to the north is the Ludlam's Thorofare Bridge (Sea Isle Boulevard). The Ludlam's Thorofare Bridge is a fixed bridge with a vertical clearance of 35 feet above MHW.

Ocean Drive (CR 619) generally runs south-north from Route 147 (M.P. 0.00) in Middle Township to 34th Street (CR 623) (M.P. 19.88) in the Ocean City, Cape May County. The project limits are approximately 350 feet in each direction from the limits of the bridge. A project Location Map is shown in Figure 1. The bridge provides an important transportation connection for residents, business owners, and visitors to Sea Isle City and the Borough of Avalon. The existing Townsends Inlet Bridge was built in 1939 and consists of a single leaf bascule span over Townsends Inlet. This bridge has been rehabilitated several times in the past 10-15 years, and most recently, spans 1-7 were

replaced in July 2019. The installation of emergency supports for Pier 6 occurred in 2017, the bridge railings were replaced in 2018-19, and submarine cable was replaced in 2019. The bascule span and toll span were rehabilitated in 2014-15, along with substantial machinery rehabilitation and PLC replacement. In 2011 the entire bridge was repainted, and structural repairs were made to the superstructure in 2009. The south fender system was replaced in 2010.

Figure 1. Geographic location of Townsends Inlet Bridge (Structure No. 3100-003) and Study Area

Due to its age, the bridge has deteriorated over time and routine maintenance can no longer address the deficiencies. The deck condition rating is satisfactory due to medium and wide transverse cracks (some with rust stains) and several small, shallow spalls on the top of deck slab, deck fasciae, and underside of the deck slab. The superstructure condition rating is poor due to painted over section losses (with several holes), and deep relic pitting, in the steel girders, floor beams, approach span stringers and bearing elements. The substructure condition rating is fair due to the heavy collision damage and missing portions of the fender system. The approaches condition rating is satisfactory due to fine to wide dense map cracks in the south approach R.C. slabs and rutting with minor settlement at the north abutment joint and wide cracks throughout the approach pavement. The underwater components of the substructure are in fair condition with severe corrosion and section loss of the steel shells on the caissons with exposed concrete, and severe deterioration of the timber fender systems. The mechanical and electrical components of the system are in fair condition. The bridge is currently posted for 15 Tons gross load. The bridge is also classified as both Scour Critical and Fracture Critical.

The Townsend Inlet Bridge has two 10’ travel lanes in the east/west direction and 1’-6” safety walks on both sides of the bridge. The project area is located within the Coastal Area Facilities Review Act (CAFRA) boundary. The Townsends Inlet Bridge was identified as a historic property. There are 8 Section 4(f) parkland resources located within the study area. Townsends Inlet Bridge spans over Townsends Inlet and borders the coastal wetlands, both sensitive ecological resources. A Coastal Wetlands permit may be required, and approval will be required from the U.S. Army Corps of Engineers for repair, replacement, or rehabilitation alternatives that require in-water work or disturbance to regulated areas. The study area is designated as an Essential Fish Habitat (EFH) and is located within the tidal 1% chance of floodplain at an elevation of 14 feet.

The major objectives of the LCD Study are to develop a Purpose and Need Statement focused on the needed transportation improvement, identify a reasonable number of prudent and feasible alternatives to address the Purpose and Need, including no-build, rehabilitation, and replacement alternatives, perform an evaluation of those alternatives, and select a Preliminary Preferred Alternative (PPA). As the Townsends Inlet Bridge spans a navigable channel within United States Coast Guard (USCG) jurisdiction, a determination of the reasonable needs of navigation will inform the selection of the PPA.

3. Townsends Inlet Bridge

Townsends Inlet Bridge (Structure No. 3100-003) is located at Townsends Inlet between the Borough of Avalon to the south and City of Sea Isle to the north. The bridge consists of 23-approach spans composed of a mixture of steel multi-girder spans, prestressed concrete girder spans, and girder-floor beam-stringer systems with reinforced concrete decks as well as a single leaf bascule span. The bridge was built in 1939 and has undergone a series of recent rehabilitations, with Spans 1-7 replaced in July 2019, the bridge railings replaced in 2018-2019, the bascule span and toll span rehabilitated in 2014-2015, the bridge was repainted in 2011, the south fender system was replaced in 2010, and most recently in 2021 a new motor drive control system, priority repairs to the east bascule trunnion column and SW warning gate support were completed. The structure is 1,373’ long and 24’ wide, carries no utilities, and consists of reinforced concrete decks.

Figure 2. Townsends Inlet Bridge with closed bascule (8/20/2025)

The substructure consists of reinforced concrete piers on timber piles. The vertical under clearance at the bascule span is approximately 23’ to the mean high-water (MHW) line with a 50’ horizontal clearance for navigational purposes.

Summary:

- Structure Type: Steel bascule bridge with 23-fixed approach spans composed of a mixture of steel multi-girder spans, prestressed concrete girder spans, and girder-floor beam-stringer systems with reinforced concrete decks and one single leaf bascule span.
- Structure Length: 1373.0’
- Width Out to Out: 25.33’
- Width Curb to Curb: 20’
- Sidewalk: 1.5’ width safetywalk on both sides of the bridge
- Fence: Four-bar bridge railing on both sides of the bridge
- Lighting: Lighting is present at both bridge approaches, at the toll booth, and the traffic signal. All lights are standard cobra head style lights. Lighting on the bridge is located on standard metal poles and lighting on each approach roadway co-located on existing utility poles.

- Vertical Clearance: Waterway navigational 23' minimum below closed bascule at mean high tide. Unlimited vertical clearance with open bascule (not currently operational).
- Horizontal Clearance: 50 feet below the bascule span.

4. Bridge Condition

The bridge is in overall poor condition due to the condition of the superstructure, substructure, and low inventory ratings. According to the 18th Cycle Bridge Re-Evaluation Survey Report dated October 1, 2023 and a cursory visual bridge inspection conducted in Summer 2025, the superstructure and substructure are in poor condition and the structure has a low inventory rating.

The Townsends Inlet Bridge was deemed functionally obsolete due to narrow widths, structurally deficient due deteriorated structural elements and low NBI sufficiency rating of 23. The bridge is also posted due to its inability to carry loads greater than 15 tons. The bridge is Fracture Critical due to the non-redundant built-up bascule deck girders, floorbeams, trunnion bearing pins, and the counter-weight built-up concrete encased double truss (not visible) in the main bascule span; the riveted built-up deck girders, floor trusses, and stringers in the approach deck girder spans (with single longitudinal stringer only) and; the 3-beam design in the approach spans, the pin and hangers in the continuous steel 3-beam approach spans. The condition of fracture critical members/elements is poor due to severe corrosion and section loss in the superstructure members.

The superstructure is rated "poor" due to painted over section loss with several holes and deep pitting in many elements, pack rusted bearing elements and rusted and potentially frozen pin and hanger assemblies. The Substructure is rated as "poor" due to heavy collision damage to the existing fender system, severely corroded caisson casings, and large spalls in reinforced concrete piles. The deck condition rating is "satisfactory" due to medium and wide transverse cracks and several small shallow spalls. The mechanical and electrical components are noted as being in fair condition.

The bridge was determined to be scour critical based on the Stage II in-depth evaluation that was dated June 1996. The underwater inspection that was performed in 2023 noted that the underwater components of the substructure are in fair condition with severe corrosion and section loss of the steel shells of the caissons and exhibit exposed concrete and severe deterioration of the Pier 7 and Pier 8 fender systems (currently under repair).

5. Existing Land Use

Dense residential and commercial establishments populate the area surrounding the approaches to the Townsends Inlet Bridge in the Avalon and Sea Isle City sections of Middle Township. The area is more specifically characterized as high-density single-family residential, with commercial businesses sporadically along the main thoroughfares.

Figure 3 shows surrounding land uses.

Figure 3. Existing Land Use

6. Townsends Inlet

Townsends inlet provides access to the Intracoastal Waterway and several estuarine waters that run along the barrier islands. North of Townsends inlet, Townsends Channel extends to Sea Isle City, Ludlam Thorofare, and to Ludlam Bay. South of the Inlet, Ingram Thorofare and Paddy Thorofare connect Townsends Inlet to Great Sound, as well as several densely populated harbors, including: Cornell Harbor, Pennsylvania Harbor, and Princeton Harbor.

a. Tidal Datums

Waterway stage information was obtained from the National Oceanic and Atmospheric Administration (NOAA) National Ocean Service (NOS) Tides and Currents website, developed and supported by the Center for Operational Oceanographic Products and Services (CO-OPS). Tidal Datum information for Station 8535375, Townsend Inlet, NJ is provided relative to the station datum (Table 1). Additional Tidal Datum information for the station is provided in Appendix C.

Table 1. Tidal Datums at Station 8535375, Townsend Inlet, NJ (NOAA, 2004).

Station: 8535375, Townsend Inlet, NJ		
Datum	**Value (ft.)**	**Description**
MHHW	4.53	Mean Higher-High Water
MHW	4.14	Mean High Water
MTL	2.16	Mean Tide Level
MSL	2.20	Mean Sea Level
MLW	0.18	Mean Low Water
MLLW	0.00	Mean Lower-Low Water

b. Navigation Channels and Conditions

Providing safe and navigable waterways is a multiple Federal and State agency effort. The National Oceanic and Atmospheric Administration (NOAA) National Ocean Service (NOS) Office of Coast Survey performs bathymetric surveys and maintains the nation's nautical charts, and the U.S. Coast Guard (USCG) is responsible for maintaining the U.S. Aids to Navigation System. The U.S. Army Corps of Engineers (USACE) is responsible for surveying, reporting, and maintaining the authorized conditions of federal navigation channels. The New Jersey Department of Transportation (NJDOT) Office of Maritime Resources (OMR) is responsible for maintaining safe and navigable waterways within the state that are not maintained by the USACE. The New Jersey Department of Environmental Protection (NJDEP) Bureau of Coastal Engineering (BCE) Aids to Navigation Team is responsible for the installation and maintenance of buoys, channel markers, and navigational beacons throughout the state.

Figures 4a and 4B below provide a visual representation of the channels, bays, and harbors served by Townsends Inlet. Immediately north of the inlet, Townsend Channel varies in width from approximately 400' to 1200'. Continuing north to Sea Isle Boulevard Bridge, Ludlam Thorofare varies in width from approximately 400' to 1200'. At the northern end of Ludlam Thorofare, just south of Sea Isle Boulevard bridge, numerous harbors and marinas are situated off this Thorofare. Although numerous shoals, tidal flats and salt marshes are present along these channels, these channels appear passable and adequate as the primary means of access from Townsends Inlet to the Intracoastal waterway to the north.

To the south of Townsends Inlet, Ingram Thorofare varies in width from approximately 500' to 1000'. Numerous harbors and marinas are accessible along this Thorofare. Although numerous shoals, tidal flats and salt marshes are present along these channels, these channels appear passable and adequate as the primary means of access from Townsends Inlet to the Intracoastal waterway to the south.

West of Townsend Inlet, Middle Thorofare provides access to several residential slips and a public boat launch. Access to this Thorofare was found to be extremely difficult during low tide due to shoals, tidal flats and salt marshes.

It should be noted that passage through Townsends Inlet itself (under Townsends Inlet Bridge) can be difficult due to close proximity of the main channel to the adjacent beach/sand bar to the north.

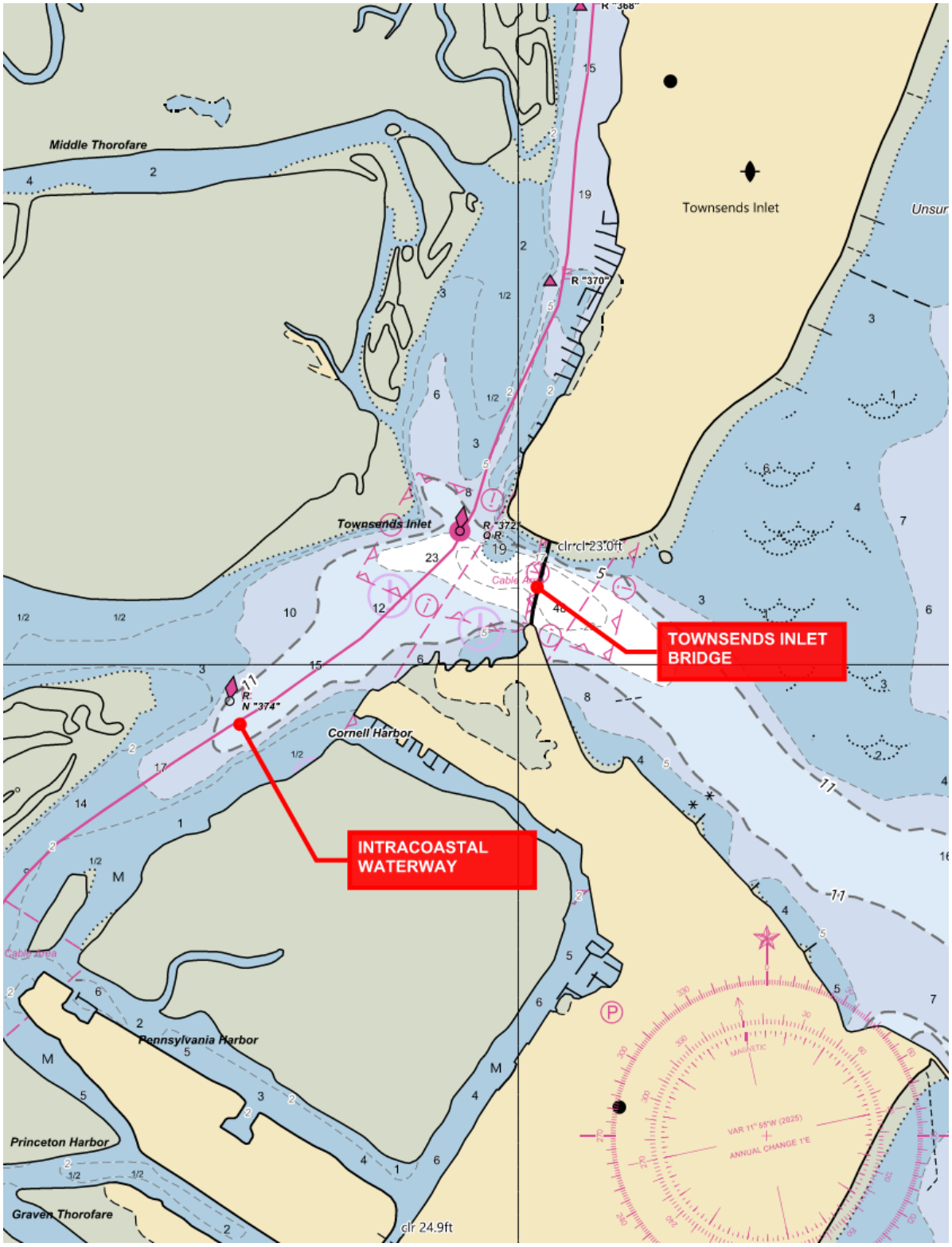


Figure 4a. Adjacent Navigation Channels and Crossings

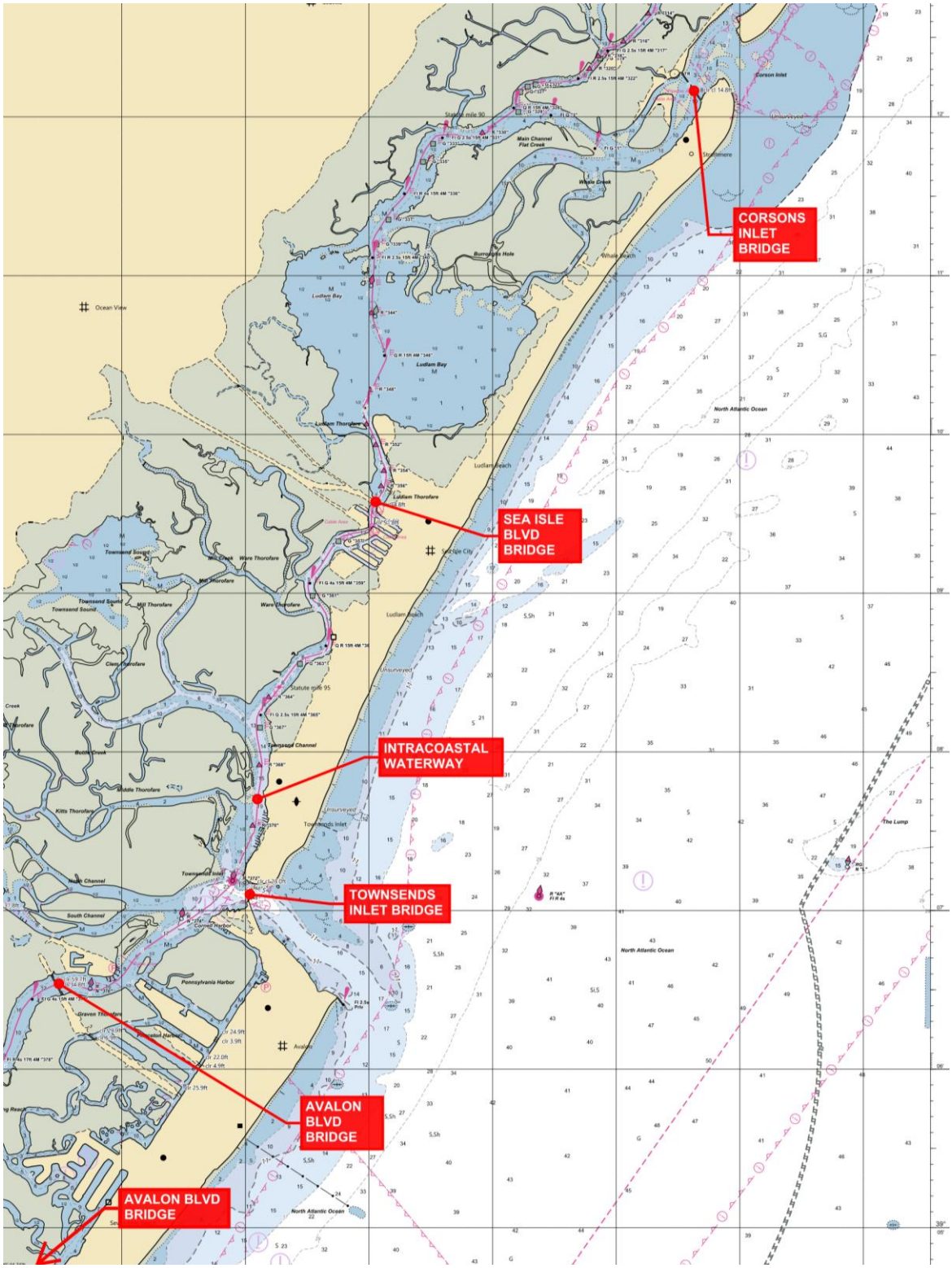


Figure 4b. Adjacent Navigation Channels and Crossings

c. Clearance

The Townsends Inlet Bridge is a single-leaf bascule span bridge with unrestricted vertical clearance when the span is in the open position, and a vertical clearance of 23' feet (MHW) when the span is in the closed position. In the open position, clearance is unlimited.

There is a 50-foot horizontal clearance between the piers of the bascule span. Navigation to the next southerly access to the Atlantic Ocean (Hereford Inlet), requires passage Avalon Boulevard (CR 601), Stone Harbor Boulevard (CR 657), and West Ocean Drive (CR 619). Navigation to the next northerly access to the Atlantic Ocean (Corsons Inlet) requires passage under Sea Isle Boulevard (CR 625) and Bay Avenue (CR 619). Table 2 shows area locations and clearances. Figures 4a and 4b above show the location of surrounding bridges relative to the Townsends Inlet Bridge.

Obstruction	Relation	Distance	Vertical Clearance MHW	Vertical Clearance MLW	Horizontal Clearance
		(mi)	(ft.)		
Corsons Inlet Bridge (CR 619) over Strathmere Channel	Upstream (North)	8.5	15' (closed) (inoperable)	19' (closed) (inoperable)	50'
Sea Isle Boulevard (CR 625) over Ludlam Thorofare	Upstream (North)	5.1	35'	39'	80'
Ocean drive (CR 619 - Townsends Inlet Bridge) over Townsends Inlet	-	-	23' (closed) (unlimited – open)	27' (closed) (unlimited – open)	50'
Avalon Boulevard (CR 601) over Ingram Thorofare	Upstream (South)	1.7	35'	39'	80'
Stone Harbor Boulevard (CR 657) over Great Channel	Upstream (South)	6.8	10' (closed) (unlimited – open)	14' (closed) (unlimited – open)	50'
Ocean Drive (CR 619) over Great Channel	Upstream (South)	8.2	15' (closed) (unlimited – open)	19' (closed) (unlimited – open)	50'

Table 2. Upstream structures.

d. Existing Marinas and Boat Ramps

There are 10 marinas and boat clubs located along waterways in Upper Township, Sea Isle City, and Avalon. Marinas and boat clubs located in Stone Harbor are south of the project limits and vessels that access these have existing alternative access via a southern entry point into the intracoastal waterway between North Wildwood and Stone Harbor. The marinas and clubs are listed below

(Table 3). The table features the number of dock slips, number of moorings, and if a pump out station is available onsite.

Table 3: Existing Marinas within the Project Area

Municipality	Name	Facility	Number of Slips	Number of Moorings	Pump Out Station
Upper Township (Strathmere)	Whale Creek Marina	Marina	65	0	Yes
Sea Isle City	Sea Isle City Marina	Marina	41	1	No
	Larsen's Marina	Marina	17	0	Yes
	Minmar Marine*	Marina	56	Unknown	Unknown
	Townsend Inlet Yacht Club*	Marina	41	Unknown	Unknown
	Pier 88 Marina	Marina	68	0	No
Avalon	Commodore Bay Marina	Marina	100	0	No
	Avalon Yacht Club	Club	32	0	No
	Jet Drive Exchange Boat & Jet Ski Club/Avalon Marine Center*	Marina	51	Unknown	Unknown
	Nob's Boat Ramp	Marina	7	0	No

** Marinas/clubs with an asterisk were unable to be reached via phone. The number of slips is estimated via Google Maps aerial view.*

In addition to the marinas there are two boat ramps that provide access to the adjacent waterways, which are listed below (Table 4).

Municipality	Name	Type
Avalon	Nob's Boat Ramp	Concrete Ramp
Sea Isle City	Sea Isle City Marina	Concrete Ramp

Table 4. Boat ramps in the vicinity of Townsends Inlet Bridge.

A location map of the existing marinas and boat ramps is included in Appendix E.

e. Private Docks

Based on field observations and Google Maps aerial views, there are an estimated 1,450 private docks in the study area. Private docks are generally located on residential properties along many channels throughout the Ludlam Thorofare in Avalon and Sea Isle City.

f. Vessel Population

Through a field observation conducted on a weekday in August 2025, there is an estimated 1,315 resident vessels in the study area. This estimate is based on a count of vessels parked at marinas and private residential dock slips throughout the study area.

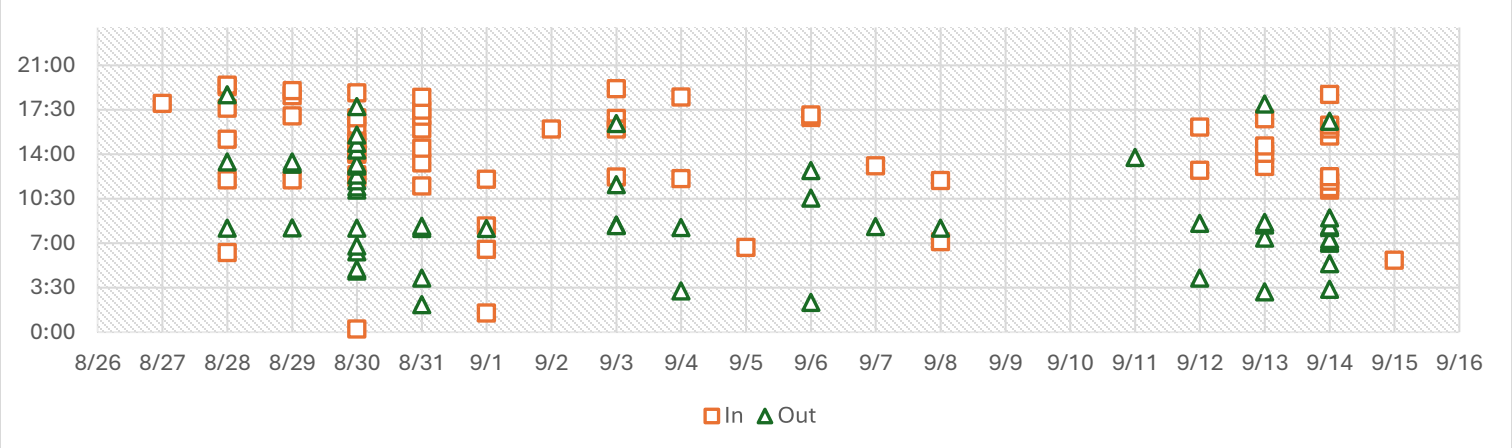
II. Townsends Inlet and Its Users: Means of Data Collection

1. Townsends Inlet Bridge Operator Log

The Townsends Inlet Bridge opens on-demand for vessel traffic throughout the year. The opening of the bridge for vessel traffic and test openings is recorded in the bridge operator's log. Copies of the most recent Bridge operator logs were obtained for the period of August 27 to September 15, 2025, and Figure 5 presents this data as a scatter plot showing the transits according to their date and in/out time.

During the period of August 27 to September 15, the majority of recorded transits occurred on weekends. 69 of 114 transits took place on Saturdays and Sundays, meaning that 61% of the transits occurred on 30% of the days. The dates with the greatest traffic were Saturday, August 30, and Sunday, September 14. 25 transits occurred on August 30 and 17 on September 14. These two dates account for 36% of the transits. 15 of 25 transits on August 30 were out, and nine of 17 transits on September 14 were also out. Over the entire period, though, more transits-in were recorded, totaling 60 of the 114. Eight of 60 transits-in happened between midnight and noon, while 33 of 54 transits-out happened between midnight and noon. The average number of transits per day for this period is 5.7.

Figure 5: Scatter Plot of Daily Bridge openings from August 27, 2025 – September 15, 2025



2. Vessel Field Survey

A field vessel survey was conducted on Wednesday, August 20th, 2025, to estimate the vertical clearance requirements of the vessel population located within the study area. Staff rented a small, motorized boat from a marina and navigated the waters to survey the vessel population from the

Sea Isle Boulevard bridge in Sea Isle City south to the Townsends Inlet Bridge, and further south to the Avalon Boulevard Bridge in Avalon. A rangefinder was used to estimate the air draft of vessels docked at marinas and private residential docks. Height was measured by taking a distance measurement with the rangefinder between the tallest part of the vessel (excluding the antennae) and the waterline. Each vessel was then assigned to an estimated vessel height category to estimate vertical clearance requirements. With the waterline measurement and the maximum extent measurement, the Pythagorean Theorem was used to determine the estimated air draft of the vessel (i.e., the third side of a triangle). The results of the vessel survey are summarized in Table 5.

Table 5: Summary of Vessel Heights from Visual Survey

Vessel Height	Total	Percent
< 15'	1,245	94.7%
15' - 20'	25	1.9%
20' - 25'	19	1.4%
25' - 30'	5	0.4%
30' - 35'	7	0.5%
35' - 40'	3	0.2%
40' - 45'	10	0.8%
45' - 50'	0	0.0%
50' - 55'	1	0.1%
Total	1,315	100.0%

The results indicate that the majority (1,245 vessels <15' or **94.7% +** 25 vessels 15'-20' or **1.9%)** of the vessel population consists of vessels that have vertical clearance requirements that do not require an opening to transit under the Townsends Inlet Bridge. These vessels primarily consist of small to mid-size motorboats along with a few smaller sailboats. The next category consisted of vessels that had a height that may require a bridge opening but would not exceed 25 feet of vertical clearance. Lastly, under the categories ranging between 25' to 55', there were 25 boats that would require bridge openings. The survey results were collected on a typical summer weekday, and may not provide a representation of vessel statistics year-round.

3. Maritime Navigation Survey

In October 2025, the project team solicited feedback from property owners that border waterways in the vicinity of the Townsends Inlet Bridge. Postcards were mailed to 745 property owners prompting them to take the Maritime Navigation Survey (MNS) via website URL or by scanning a QR code with their mobile device that would direct them to the survey. The purpose of the survey is to gather information about vessels that transit the adjacent waterways near the Townsends Inlet Bridge. Postcards arrived in mailboxes on approximately October 22 to 24, 2025 and responses were encouraged by November 14, 2025. A total of 88 (12%) responses were received.

Key findings include the following:

- Type of Vessel Use
    - Nearly 92% of respondents indicated their maritime activity near the Townsends Inlet Bridge is personal/ recreational in nature. The remaining respondents reported "Other" (e.g., rental fleet, charter, business, commercial fishing, parasail).
    - The three most common boat types reported using the Townsends Inlet Bridge waterways were "Motorboat/Powerboat" (89.2%), followed by "Personal Watercraft" (25.3%), and "Canoe/Kayak/Rowboat" (18.1%) (respondents could choose more than one answer).
- Vessel Dimensions
    - The average maximum vessel length of 29.0 feet was reported, the average maximum beam was 9.2 feet, average maximum draft was 3.4 feet, and the average maximum vessel air draft was 12.5 feet.
    - The longest vessel length reported was 80 feet, the highest beam reported was 28.5 feet, the deepest vessel draft reported was 25 feet, and the highest vessel air draft reported was 40 feet.
    - On average, respondents reported that their boats require a minimum channel depth of 6.4 feet, horizontal/width clearance of 18.7 feet, and vertical/overhead clearance of 17.8 feet.
    - The deepest channel depth reported was 28 feet, the largest horizontal/width clearance reported was 60 feet, and the highest vertical/overhead clearance reported was 60 feet.
    - 8.2% of respondents reported having masts on their vessels, 35.9% of respondents reported having outriggers, and 62.8% reported having antennae.
- Transiting Waterways
    - 92.6% of respondents reported that their mooring or berthing location requires a transiting of Townsends Inlet Bridge to reach the ocean.
    - On average, respondents reported transiting the Townsends Inlet Bridge 26.5 times per month during the peak season, and 3.3 times per month during the off-peak season.
    - On average, respondents reported requiring a bridge opening 2.2 times per month during the peak season, and 0 (zero) times per month during the off-peak season.
    - 43.3% (26 responses) of respondents reported operation of vessels during hours of darkness.

- 16.7% (11 responses) reported existing waterway obstructions/hazards such as hurricane debris, shifting sands, damaged bridge protection, sandbars, strong currents, beach encroachment.

The following tables provide further detail of input on vessel height and desired vertical clearance.

Table 6 – Vessel Air Drafts - Maritime Navigation Survey

Vessel Height	Total Vessels	Percent
< 15'	50	64.1%
15' - 20'	3	3.8%
20' - 25'	3	3.8%
25' - 30'	0	0.0%
30' - 35'	3	3.8%
35' - 40'	4	5.1%
40' - 45'	0	0.0%
45' - 50'	0	0.0%
50' - 55'	0	0.0%
Not Answered	15	19.2%
Total	78	100.0%

Table 7 – Desired Minimum Vertical Clearance Per Input from Vessel Owners - Maritime Navigation Survey

Desired Minimum Vertical Clearance	Total	Percent
< 15'	29	50.9%
15' - 20'	10	17.5%
20' - 25'	2	3.5%
25' - 30'	4	7.0%
30' - 35'	2	3.5%
35' - 40'	2	3.5%
40' - 45'	1	1.8%
45' - 50'	0	0.0%
50' - 55'	1	1.8%
55' – 60'	1	1.8%
Not Answered	3	5.3%
Total	57	100.0%

Appendix H includes extensive summary of survey responses, along with pictures of boats owned by respondents.

4. Marina Interviews

In September 2025, phone interviews were conducted with several marinas located in Sea Isle City and Avalon. The purpose of the interviews was to collect technical and anecdotal information about their facilities, resident vessels, transient vessels, and the nature of boat usage (commercial or recreational). While 10 marinas are listed in section 6c – Existing Marinas and Boat Ramps, nine marinas were evaluated as part of the Townsends Inlet Bridge Local Concept Development Study due to proximity to the Townsends Inlet Bridge. Whale Creek Marina was excluded from this summary as it is associated with the Corsons Inlet Bridge Local Concept Development Study due to its proximity to Corsons Inlet Bridge. Please consult the Corsons Inlet Bridge LCD Study for a summary of the interview with Whale Creek Marina. Table 8 shows a summary of the marinas contacted.

Table 8 – Summary of Marinas Interviewed

Marina	Address	Date of Interview	Method of Interview
Avalon Yacht Club	704 7th St, Avalon, NJ 08202	18-Sep-25	Phone
Commodore Bay Marina	900 Ocean Dr, Avalon, NJ 08202	16-Sep-25	Phone
Larsen's Marina	7 Old Sea Isle Blvd, Sea Isle City, NJ 08243	16-Sep-25	Phone
Nob's Boat Ramp	534 Old Avalon Blvd, Avalon, NJ 08202	16-Sep-25	Phone
Pier 88 Marina	8800 Sounds Ave, Sea Isle City, NJ 08243	19-Sep-25	Phone
Sea Isle City Marina	347 42nd Pl, Sea Isle City, NJ 08243	16-Sep-25	Phone
Minmar Marine	14 Old Sea Isle Blvd, Sea Isle City, NJ 08243	Unable to be contacted	Unable to be contacted
Townsend Inlet Yacht Club	87th St & Bay St, Sea Isle City, NJ 08243	Unable to be contacted	Unable to be contacted
Jet Drive Exchange/Avalon Marine Center	701 Old Avalon Blvd, Avalon, NJ 08202	Unable to be contacted	Unable to be contacted

Every marina interviewed has docking slips, ranging from 7 to 100. Sea Isle City Marina is the only marina interviewed that provides mooring locations (1), and Avalon Yacht Club is the only marina interviewed that provides boat storage facilities (60). Some marinas provide additional facilities for members or guests, including restaurants, water supply service, and pump out service. All marinas interviewed reported that nearly 100% of the resident vessels are power boats. No marinas mentioned a maximum height allowed for air draft.

A table summarizing the marina facilities that were interviewed is included in Appendix I. The table includes the number of dock slips, number of mooring locations, number of storage locations, maximum draft, maximum air draft, maximum length, maximum width, ownership information, services provided at the marina, and specialized vessels that use the marinas.

5. Projected Waterway Improvements

[To be determined]

6. Summary of Vessel Height Data

The two sources of vessel height data were used in this study to estimate the impact of bridge clearance for maritime traffic in nearby waterways.

Vertical clearance height impacts on vessel movements were estimated using vessel height data gathered from two sources during the data collection effort of this study. As there is likely overlap between data sources, each is presented separately. The two data sources are as follows:

- Vessel Field Survey: Heights of 1,315 boats docked at marinas and private residential properties were manually measured. Please note that survey results were collected on a random summer weekday and may not provide a representation of vessel statistics year-round.
- Maritime Navigation Survey: 78 vessel heights provided via a maritime survey meant to collect information specifically about maritime navigation in adjacent waterways.

Table 9 shows the summary of vessel heights as reported by the two data sources.

Table 9 – Summary of Vessel Height Data

Vessel Height	Vessel Field Survey	Maritime Navigation Survey	Total	Total (%) (rounded)
< 15'	1,245	50	1,295	93%
15' - 20'	25	3	28	2%
20' - 25'	19	3	22	2%
25' - 30'	5	0	5	<1%
30' - 35'	7	3	10	<1%
35' - 40'	3	4	7	<1%
40' - 45'	10	0	10	<1%
45' - 50'	0	0	0	0%
50' - 55'	1	0	1	<1%
55' – 60'	0	0	0	0%
Not Answered	N/A	15	15	1%
Total	1,315	78	1,393	

III. Project Purpose and Need

1. PROJECT PURPOSE

The overall purpose of this project is to address the structural and roadway deficiencies of the County Road 619 (Ocean Drive) Bridge over Townsends Inlet and to provide safe, efficient, and reliable passage for all users and modes of transportation.

2. Project Need

Bridge and Roadway Deficiencies

Structure #3100-003, located between the Borough of Avalon to the south and the City of Sea Isle to the north in Cape May County, at Milepost (MP) 19.88, carries County Route 619 (Ocean Drive) over Townsends Inlet. Built in 1939, Townsends Inlet Bridge is a steel bascule bridge with 23-fixed approach spans composed of a mixture of steel multi-girder spans, prestressed concrete girder spans, and girder-floor beam-stringer systems with reinforced concrete decks and one single leaf bascule span. The bridge is both structurally deficient and functionally obsolete, has a current Sufficiency Rating of 23.0, and has undergone a series of recent rehabilitations with Spans 1 through 7 replaced in July 2019, the bridge railings replaced in 2018-2019, and the bascule span and toll span rehabilitated in 2014-2015. The bridge is posted due to its inability to carry loads greater than 15 tons. Due to its age, routine maintenance can no longer address the bridge's deficiencies.

According to the most recent bridge inspection report (Bridge Re-Evaluation Survey Report, 18th Cycle, dated October 1, 2023):

- The **overall** condition of the Townsends Inlet Bridge is "poor" due to the condition of the superstructure, substructure, and low inventory ratings.
- The **superstructure** is in "poor" condition due to painted over section loss with several holes and deep pitting in many elements; pack rusted bearing elements; and rusted and potentially frozen in and hanger assemblies.
- The **substructure** is in "poor" condition due to heavy collision damage to the existing fender system, severely corroded caisson casings, and large spalls in reinforced concrete piles.
- The **deck** is in "satisfactory" condition due to medium and wide transverse cracks and several shallow spalls.
- The **approach roadways** are in "satisfactory" condition with large spalls, severe settlements (1 to 2"),and moderate slope embankment erosion.
- The **channel/channel protection** is in good condition with no significant defects.
- The bridge is classified as both **Scour Critical** and **Fracture Critical**.
- The bridge's **mechanical machinery** and **electrical system** are in fair condition.

Substandard roadway controlling design elements were identified as follows within the project study limits:

- The lanes and shoulders have a substandard cross slope of 1.25 percent

- The left turn intersection sight distance at the 94th Street unsignalized intersection in Sea Isle City is substandard.

In addition, the following deficiencies were identified within the project limits:

- Lack of current standard MASH compliant roadside protections
- Lack of dedicated bicycle and pedestrian facilities
- There is currently no guiderail to protect the bridge parapet.

System Linkage

The Townsends Inlet Bridge serves as a vital link between Avalon and Sea Isle City that attract thousands of visitors each year. Sea Isle City and the Borough of Avalon are prominent summer tourist destinations situated along the southern coastline of New Jersey. Many businesses in these areas operate on a seasonal basis or rely predominantly on summer tourism as their primary source of revenue. As such, maintaining access to businesses and tourist amenities is critical to maintaining the economy of the municipalities. When the bridge is closed, drivers must follow a 17-mile/30-minute detour via the Garden State Parkway or Route 9 for trips between both towns.

The connection provided by the Townsends Inlet Bridge is economically important, linking customers with local businesses. Local residents and business owners rely on the bridge for their daily needs. Due to its local and regional importance, especially during the peak summer tourist season, bridge closures due to aging infrastructure will continue to be highly burdensome to the communities particularly because of the lack of convenient detour routes. Due to the age of the bridge, emergency repairs requiring a full closure of the bridge will become more frequent, leading to the continued use of lengthy detours adversely impacting commerce and emergency services.

The rehabilitation or reconstruction of Townsends Inlet Bridge to provide more reliable conditions that can serve the community as a vital economic connection is paramount to this Local Concept Development Study.

3. Goals and Objectives

- Minimize or eliminate the need for bridge openings
- Upgrade bridge and approach roadway conditions to meet AASHTO and NJDOT safety standards including new parapets and guide rail
- Reduce the frequency of major bridge maintenance activities that result in detours and/or disruption of traffic flow
- Correct the controlling substandard design elements and the highway deficiencies
- Modernize bridge mechanical and electrical components to meet current design standards
- Provide accommodation for current and future users of Townsends Inlet in accordance with the completed Navigation Impact Report

- Avoid or minimize long-term roadway closures during construction
- Provide ADA-compliant pedestrian facilities and bicycle accommodation
- Avoid or minimize impacts to social, economic and environmental resources
- Minimize the number of occurrences that the approach roadway is closed due to wave over wash
- Address the high rate of vehicular crashes on the Sea Isle City approach roadway

IV. Alternatives Analysis

1. List of Alternatives

2. Comparison of Alternatives Matrix

V. Appendices