



North Causeway Pedestrian Crossing Feasibility Study

Final Report

City of New Smyrna Beach, Florida

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Prepared For:



RIVER TO SEA
Transportation Planning Organization
VISION - PLAN - IMPLEMENT





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Executive Summary

The City of New Smyrna Beach identified the need for pedestrian crossing improvements at the intersection of North Causeway (SR 44) and Quay Assisi including a short section of new five-foot sidewalk on the west side of Quay Assisi to connect with existing four-foot sidewalk, a new marked crossing of North Causeway, and new crosswalks on the north leg of the Quay Assisi intersection and across the driveway access to Kenny's Liquors just north of North Causeway. These improvements will make walking both a safer and a more attractive alternative to all potential users and provide a connection to an existing and well-used shared use path on the south side of North Causeway that serves as the main pedestrian and bicycle connection from the mainland to the beach. This study addresses concerns regarding sidewalk connectivity and intersection improvements through data collection, field observations, and qualitative analysis.

A field assessment was conducted on Thursday, September 16, 2021, to evaluate utilities, drainage, signalization, and lighting characteristics in the vicinity of the study intersection and determine potential right-of-way (ROW) and environmental impacts. Existing roadway conditions, intersection operations, and traffic behavior were observed and documented during the assessment. The existing lighting at the proposed new pedestrian crossing location was observed during dark conditions on a separate field visit on Friday, October 22, 2021. It should be noted that based on the Florida statute definition of crosswalks, there are legal unmarked crosswalks at the North Causeway / Quay Assisi intersection.

Relevant data including eight-hour pedestrian and bicycle counts from January 2021 were provided by the Florida Department of Transportation (FDOT) as part of two other studies. A temporary traffic signal warrant study was completed for the North Causeway / Quay Assisi intersection based on the planned detour route associated with the Barracuda Boulevard Bridge reconstruction project which will begin in spring 2022. That study recommended installation of a temporary traffic signal at Quay Assisi to accommodate traffic detoured from Barracuda Boulevard, although a pedestrian crossing of North Causeway was not included in the temporary signal concept. The study also documented low existing pedestrian crossing demand on North Causeway at both the Quay Assisi and Barracuda Boulevard intersections. A draft speed zone study report was also provided by FDOT that evaluated existing speeds on the North Causeway corridor, but did not recommend any changes to the existing posted speeds that vary between 30 and 40 MPH. A temporary change to lower the posted speed from 40 to 35 MPH east of Quay Assisi was recommended to be implemented concurrent with the Barracuda Boulevard Bridge reconstruction project, primarily to accommodate low speed vehicles (LSVs) on North Causeway during the planned detour.

Two concept plans were developed with both including the new sidewalk and crosswalks. Concept 1 assumes pedestrian signal features are added to a signal at the North Causeway / Quay Assisi intersection. Concept 2 assumes the intersection remains unsignalized but adds a pedestrian median refuge island within the North Causeway center two-way left turn lane and rectangular rapid flashing beacons (RRFBs) to the crossing on the east leg of the Quay Assisi intersection. There are no anticipated impacts to ROW or utilities associated with the proposed improvements in either concept. The total project is anticipated to cost \$100,000 for Concept 1 or \$124,000 for Concept 2 in current year dollars and based on FDOT historical 2021 market 6 area item annual averages cost report, supplemented with historical 2021 statewide annual averages cost report.

At the conclusion of the data collection, field observation, and geometric analysis and concept development, it was determined that the proposed improvements in Concepts 1 and 2 are physically feasible. However, the proposed North Causeway crossing does not currently meet FDOT criteria



for installation of a marked crosswalk at a midblock or unsignalized location based on observed pedestrian crossings reflecting demand. The study team coordinated with FDOT to determine if a pedestrian crossing could be incorporated as part of the temporary signal at the Quay Assisi intersection, which will be present during the duration of the Barracuda Boulevard Bridge reconstruction project. However, it was determined that there was insufficient time in the project schedule to add the additional features into the temporary signalization plan.

While there are no notable physical barriers to implementing the proposed improvements, the low crossing demand not meeting the minimum FDOT thresholds for the marking of a crosswalk leaves the conclusion that this project is not feasible at this time. It is recommended that pedestrian demand at this location be monitored for future consideration for a marked crossing. Additional pedestrian and bicycle traffic is anticipated due to the planned detour route during the bridge reconstruction project. Additional pedestrian and bicycle traffic at the Quay Assisi area is also anticipated once the adjacent Riverwalk Condominiums at Coronado Island project is completed and fully occupied.

If minimum demand levels can be demonstrated in the future and is approved by the FDOT District Traffic Operations Engineer, potential options for implementing the crossing include the following:

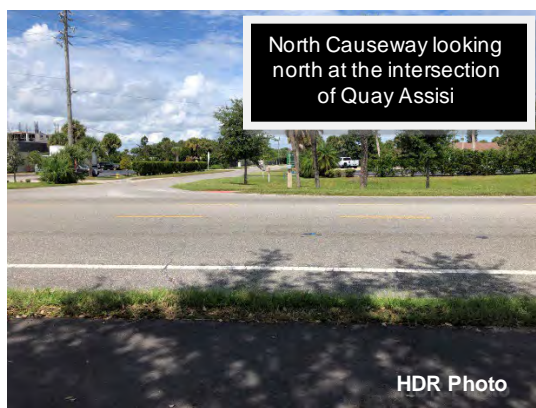
- FDOT installation as a smaller in-house project.
- City installation through permit with FDOT.
- Prioritized for funding through the R2CTPO.

1 Introduction

The River to Sea Transportation Planning Organization (R2CTPO) is evaluating the feasibility of a new pedestrian crossing of North Causeway (SR 44) at Quay Assisi in the City of New Smyrna Beach. This improvement will also include the extension of the current sidewalk segment along the west side of Quay Assisi approximately 65 feet to connect with the existing sidewalk on the north side of North Causeway. This study will also evaluate appropriate intersection treatments, including traffic control, signage, lighting, and American Disability Act (ADA) improvements.

The pedestrian improvements are desired to provide a safe and convenient crossing location to the shared use path located on the south side of North Causeway between the existing signalized intersections at Riverside Drive and Barracuda Boulevard. Pedestrian and bicycle demand in the area is increasing with the redevelopment of a shopping center as the Riverwalk Condominiums, growth of the Marine Discovery Center, and the presence of the existing shared use path. The most desirable location for an additional crossing in this portion of North Causeway is at the Quay Assisi intersection, which is approximately half way between the adjacent signalized intersections, each about 0.3 mile away.

The proposed pedestrian improvements will provide benefits in terms of increased connectivity, mobility, and safety. The new crossing and additional sidewalk at the intersection of North Causeway and Quay Assisi will provide a direct connection to the City's trail network, thereby enhancing mobility for pedestrians and bicyclists to safely access surrounding businesses and destinations. The crossing would formalize an unmarked crosswalk location that is used today but anticipated to have higher use once the Riverwalk Condominiums development is completed and fully occupied. Furthermore, these improvements will make walking and biking a more attractive alternative to all potential users.



The images above show the locations for the proposed crosswalk locations spanning North Causeway (left) and Quay Assisi (right).



The project team would like to extend appreciation to all agency representatives and stakeholders whose assistance in this project proved invaluable.

- Mr. Stephan Harris – *River to Sea Transportation Planning Organization*
- Mr. Kyle Fegley – *City of New Smyrna Beach*
- Mr. Amir Asgarinik – *Florida Department of Transportation*
- Mr. Mike Sanders – *Florida Department of Transportation*
- Mr. Chris Dabson – *Florida Department of Transportation*

A project location map is supplied in **Figure 1-1**. The specific project area being evaluated in this project is shown in the red box.

Figure 1-1 Project Location



2 Existing Conditions

The following section details the characteristics observed and available within Geographic Information System (GIS) within the project study limits regarding physical conditions, environmental concerns, drainage, utilities, and right of way (ROW).

2.1 General Description

Two field reviews were conducted by the project team on Thursday, September 16, 2021, and Friday, October 22, 2021. During the field reviews, the team inspected existing path / sidewalk conditions, roadway conditions, land use, and potential obstacles. Existing conditions and observations, including photographs, were documented using a mobile GIS data collection application. An inventory of the observations and photos is included in **Appendix A**.

Streets and Intersections

The project study area at the intersection of North Causeway and Quay Assisi is located within the City of New Smyrna, Florida. Within this study area, North Causeway (SR 44) is a Florida Department of Transportation (FDOT) maintained roadway and is a two-lane urban minor arterial that runs east-west, including a center two-way left turn lane. The posted speed limit is 35 MPH; however, it increases to 40 MPH just to the east of the Quay Assisi intersection, but then decreases to 30 MPH approximately 0.6 miles further east, just east of East Circle Drive. The existing access management classification is 4, and the existing context classification is C3C, suburban commercial.

Bicyclists and pedestrians are principally served on the North Causeway by an eight-to-ten-foot shared use path along the south side of the roadway. There is also an existing five-foot sidewalk along the north side of the road. The roadway has paved shoulders that vary in width throughout the corridor (generally three to six feet), although there are currently no signed or marked bicycle treatments on the roadway. There are no marked crosswalks to connect the sidewalk and shared use path on opposite sides of North Causeway between the signalized intersections of North Riverside Drive and Barracuda Boulevard, approximately 0.57 miles. The Quay Assisi intersection is located about halfway between those two signals, 0.28 miles from Riverside Drive and 0.29 miles from Barracuda Boulevard. There are two raised median islands on North Causeway within the two-way left turn lane in the 40 MPH section, east of Barracuda Boulevard and east of Middle Way.

Quay Assisi is a two-lane local road providing access primarily to residential development that ends at North Causeway and has a posted speed limit of 25 MPH approaching the intersection. An existing four-foot sidewalk is located on the west side of the street, but it ends on the north side of a driveway providing access to Kenny's Liquors just north of North Causeway.

Quay Assisi at North Causeway is a three-leg intersection, with the southbound Quay Assisi approach operating with stop-control. The southbound approach has a single lane. The eastbound approach on North Causeway has one left turn lane and one through lane, and the westbound approach has one through lane. There is an existing access driveway to the North Causeway Park / Boat Ramp and parking area on the south side of North Causeway that is

offset from Quay Assisi by approximately 85 feet. That intersection has a similar configuration and traffic control, with a single northbound lane operating under stop control for the driveway, and North Causeway having one through lane on the eastbound approach, and one left turn lane and one through lane on the westbound approach. The existing sidewalk crossing of Quay Assisi on the north side of North Causeway is currently unmarked, although it features ADA compliant tactile warning surfaces.

Existing Transit Service

The City of New Smyrna Beach is serviced by VOTRAN, which is Volusia County's public transit system. There are no fixed-route transit services that utilize the study corridor, but the study corridor is located within FLEX 42 Beachside, a curb-to-curb service that operates within New Smyrna Beach. Riders must call ahead to schedule a ride and can be connected to VOTRAN routes 40 or 41 at VOTRAN's Julia Street and Sams Avenue Connection Point, which is located near Old Fort Park. In addition, riders can transfer to one of the other FLEX services that are offered by VOTRAN, such as FLEX 43 and FLEX 44, which also stop at the Julia Street/Sams Avenue Connection Point. FLEX 42 leaves from this point every hour, beginning at 7:47 AM until 5:47 PM.



Signalization

As noted above, the closest signalized intersection to Quay Assisi on North Causeway are approximately 0.3 miles away in both the east and west directions. There are plans to include a temporary signal at the Quay Assisi intersection during the closure and reconstruction of the Barracuda Boulevard Bridge, beginning in spring 2022. See **Section 2.8** for more information about that project.

Land Use

Land uses along the study area are mostly residential, commercial, and recreational. The commercial developments include:

- Volusia Medical Center (medical center)
- Kenny's Liquors (store)
- North Causeway Marine Corp (store)
- Dolphin Cove (residential)
- Venetian Villas (residential)
- Riverwalk Condominiums (residential)

Development of the Riverwalk Condominiums, a residential property located to the northwest of the North Causeway / Quay Assisi intersection, is in-progress and approximately 60 percent complete. Once fully complete and occupied, the additional residences are anticipated to produce more non-motorized users throughout the study area. The North Causeway Park / Boat Ramp and New Smyrna Marina is also located directly to the south of the North Causeway and Quay Assisi intersection.

2.2 Right-of-Way

Parcel boundaries were obtained from Volusia County's GIS website and used for apparent ROW width, which varies along North Causeway and Quay Assisi. On the immediate approach to the intersection, the apparent ROW width on Quay Assisi is approximately 70 feet, and the apparent ROW width on North Causeway at Quay Assisi is approximately 175 feet. The proposed sidewalk extension and pedestrian crossing improvements are completely within the apparent ROW, with no issues anticipated. There is an existing utility pole near the proposed alignment of the sidewalk extension on the west side of Quay Assisi. However, there is available space for the sidewalk to be constructed on the outside of the pole but within the public ROW.



Utility pole at the northwest corner of the North Causeway and Quay Assisi intersection.

2.3 Utilities

The project team completed a utilities assessment on the study corridor. There is an overhead distribution power line that travels along the northern side of North Causeway. There is another overhead distribution power line along the southern side of Quay Assisi that connects to a utility pole at the T-intersection of Quay Assisi and North Causeway. The relocation of existing utilities lines and poles is not anticipated.

A Sunshine One Call Ticket identified the following utilities along the corridor:

- Utilities Commission, City of New Smyrna Beach – Wastewater, Water
- Utilities Commission, City of New Smyrna Beach – Electric
- AT&T / Distribution – Telephone
- Florida Public Utilities Co. – Gas
- Charter Communications – CATV

The Sunshine One Call Ticket is supplied in **Appendix B**.

2.4 Drainage and Permitting

The corridor's drainage is defined by roadside swales that vary in depth relative to the roadway.

The Federal Emergency Management Agency's (FEMA) Flood Insurance Rate Maps (FIRMs) for the study area in Volusia County were reviewed, showing potential impact by identified floodplains on the corridor. The impact to the floodplains from work performed are expected to be negligible. The FIRM for the study area is provided in **Appendix C**.

Determination of qualification for an activity exemption can be obtained through the St. Johns River Water Management District (SJRWMD). Once potential impacts are known during the design and permitting phase, a pre-application meeting should be held with the SJRWMD to verify whether the project qualifies for an exemption (62-330.051, Florida Administrative Code & Florida Administrative Register).

2.5 Soils

The North Causeway study area subsurface consists of the soil type Turnbull variant sand. The Turnbull variant sand is a somewhat poorly drained soil and is a part of the Hydrologic Soil Group A/D. A soil map is provided in **Appendix D**. The map was prepared using GIS data from the USDA Natural Resources Conservation Services (NRCS).

2.6 Environmental

The portion of the study area along North Causeway and Quay Assisi is located primarily in commercial, marina, and high-density residential land uses. The area directly along North Causeway is designated as commercial, with the area to the north along Quay Assisi being high-density residential and the area south of North Causeway designated as Marina.

Impacts to any endangered or protected species is expected to be negligible due to the proposed improvements being limited in nature. While the Florida Fish and Wildlife Conservation Commission (FWC) identifies the project area as being part of a scrub-jay consultation area, there is no intended clearing of land for the proposed improvements. Also, a query of the Florida Natural Areas Inventory (FNAI) Biodiversity Matrix did not show the presence or potential presence of scrub jay in the vicinity of the project.

Based on a review of the FWC Historical Bald Eagle Nesting Map, there are no bald eagle nests known to occur within 660 feet of the project corridor. USFWS has de-listed the bald eagle; however, protection will continue under the Bald and Golden Eagle Protection Act and the Migratory Bird Treaty Act. No eagles were observed near the study area during the field reviews on September 16, 2021, and October 22, 2021.

FWC Gopher Tortoise Permitting Guidelines were also obtained to examine the gopher tortoise overlay observed in *Volusia County's Growth and Resource Management (GRM) Interactive Map*. Gopher tortoises are threatened wildlife species protected by state law (Chapter 68A-27, Florida Administrative Code), and must be relocated before any development / land clearing takes place. No gopher tortoise burrows were observed during the field reviews, however per FWC's Guidelines a preconstruction survey should be conducted to guarantee there is no potential for disturbance by construction of the new proposed sidewalk segments, or if a permit is required. The FNAI Element Occurrence data does not identify any documented listed species within the project area.

The FNAI does not identify any part of the corridor as being conservation land. The Florida Department of Environmental Protection (FDEP) identifies no area within the study limits as Outstanding Florida Water. Volusia County is within a Central (Ocala) Bear Management Unit (BMU). The limited scope of this project makes it unlikely that protected species or any wildlife will be affected by this project. During the design and permitting phase, potential impacts to any species should be re-evaluated.

2.7 Lighting

A qualitative lighting evaluation was conducted by the project team on October 22, 2021, at approximately 8 PM during dark conditions along North Causeway. No quantitative lighting measurements were taken. The intersection of North Causeway and Quay Assisi has several light poles that are located near the intersection. There is one that is located directly across from Quay Assisi on the south side of the roadway and another on the west side of Quay Assisi approximately 40 feet north of North Causeway, just south of the driveway providing access to the commercial property, Kenny's Liquors. There are also multiple light poles along North Causeway along the corridor with varying distances from the edge of pavement to the front of the concrete base of the light pole. During the field review on October 22, 2021, the light poles were observed to emit yellow-orange lights. It can be assumed that these light fixtures are high pressure sodium lamps. The existing lighting does not provide sufficient lighting for pedestrians who may attempt to cross North Causeway or the north leg of the Quay Assisi intersection.



Existing lighting in the vicinity of the North Causeway and Quay Assisi intersection.

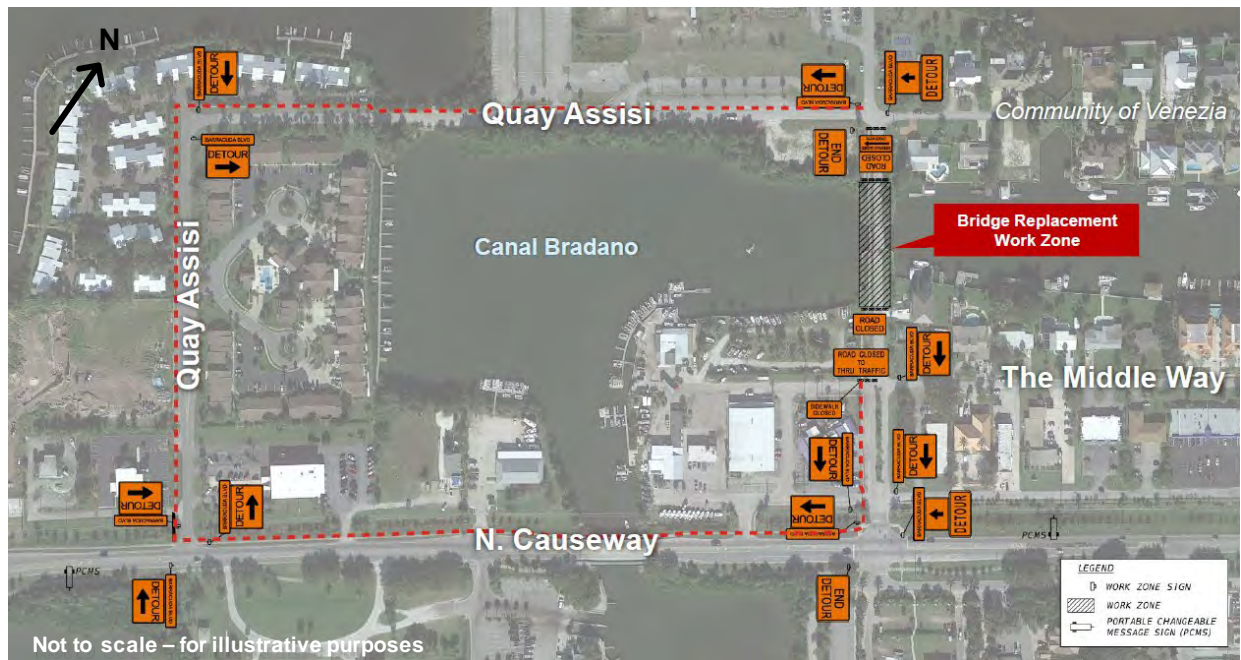
2.8 Other Studies and Related Projects

Barracuda Boulevard Bridge Replacement

Anticipated to begin construction in spring 2022, FDOT will be replacing the vehicle and pedestrian bridge on Barracuda Boulevard north of North Causeway (FPID No. 437935-1). During construction, all traffic (including pedestrians and bicyclists) that would have normally used the bridge will be detoured using Quay Assisi to North Causeway. Once reaching North Causeway, pedestrians and bicyclists wanting to cross North Causeway at the intersection of Barracuda Boulevard would then have to use the sidewalk along the north side of North Causeway to go east 0.3 miles back to Barracuda Boulevard to cross at the signal.

While access will be restricted, FDOT has created a signage plan to help direct people to the appropriate detour route during the construction of the bridge (pedestrian detour plan shown in **Figure 2-1**).

Figure 2-1 Barracuda Boulevard Bridge Project Pedestrian Detour Plan



With the proposed detour and additional traffic using Quay Assisi to access North Causeway, FDOT conducted a signal warrant analysis to determine whether a temporary signal would be warranted at the North Causeway / Quay Assisi intersection. The study concluded that a signal would be warranted with the additional rerouted traffic and recommended a temporary signal be installed during the Barracuda Boulevard Bridge closure. The signal warrant analysis report also recommended the following additional improvements:

- Refresh the stop bar pavement markings on the southbound approach of Quay Assisi
- Provide crosswalk pavement markings on the southbound approach
- Replace the tactile mats on the northeast and northwest corners
- At the western driveway for the waterfront park:
 - Install a tactile mat on the southeast corner
 - Consider temporarily restricting exit movement to right-turn only

As part of the signal warrant study, eight-hour turning movement counts were collected at the North Causeway intersections at Quay Assisi and Barracuda Boulevard, including pedestrian and bicycle counts. The count data was collected on January 5th, 2021, from the hours of 9:00 AM to 5:00 PM and focused. Non-motorized user data was collected in each direction so the project team could better understand the existing street crossing patterns. During the eight-hour count, a total of 285 people were observed traversing the North Causeway / Quay Assisi intersection (155 pedestrian, 130 bicyclists). However, most users (218 people or 76 percent) were on the shared use path on the south side of the roadway, and there were only 6 combined crossings of North Causeway in the north/south direction during the eight-hour period. The highest number of people crossing North Causeway at Quay Assisi for one hour was three between 4:00 and 5:00 PM. The count data at North Causeway and Barracuda

Boulevard showed a total of 234 people crossing the intersection during the eight-hour period, including 143 pedestrians and 91 bicyclists. Like Quay Assisi, most of those users were on the shared use path on the south side of the roadway (149 or 64 percent). Compared to Quay Assisi, there are more users that cross North Causeway at Barracuda Boulevard since it's a signalized intersection. There were a total of 38 pedestrians and bicyclists that crossed the intersection north/south during the eight-hour count period, with the highest volume of 9 people occurring between 1:00 and 2:00 PM.

A summary of collision data for the North Causeway / Quay Assisi intersection was included in the signal warrant study report, which showed a total of three (3) crashes at the intersection in the 36-month period between December 1, 2017, and November 30, 2020. There were no reported pedestrian or bicycle crashes during this period.

Pedestrian and bicycle counts from the temporary signal warrant study report, as well as the concept for the temporary signal, are shown in **Appendix E**.

With the detours during the Barracuda Boulevard Bridge closure, it is anticipated that pedestrians and bicyclists who previously crossed North Causeway at Barracuda Boulevard would prefer to cross North Causeway at Quay Assisi to access the shared use path sooner, rather than stay on the narrower sidewalk for more than a quarter mile to get back to the Barracuda Boulevard signal.

SR 44/North Causeway Speed Zone Study

In June 2021, a speed zone study was conducted for North Causeway (SR 44) from Riverside Drive to Peninsula Avenue with speed measurements taken in three separate locations. This study provides a sample of vehicle speeds and a comparison to the posted speed limit. The draft study report found that two of the locations had some speed characteristics in the 85th percentile speeds (the speed at or which 85 percent of free-flowing vehicles are traveling) and the 10 MPH pace (the 10 MPH range containing the highest number of vehicles from the study data) which did not adhere to current guidelines contained in the FDOT Speed Zoning Manual. **Figure 2-2** provides a summary of the results.

Figure 2-2 SR 44/North Causeway Speed Zone Study Summary

Spot Speed Study Summary							
Site	Location (West to East)	Posted Speed Limit (MPH)	Combined 85th Percentile Speed (MPH)	Difference	Combined 10 MPH Pace	Difference	Within Guidelines?
S1	S.R. 44, 250 feet west of Quay Assisi	35	43	+8	34 - 44	+9	Yes
S2	S.R. 44, 800 feet east of Barracuda Boulevard	40	43	+3	34 - 44	+4	Yes
S3	S.R. 44, 350 feet east of Desoto Drive	30	41	+11	32 - 44	+14	No

Red text denotes data outside of guidelines

Crash data for the 36-month period between May 1, 2018, and April 30, 2021, for the entire speed zone study area between Riverside Drive and Desoto Drive showed a total of 28 crashes occurred, including two (2) bicycle crashes and one (1) pedestrian crash. The report did not specifically provide the locations of those crashes.

In addition to these findings, another important consideration is the use of the North Causeway corridor by Low-Speed Vehicles (LSVs). The City of New Smyrna Beach implemented a LSV Route Map for North Causeway as shown in **Figure 2-3**, which in addition to some sections of North Causeway also uses Quay Assisi and Barracuda Boulevard for the LSV route from the mainland to the beach. However, the current route would be impacted by the closure and reconstruction of the Barracuda Boulevard Bridge, thereby requiring LSVs to use a longer section of North Causeway that currently has a posted 40 MPH speed limit.

Figure 2-3 City of New Smyrna Beach Low Speed Vehicle Route Map



Source: New Smyrna Beach Police Department Facebook page, dated July 14, 2017

The draft study recommended for the existing posted speed limits along North Causeway to be retained. Another recommendation included temporarily lowering the speed limit along North Causeway from 40 MPH to 35 MPH east of Quay Assisi to allow LSVs to travel along SR 44 to access the frontage road at Barracuda Boulevard while the Barracuda Boulevard Bridge is being reconstructed and the detour is in place. Finally, it was recommended to utilize more speed enforcement along the 30 MPH segment of North Causeway to reduce the difference between the average vehicular speed and the posted speed limit.

3 Pedestrian Crossing Concept Plans

The following section outlines the concept plans for the project which are attached in **Appendix F** with the typical section in **Appendix G**. Two different concepts were developed as part of this study: Concept 1 assumes pedestrian crossing features are added to a signalized intersection at Quay Assisi and Concept 2 assumes the intersection remains unsignalized. Criteria from the FDOT Design Manual (FDM) were followed for minimum standards and design criteria.

3.1 Sidewalks and Crosswalks

Marked Crosswalk and Traffic Control Criteria

The FDOT Traffic Engineering Manual (TEM) Section 5.2 provides guidance on treatments for pedestrian crosswalks at midblock and unsignalized intersections. It notes that marked crosswalks and pedestrian treatments that are well located and thoughtfully designed can serve as a mechanism for improving pedestrian connections, community walkability, and pedestrian safety. However, they are not suitable for all locations. Suitability can be determined by careful evaluation regarding expected levels of pedestrian crossing demand, safety characteristics of the crossing location, and design considerations for the crossing control type. The proposed crossing in this study was reviewed based upon the criteria for placement of marked crosswalks (TEM Section 5.2.5.1), as discussed below:

- **Proximity to significant generators and attractors.** The primary attractor for crossings at Quay Assisi is the existing shared use path on the south side of North Causeway which saw an average of nearly 30 total pedestrians and bicyclists per hour based on the eight-hour counts collected in January 2021 as part of the temporary signal warrant study.
- **Recommended levels of pedestrian demand.** The typical threshold for a new marked crosswalk is 20 pedestrians during a single hour of an average day (with reductions for pedestrian demand to 18 or 15 across any two or three hours of an average day, respectively). Another provision allows a 50 percent reduction to the pedestrian threshold for crossing locations connecting a shared use path on each side of a roadway. The existing pedestrian and bicycle crossing volumes at Quay Assisi are very low with only 6 people recorded over an eight-hour period and 3 during the highest hour during the signal warrant counts. Even at the signalized Barracuda Boulevard signalized intersection, there were only 38 people crossing North Causeway with 9 during the highest hour. As this crossing would only provide a connection to an existing shared use path and not along a shared use path, the 50 percent reduction provision may not be applicable. However, the combination of the detour associated with the Barracuda Boulevard Bridge project and forthcoming completion of the Riverwalk Condominiums project adjacent to Quay Assisi provides the potential for pedestrian and bicycle demand to increase at North Causeway and Quay Assisi.
- **Minimum location characteristics.** The FDOT TEM requires a minimum vehicular volume of 2,000 average daily traffic (ADT), a minimum crossing distance to the nearest alternative crossing location is at least 300 feet, and the proposed location is

outside the influence area of adjacent signalized intersections including the limits of auxiliary turn lanes. The annual average daily traffic (AADT) on North Causeway in 2020 was 9,900, the proposed crossing location is approximately 0.3 mile away from the nearest alternative crossing location (Riverside Drive or Barracuda Boulevard) and is not within the influence area of a signalized intersection.

The proposed crossing location meets two of the three prescribed criteria but does not currently meet the recommended levels of pedestrian demand. Consideration was given for piloting the pedestrian crossing during the temporary signalization of North Causeway at Quay Assisi based on the expected increased pedestrian and bicycle demand with the detour route. However, it was not possible to add pedestrian crossing features to the temporary signal plans due to the lateness in the project schedule. As such, a decision on permanent installation of a crossing should be considered in the future based on additional data collection to be completed either during the temporary signalization of Quay Assisi or once the Riverwalk Condominiums project is completed and fully occupied.

According to the FDOT TEM (Section 5.2.5.2), yellow flashing beacons and rectangular rapid flashing beacons (RRFBs) must be limited to roadways that have a marked special emphasis crosswalk, four or fewer through lanes, and a posted speed limit of 35 MPH. A potential unsignalized crossing on North Causeway at Quay Assisi would meet each of these criteria.

Concept Options

In both concepts, a 5-foot sidewalk is proposed to fill in the approximate 60-foot gap of missing sidewalk on the west side of Quay Assisi immediately north of the existing North Causeway sidewalk. There are three crosswalks proposed:

- The crossing of North Causeway that is the primary subject of this study. This is proposed to be placed on the east leg of the Quay Assisi intersection, thereby not interfering with eastbound left turn movement to Quay Assisi or westbound left turn movements into the North Causeway Park / Boat Ramp. Additional 5-foot sidewalk would connect the proposed North Causeway crossing to the sidewalk on the north side of the road and the shared use path on the south side of the road.
- Across the north leg of the North Causeway / Quay Assisi intersection.
- Across the driveway of Kenny's Liquors connecting the new proposed section of sidewalk on the east side of Quay Assisi to the existing sidewalk.

Concept 1 assumes pedestrian signal features are added to signalization at the Quay Assisi intersection. Although it was originally being considered to add these features to the forthcoming temporary signalization during the Barracuda Boulevard Bridge project, as noted, this was not possible due to the project schedule. Concept 1 would still be valid in the future should the signalization of the Quay Assisi intersection become permanent.

Concept 2 assumes no signalization, and the crossing includes a concrete median refuge island and RRFB assemblies located on the edges of the road as well as within the median island. The island will allow for two-stage pedestrian crossing movements and a protected refuge area. The island has been configured to allow both westbound left turns into the City's North Causeway Park / Boat Ramp, as well as northbound left turns out from the park / boat ramp. The length of the median island meets the FDOT minimum of 25 feet.

The concepts shown in **Appendix F** convey these proposed sidewalk and crosswalk improvements.

3.2 Lighting and Traffic Control

Adequate lighting should be provided at all marked pedestrian crossing locations. Insufficient illumination of the crosswalk during nighttime conditions could jeopardize the safety of pedestrians if no intersection improvements are considered. The FHWA Informational Report on Lighting Design for Midblock Crosswalks recommends that lighting of crosswalks be placed just in front of the crosswalk on the approach side to create optimal visibility of pedestrians. A qualitative lighting evaluation was conducted by the project team on October 22, 2021.

An existing light pole on the south side of the roadway provides front-lighting of the proposed crossing location for the eastbound direction. One additional light pole and fixture is proposed on the north side of North Causeway, just east of the proposed crossing location to front-light the crossing for the westbound direction. In addition, a new light pole and fixture is proposed to improve lighting for the new proposed crosswalk on the north leg of the North Causeway / Quay Assisi intersection.



Existing Light Pole at Quay Assisi

In the unsignalized concept, additional traffic control in the form of RRFBs are proposed to be added to the crossing to provide an active warning to drivers of pedestrian crossing activity. RRFB assemblies are proposed on both side of the street with dual facing signs, as well as a third assembly within the median island with dual facing signs.

Refer to **Appendix F** for the proposed pedestrian crossing concepts.

3.3 Utilities

The concept plans in **Appendix F** identify utilities visible during the field visit at the existing intersection near Quay Assisi and North Causeway, including include existing utility poles. There is no anticipated impact to any utilities based on the proposed concepts.

4 Financial Feasibility

This section outlines the preliminary opinion of probable cost for the design and construction of the proposed pedestrian crossing improvements at North Causeway and Quay Assisi, as well as a new section of five-foot concrete sidewalk on the west side of Quay Assisi. Two different concepts were developed, as shown in **Appendix F**.

The opinion of probable cost pay item numbers and units of measurement are based on FDOT historical 2021 market area 6 annual averages cost report, supplemented with historical 2021 statewide annual averages cost report. This opinion of probable cost is completed for the feasibility study to allow the R2CTPO and City of New Smyrna Beach to determine the priority of any planned improvements. It should be noted that utility relocation costs are typically borne by the utility company, so no specific costs were included for utility relocations, although none are anticipated to be needed. To accommodate future increases in the opinion of probable cost, an inflation factor was applied based on FDOT guidelines for roadway construction costs. A list of FDOT approved inflation factors through 2059 is provided in **Appendix H**.

Table 4-1 and **Table 4-2** summarize the estimates preliminary opinion of probable cost for Concepts 1 and 2, respectively. The total estimated opinion of probable cost of the project for Concept 1 is \$100,000, with Concept 2 estimated at \$124,000.

Table 4-3 and **Table 4-4** summarize inflation for the proposed improvements through 2025 for Concepts 1 and 2, respectively.

Table 4-1 North Causeway Concept 1 – Quantities and Opinion of Probable Cost

PRELIMINARY OPINION OF PROBABLE COST FOR CONSTRUCTION					
NORTH CAUSEWAY PESTRIAN CROSSING – CONCEPT 1					
FDOT Pay Item No.	Description	Unit	Unit Cost	Quantity	Cost
0101 1	MOBILIZATION	LS	15%	1	\$ 7,444.61
0102 1	MAINTENANCE OF TRAFFIC	LS	10%	1	\$ 4,963.07
0522 1 - ALTERNATE	CONCRETE SIDEWALK AND DRIVEWAYS, 4"	SY	\$ 48.27	40	\$ 1,917.50
0527 2	DETECTABLE WARNINGS	SF	\$ 29.31	2.2	\$ 64.48
0630 2 11	CONDUIT, F& I, OPEN TRENCH	LF	\$ 8.84	60	\$ 530.40
0630 2 12	CONDUIT, F& I, DIRECTIONAL BORE	LF	\$ 19.87	130	\$ 2,583.10
0632 7 2	SIGNAL CABLE, REPAIR/REPL-FUR & INSTALL	LF	\$ 11.00	200	\$ 2,200.00
0635 2 11	PULL & SPLICE BOX, F&I, 13" x 24"	EA	\$ 886.76	3	\$ 2,660.28
0646 1 11	ALUMINUM SIGNALS POLE, PEDESTAL	EA	\$ 2,253.14	4	\$ 9,012.56
0653 1 11	PEDESTRIAN SIGNAL, F&I LED COUNT, 1 WAY	AS	\$ 717.05	4	\$ 2,868.20
0665 1 12	PEDESTRIAN DETECTOR, F&I, ACCESSIBLE	EA	\$ 1,500.00	4	\$ 6,000.00
0678 1104	CNTRL ACCESS, F&I, LOAD SWITCH	EA	\$ 1,433.16	2	\$ 2,866.32
0700 1 11	SINGLE POST SIGN, F&I GM, <12 SF	AS	\$ 522.64	1	\$ 522.64
0711 11123	THERMOPLASTIC, STD, WHITE, SOLID, 12"	LF	\$ 3.15	250.28	\$ 788.38
0711 11125	THERMOPLASTIC, STD, WHITE, SOLID, 24"	LF	\$ 6.13	188.71	\$ 1,156.79
0715 4 23	LIGHT POLE COMPLETE, F&I- STD P, SP, 40'	EA	\$ 8,230.04	2	\$ 16,460.08
			SUBTOTAL		\$ 62,038.42
			CEI (15%)		\$ 9,305.76
			ENGINEERING AND DESIGN (30%)		\$ 18,611.53
			SURVEY AND ROW MAPPING		\$ 10,000.00
			TOTAL		\$ 99,955.71
			ROUNDED TOTAL*		\$ 100,000

* Construction cost estimate does not include utility relocation costs or right-of-way costs.

Unit costs based on the FDOT historical 2021 market area 6 item annual averages cost report, supplemented with historical statewide annual averages cost report.



Table 4-2 North Causeway Concept 2 – Quantities and Opinion of Probable Cost

PRELIMINARY OPINION OF PROBABLE COST FOR CONSTRUCTION					
NORTH CAUSEWAY PEDESTRIAN CROSSING – CONCEPT 2					
FDOT Pay Item No.	Description	Unit	Unit Cost	Quantity	Cost
0101 1	MOBILIZATION	LS	15%	1	\$ 9,361.78
0102 1	MAINTENANCE OF TRAFFIC	LS	10%	1	\$ 6,241.19
0520 1 7	CONCRETE CURB & GUTTER, TYPE E	LF	\$ 41.78	72	\$ 3,001.06
0522 1 - ALTERNATE	CONCRETE SIDEWALK AND DRIVEWAYS, 4"	SY	\$ 48.27	55.4	\$ 2,671.74
0527 2	DETECTABLE WARNINGS	SF	\$ 29.31	2.2	\$ 64.48
0630 2 11	CONDUIT, F&I, OPEN TRENCH	LF	\$ 8.84	30	\$ 265.20
0630 2 12	CONDUIT, F&I, DIRECTIONAL BORE	LF	\$ 19.87	75	\$ 1,490.25
0632 7 2	SIGNAL CABLE, REPAIR/REPL-FUR & INSTALL	LF	\$ 11.00	105	\$ 1,155.00
0635 2 11	PULL & SPLICE BOX, F&I, 13" x 24"	EA	\$ 886.76	3	\$ 2,660.28
0654 2 22	RECT RAPID FLASHBCN, F&I SOL, BB SIGN	AS	\$ 9,601.50	3	\$ 28,804.50
0700 1 11	SINGLE POST SIGN, F&I GM, <12 SF	AS	\$ 522.64	7	\$ 3,658.48
0700 1 50	SINGLE POST SIGN, RELOCATE	AS	\$ 408.52	1	\$ 408.52
0711 11123	THERMOPLASTIC, STD, WHITE, SOLID, 12"	LF	\$ 3.15	234.31	\$ 738.08
0711 11125	THERMOPLASTIC, STD, WHITE, SOLID, 24"	LF	\$ 6.13	168.71	\$ 1,034.19
0715 4 23	LIGHT POLE COMPLETE, F&I- STD P, SP, 40'	EA	\$ 8,230.04	2	\$ 16,460.08
SUBTOTAL					\$ 78,014.83
CEI (15%)					\$ 11,702.22
ENGINEERING AND DESIGN (30%)					\$ 23,404.45
SURVEY AND ROW MAPPING					\$ 10,000.00
TOTAL					\$ 123,121.50
ROUNDED TOTAL *					\$ 124,000

* Construction cost estimate does not include utility relocation costs or right-of-way costs.

Unit costs based on the FDOT historical 2021 market area 6 item annual averages cost report, supplemented with historical statewide annual averages cost report.

Table 4-3 North Causeway Concept 1 – FDOT Inflated-Adjusted Estimate

FDOT Inflation-Adjusted Estimate	Inflation Factor	PDC Multiplier	Adjusted Cost Estimate
Year 1 Inflation-Adjusted Estimate (2023)	2.70%	1.027	\$102,700.00
Year 2 Inflation-Adjusted Estimate (2024)	2.80%	1.056	\$105,600.00
Year 3 Inflation-Adjusted Estimate (2025)	2.90%	1.086	\$108,600.00

Table 4-4 North Causeway Concept 2 – FDOT Inflated-Adjusted Estimate

FDOT Inflation-Adjusted Estimate	Inflation Factor	PDC Multiplier	Adjusted Cost Estimate
Year 1 Inflation-Adjusted Estimate (2023)	2.70%	1.027	\$127,350.00
Year 2 Inflation-Adjusted Estimate (2024)	2.80%	1.056	\$130,940.00
Year 3 Inflation-Adjusted Estimate (2025)	2.90%	1.086	\$134,660.00

5 Conclusions

Proposed pedestrian crossing concept plans and preliminary opinion of probable cost are presented in this study to help the R2CTPO and the City of New Smyrna Beach plan for future design and construction phases and prioritize funding for the planned improvements.

This study identified a sidewalk alignment that would fill in the missing section of sidewalk on the west side of Quay Assisi between the existing four-foot sidewalk on Quay Assisi and the existing five-foot sidewalk on the north side of North Causeway. No ROW or utility impacts are anticipated. Two concept options were proposed for the crossing of North Causeway, one which would add pedestrian signal features to a signal at the Quay Assisi intersection, and another with a median refuge island and RRFBs that assumes the intersection stays unsignalized. In both cases, the crossing is proposed to be on the east leg of the North Causeway / Quay Assisi intersection and west of the driveway to the North Causeway Park / Boat Ramp. Other improvements include crosswalks on the north leg of the North Causeway / Quay Assisi intersection and across the driveway on Quay Assisi just north of North Causeway that provides access to Kenny's Liquors, as well as lighting enhancements at the proposed crosswalks.

This study finds that the proposed pedestrian crossing on North Causeway is physically feasible but does not currently meet FDOT criteria for installation of a marked crosswalk based on the recommended levels of pedestrian demand for a midblock or unsignalized location. The study team coordinated with FDOT to determine if a pedestrian crossing could be incorporated as part of the temporary signal at the Quay Assisi intersection, which will be present during the duration of the Barracuda Boulevard Bridge reconstruction project. However, it was determined that there was insufficient time in the project schedule to add the additional features into the temporary signalization plan.

While there are no notable physical barriers to implementing the proposed improvements, the conclusion of this study is that this project is not feasible at this time due to the low crossing demand not meeting the minimum FDOT thresholds for the marking of a crosswalk. It is recommended that pedestrian demand at this location be monitored for future consideration for a marked crossing. Additional pedestrian and bicycle traffic is anticipated due to the planned detour route during the bridge reconstruction project. Additional pedestrian and bicycle traffic at the Quay Assisi area is also anticipated once the adjacent Riverwalk Condominiums at Coronado Island project is completed and fully occupied.

If minimum demand levels can be demonstrated in the future and is approved by the FDOT District Traffic Operations Engineer, potential options for implementing the crossing include the following:

- FDOT installation as a smaller in-house project.
- City installation through permit with FDOT.
- Prioritized for funding through the R2CTPO.

6 References

FDOT 2021/2022 Basis of Estimates Manual

2021 <http://www.fdot.gov/programmanagement/Estimates/BasisofEstimates/>

FEMA Maps Service Center (FIRM Maps)

2021 <https://msc.fema.gov/portal/search>

Florida Department of Transportation Design Manual (FDM)

2021 <https://www.fdot.gov/roadway/fdm/default.shtm>

Florida Fish and Wildlife Conservation Commission Bald Eagle Nest Locator

2021 <https://www.arcgis.com/apps/webappviewer>

Florida Natural Areas Inventory (FNAI) Florida Biodiversity Matrix

2021 <https://www.fnai.org/BiodiversityMatrix/index.html>

National Resources Conservation Service. Web Soil Survey.

2021 <https://websoilsurvey.nrcs.usda.gov/app/>

River to Sea Transportation Planning Organization

2021 <https://www.r2ctpo.org/>

City of New Smyrna Beach

2021 <https://www.cityofnsb.com/>

Volusia County Property Appraiser's Land Mapping System

2021 <https://vcpa.vcgov.org/info/maps#gsc.tab=0>

Volusia County Growth and Resource Management

2021 <https://www.volusia.org/services/growth-and-resource-management/planning-and-development/mapping-and-addressing/grm-interactive-map.stml>

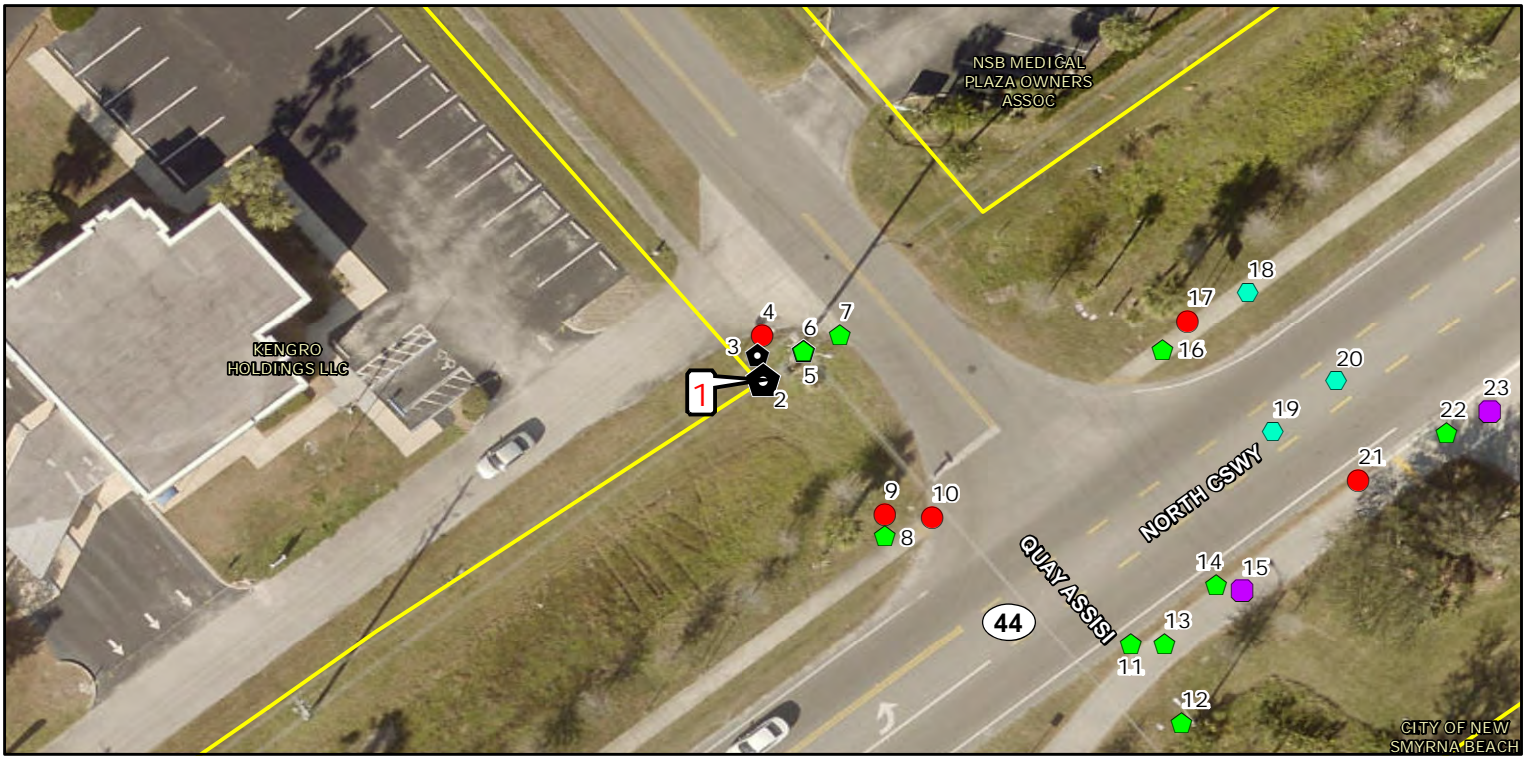
Manual on Uniform Traffic Control Devices (MUTCD) Part 7

2021 https://mutcd.fhwa.dot.gov/hdm/2009/part7/part7_toc.htm

[Volusia County's Public Transit System \(votran.org\)](http://www.votran.org)



Appendix A – Field Observations Inventory



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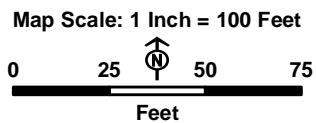
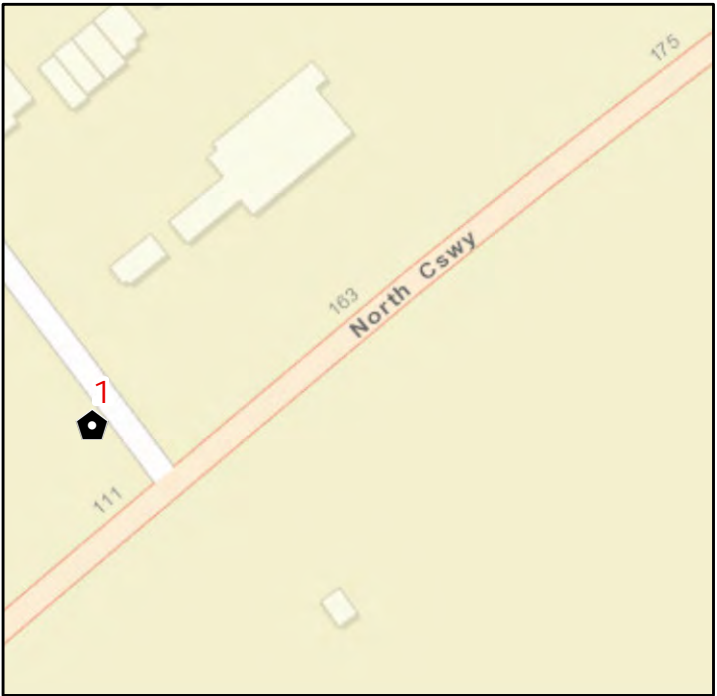
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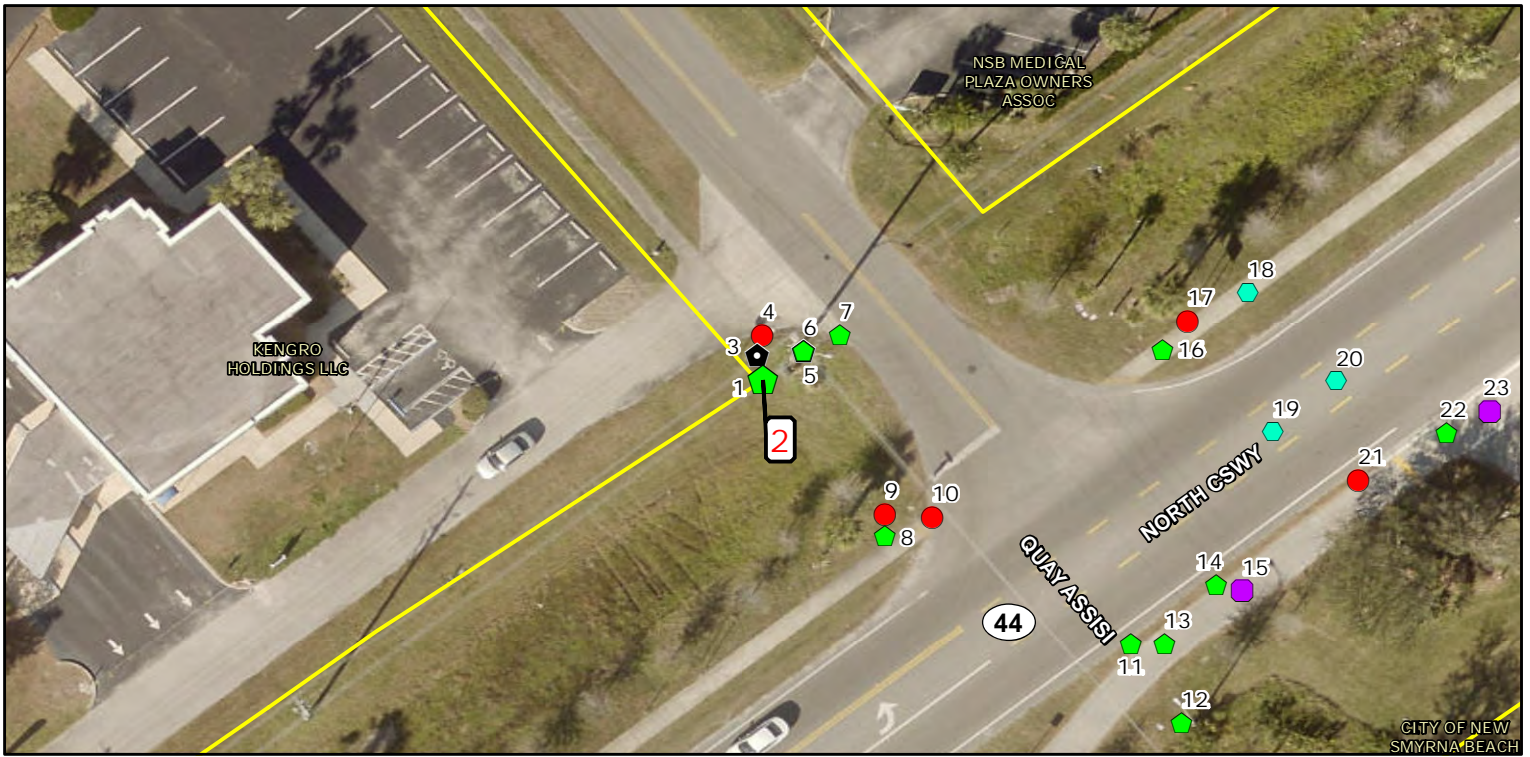
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● ADA - Safety	● Lighting
★ Cultural	● Traffic Control
● User	● Utilities



Field Observations

River to Sea TPO
North Causeway Sidewalk Feasibility Study



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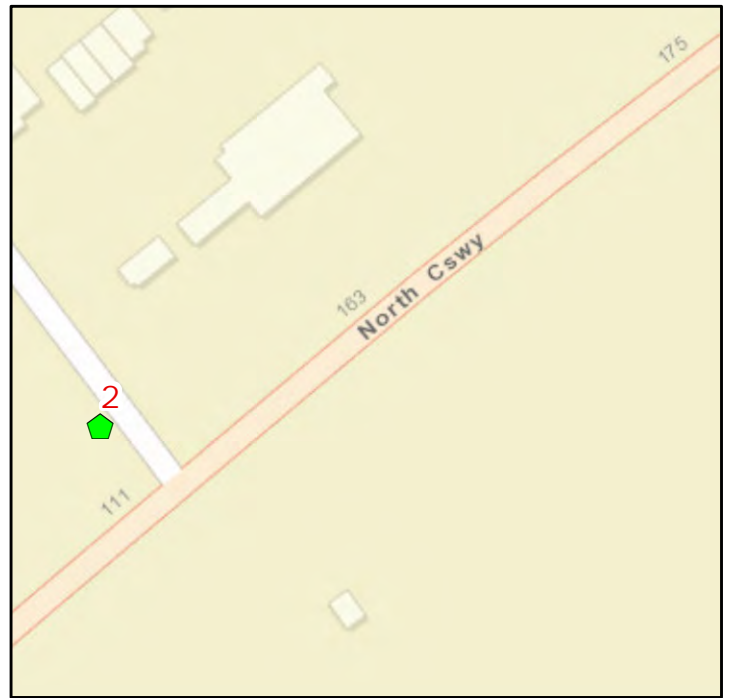
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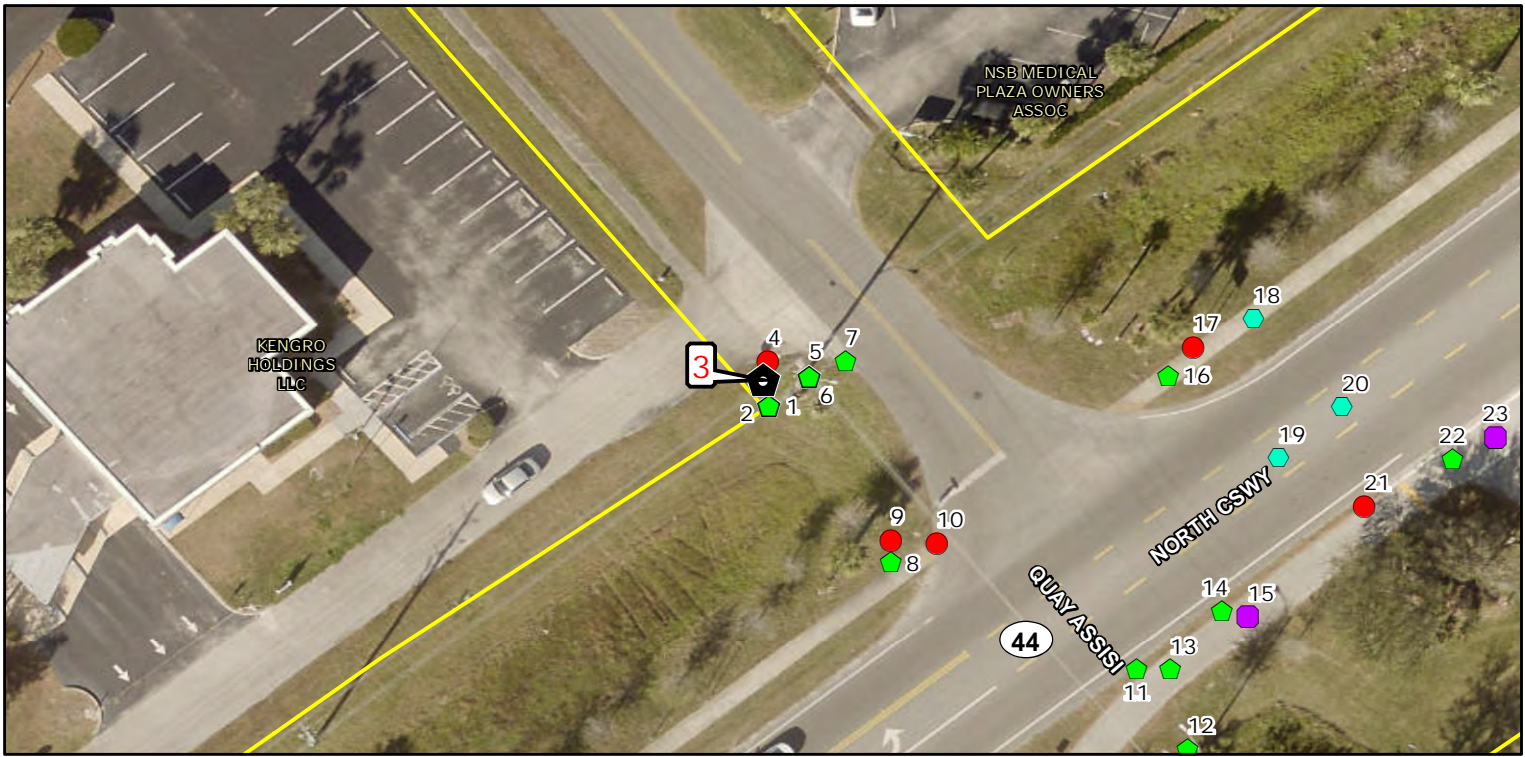
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● ADA - Safety	⬠ Lighting
★ Cultural	⬡ Traffic Control
■ User	⬢ Utilities





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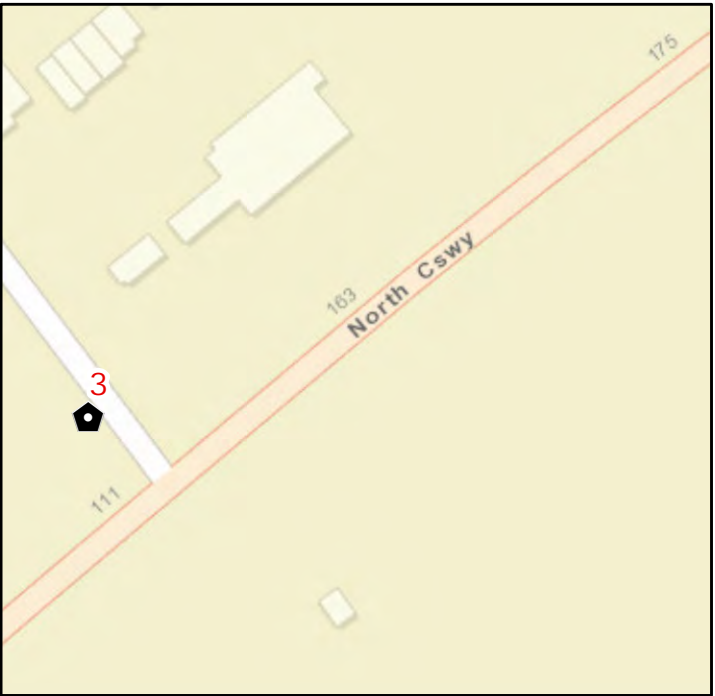
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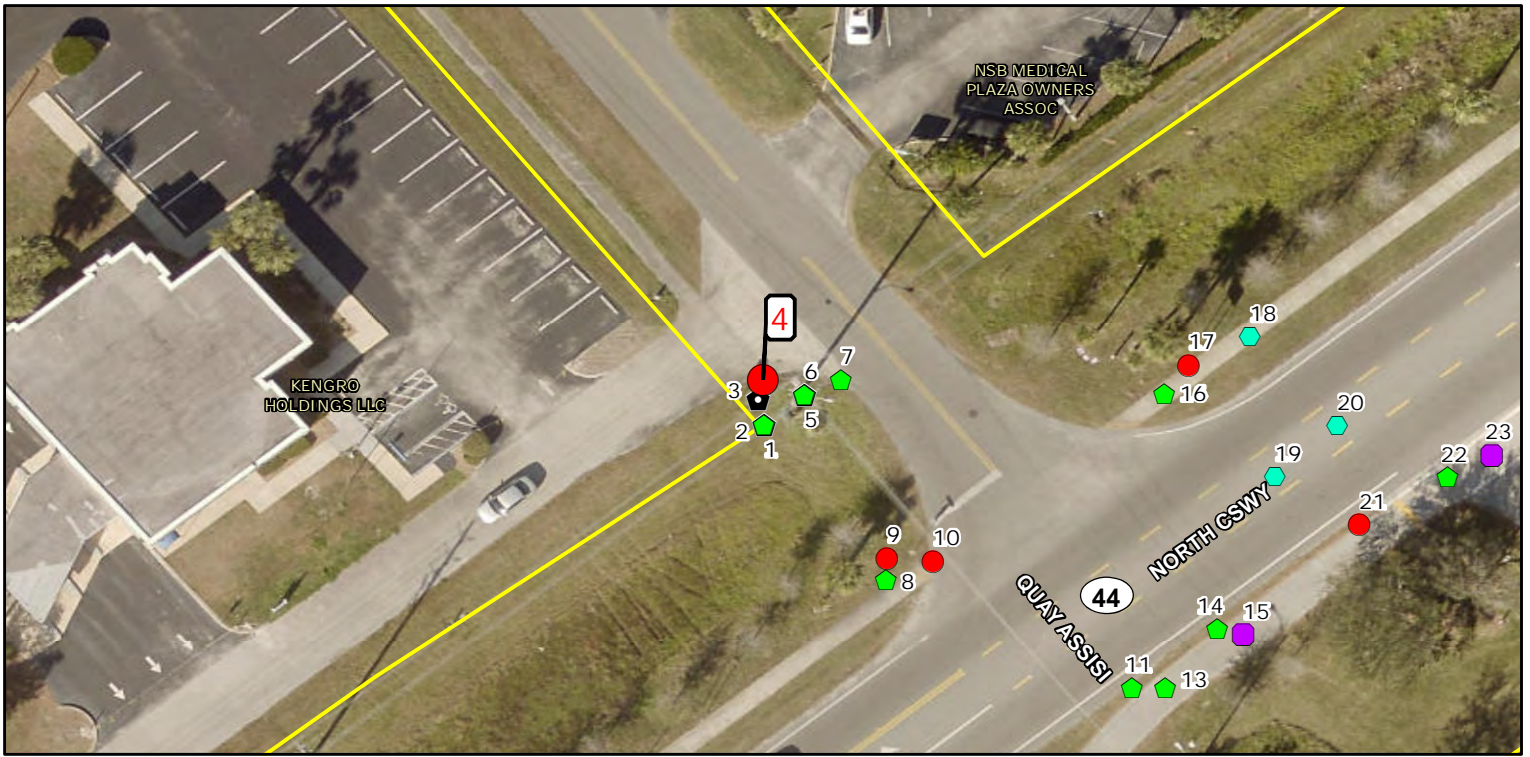
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● ADA - Safety	◆ Lighting
★ Cultural	◆ Traffic Control
◆ User	⬢ Utilities





Feature ID: 4

Feature Type: ADA - Safety

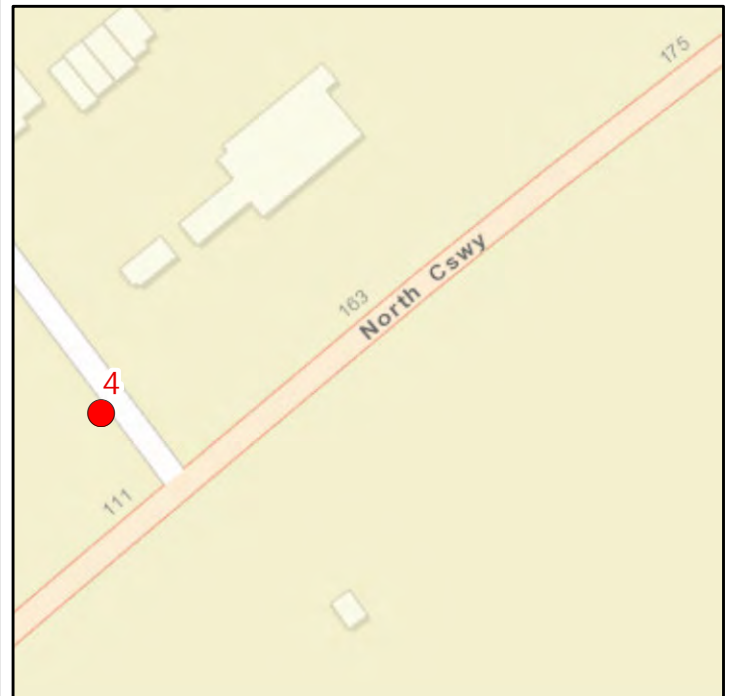
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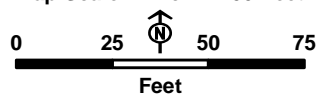
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- | | |
|---|---|
| ● ADA - Safety | ◆ Lighting |
| ★ Cultural | ◆ Traffic Control |
| ◆ User | ⬢ Utilities |

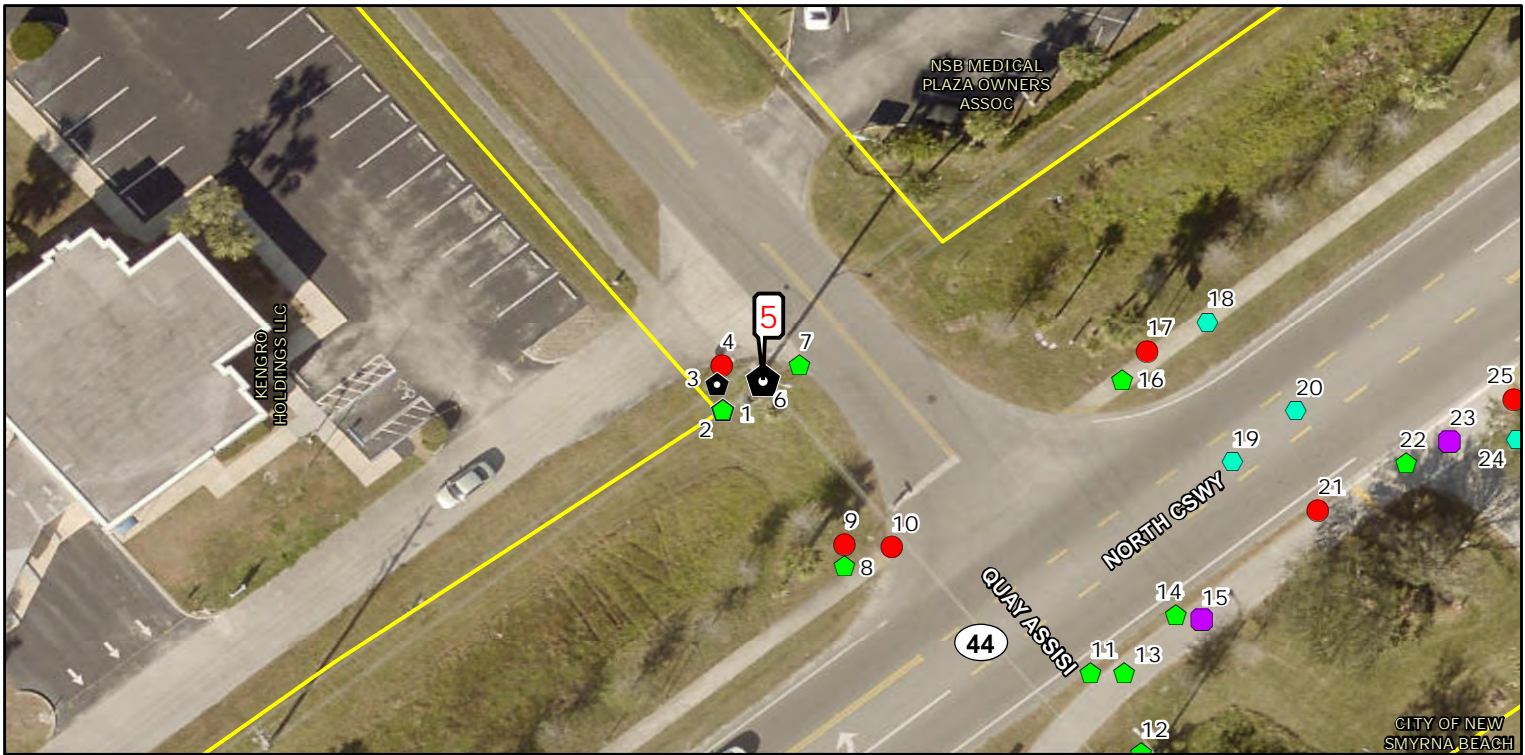


Map Scale: 1 Inch = 100 Feet



Field Observations

**River to Sea TPO
North Causeway Sidewalk Feasibility Study**



Feature ID: 5

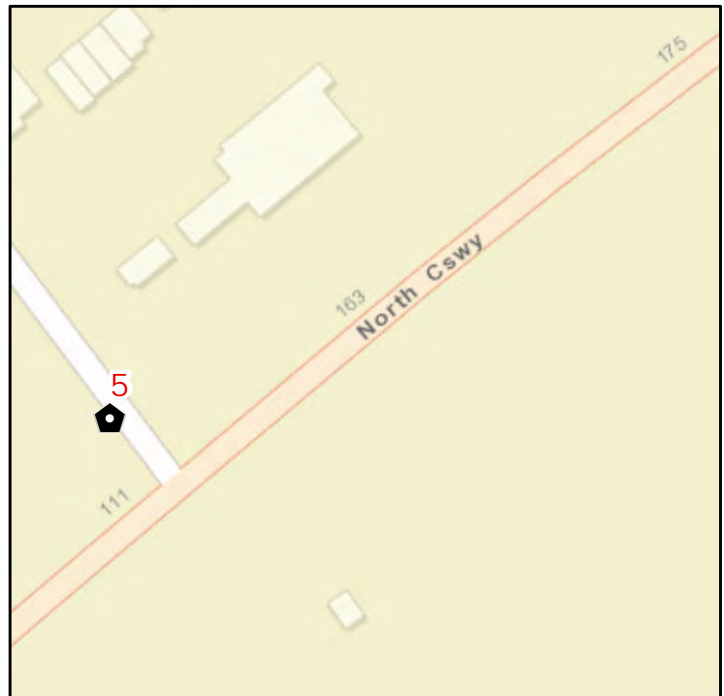
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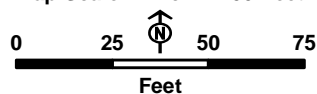
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● ADA - Safety	⬠ Lighting
★ Cultural	⬠ Traffic Control
⬠ User	⬠ Utilities

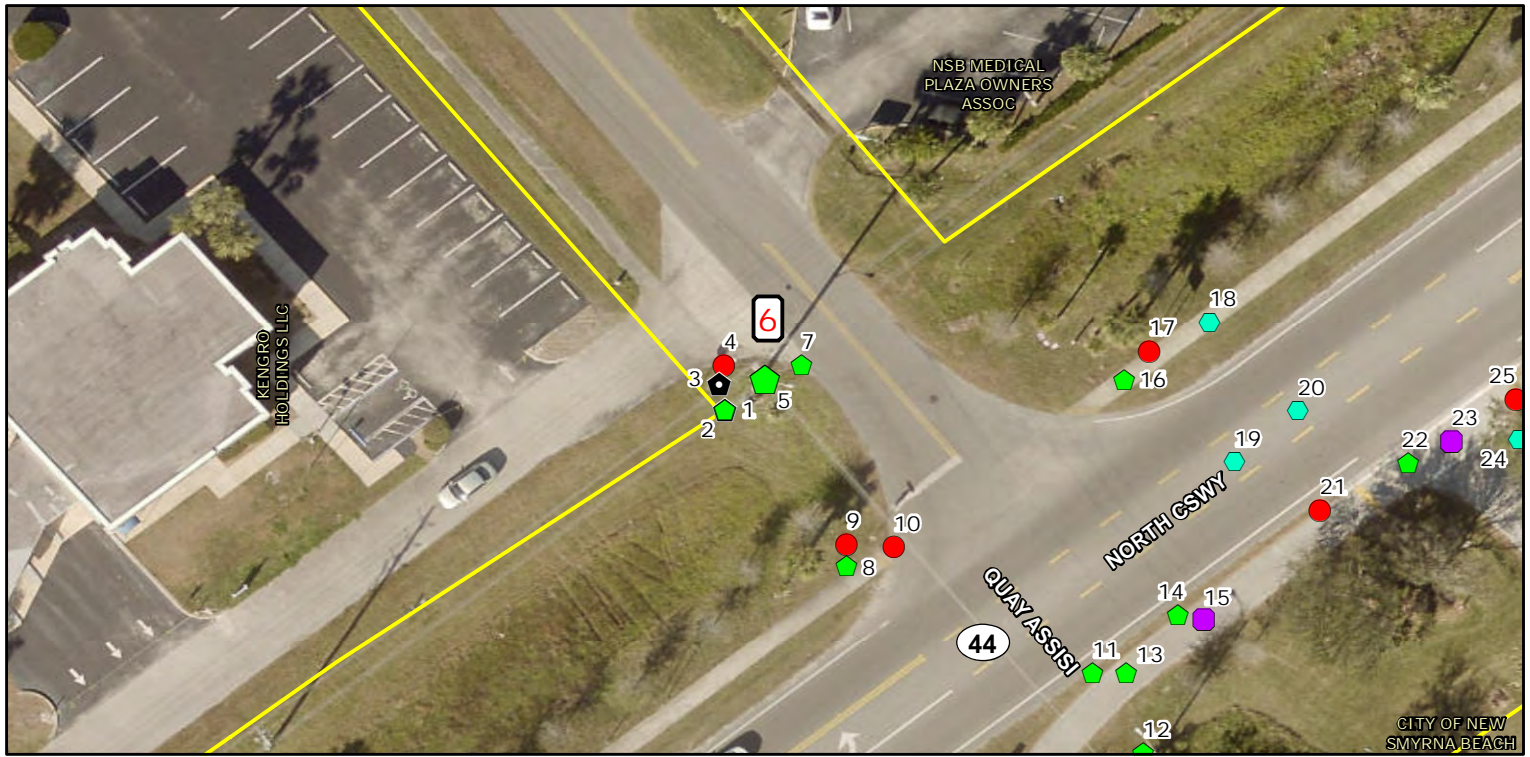


Map Scale: 1 Inch = 100 Feet



Field Observations

River to Sea TPO
North Causeway Sidewalk Feasibility Study



Feature ID: 6

Feature Type: Lighting

Comment:

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Long: -80.919176

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● ADA - Safety

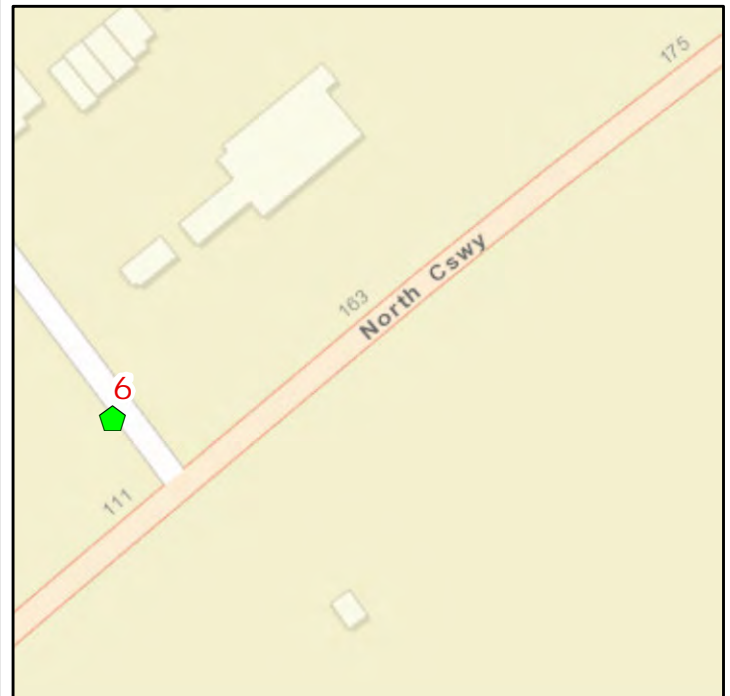
★ Cultural

● User

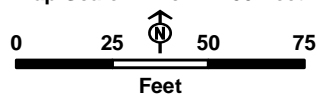
● Lighting

● Traffic Control

● Utilities



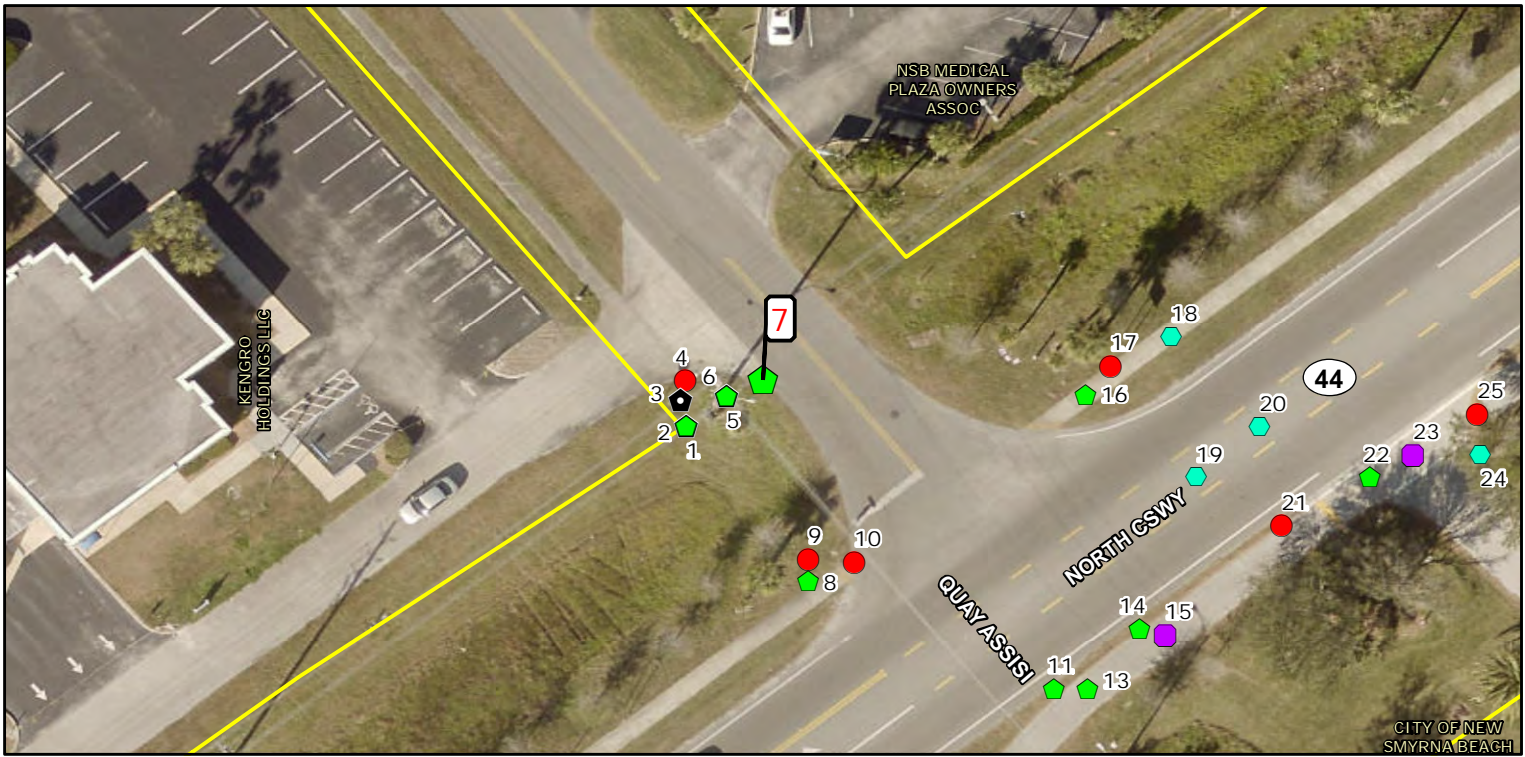
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Field Observations

River to Sea TPO

North Causeway Sidewalk Feasibility Study



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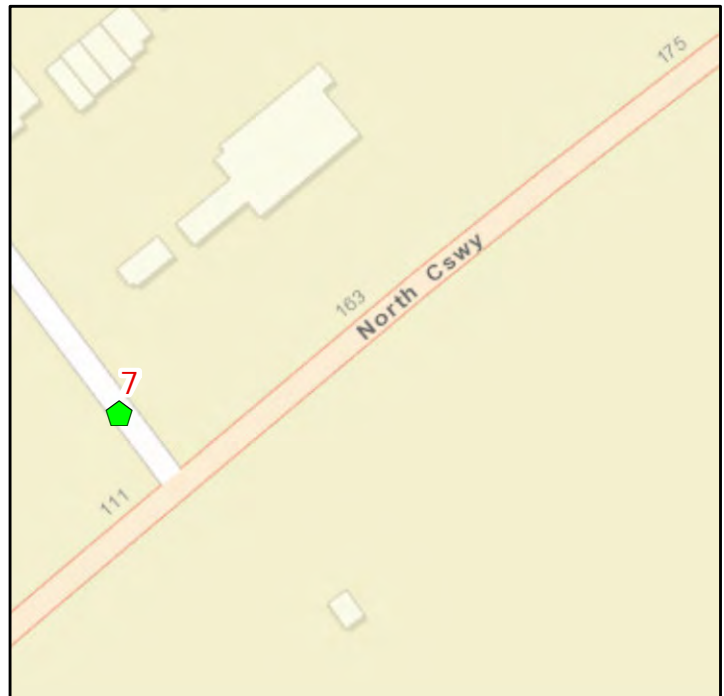
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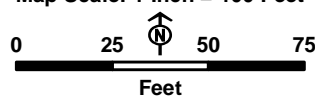
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● ADA - Safety	⬠ Lighting
★ Cultural	⬡ Traffic Control
■ User	⬠ Utilities

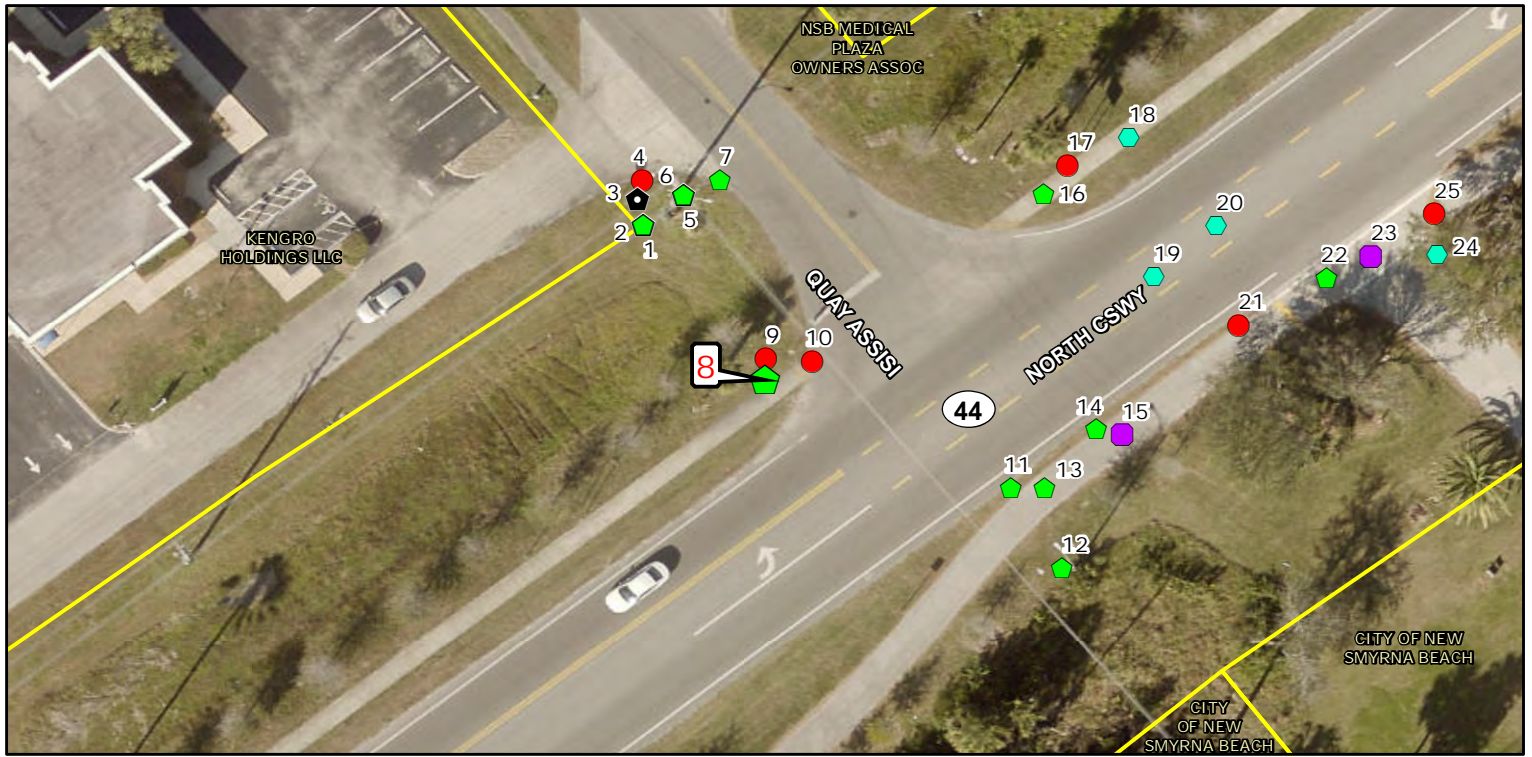


Map Scale: 1 Inch = 100 Feet



Field Observations

River to Sea TPO
North Causeway Sidewalk Feasibility Study



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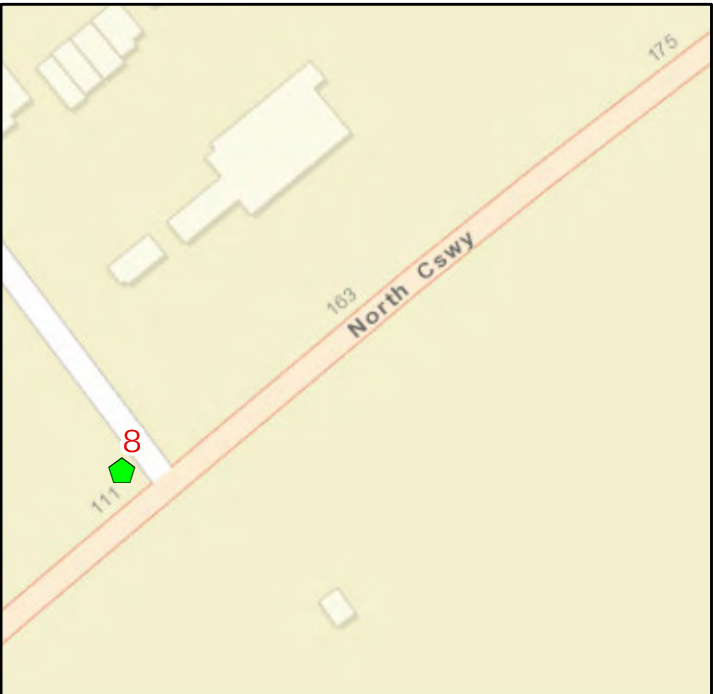
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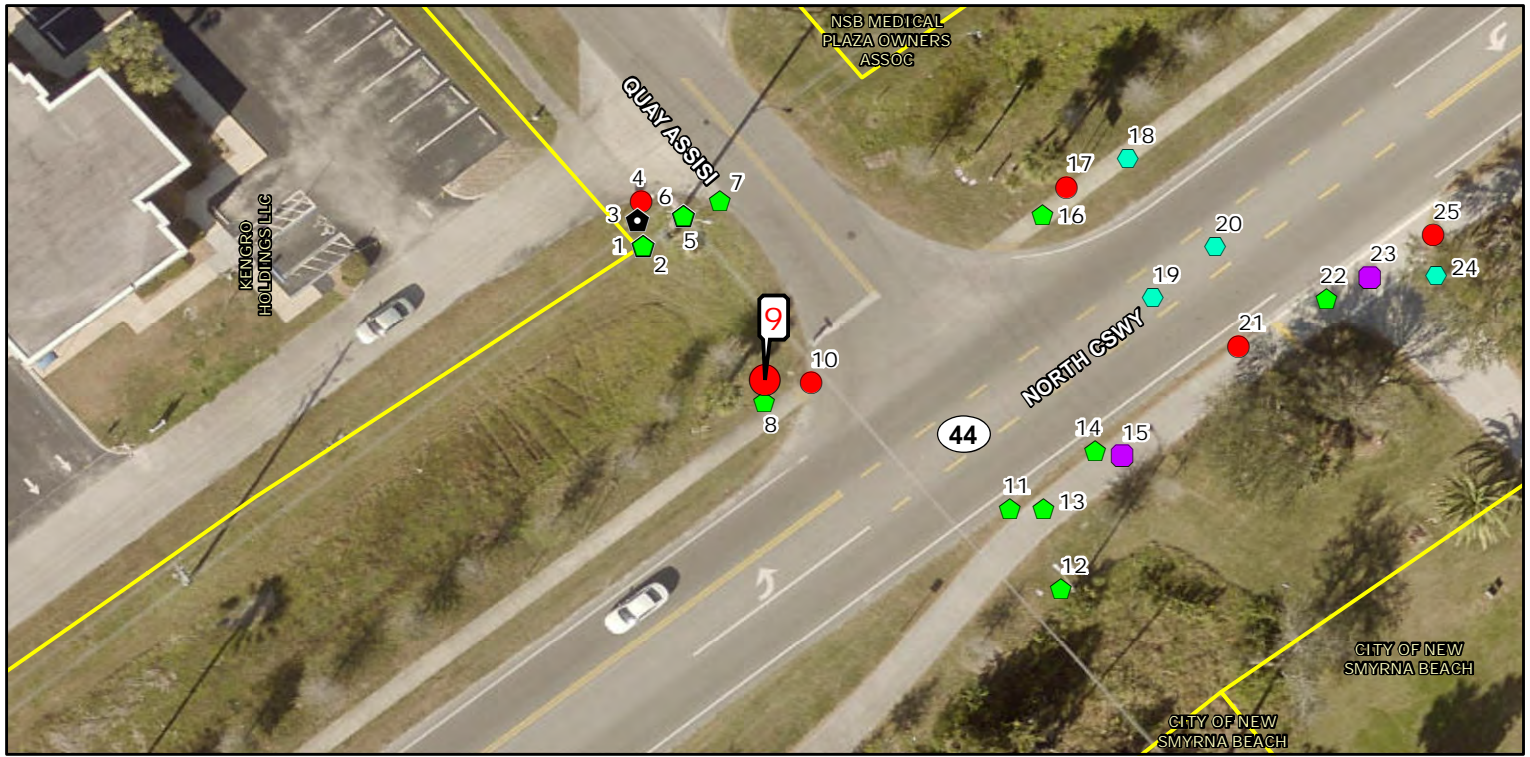
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● ADA - Safety	⬠ Lighting
★ Cultural	⬠ Traffic Control
⬠ User	⬠ Utilities





Feature ID: 9

Feature Type: ADA - Safety

Comment:

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● ADA - Safety

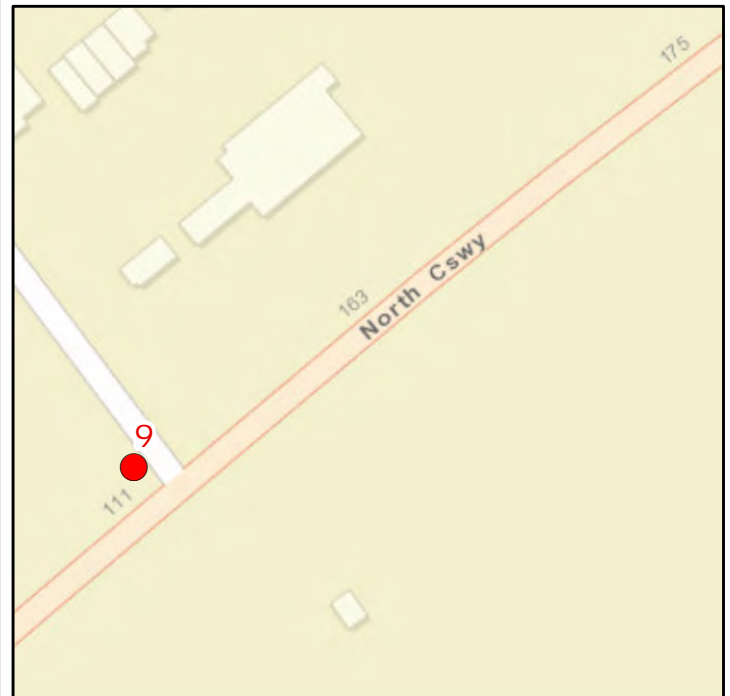
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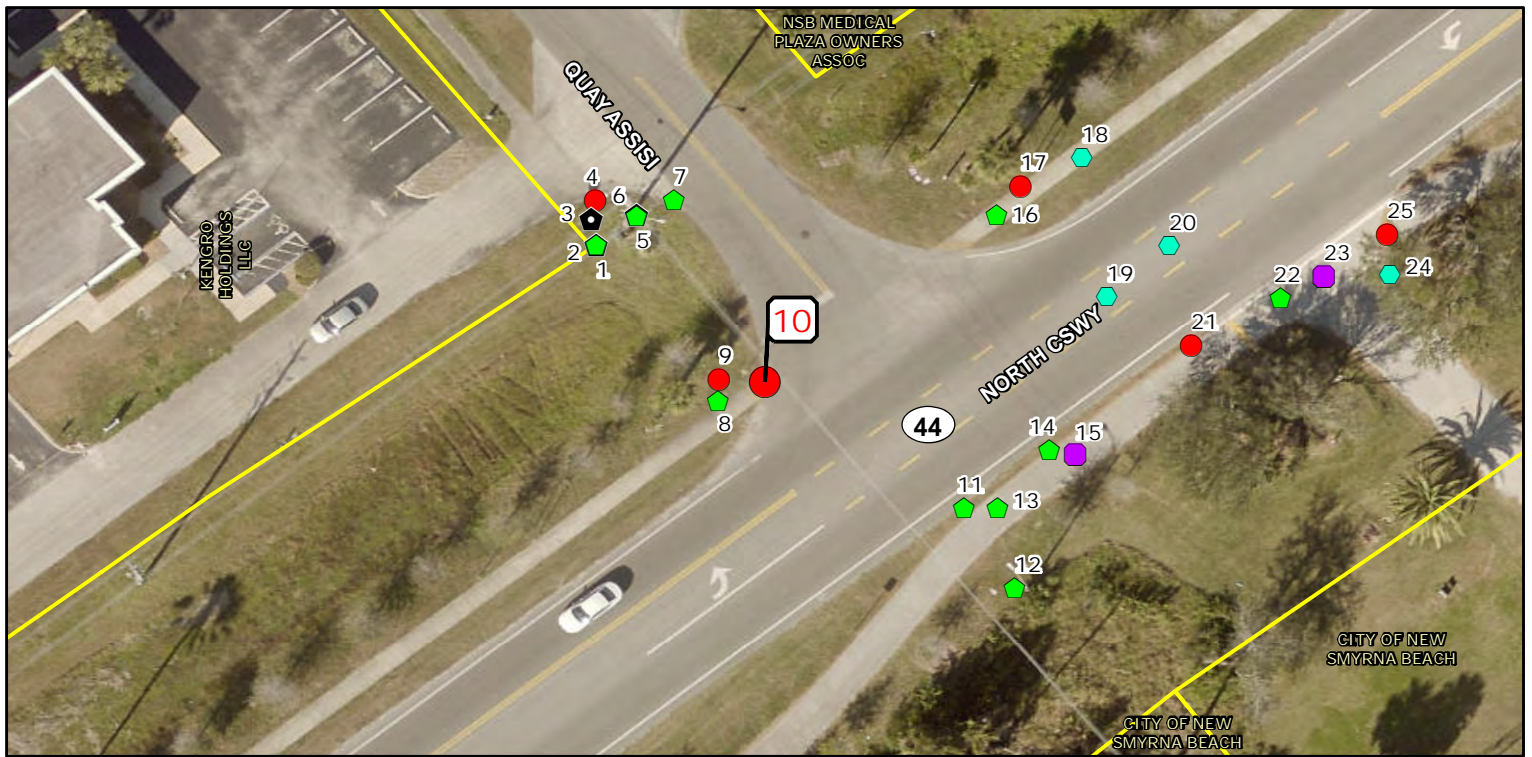
■ User

■ Lighting

■ Traffic Control

■ Utilities





Feature ID: 10

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● ADA - Safety

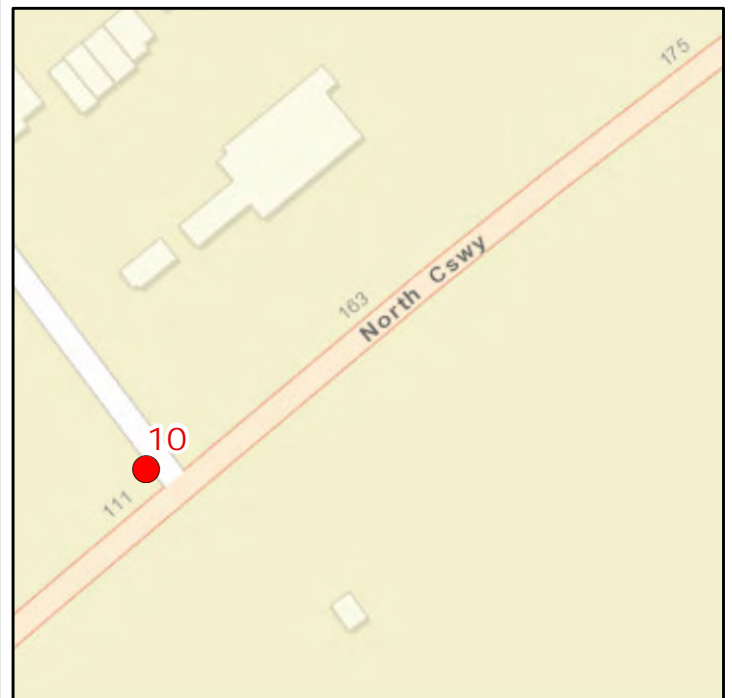
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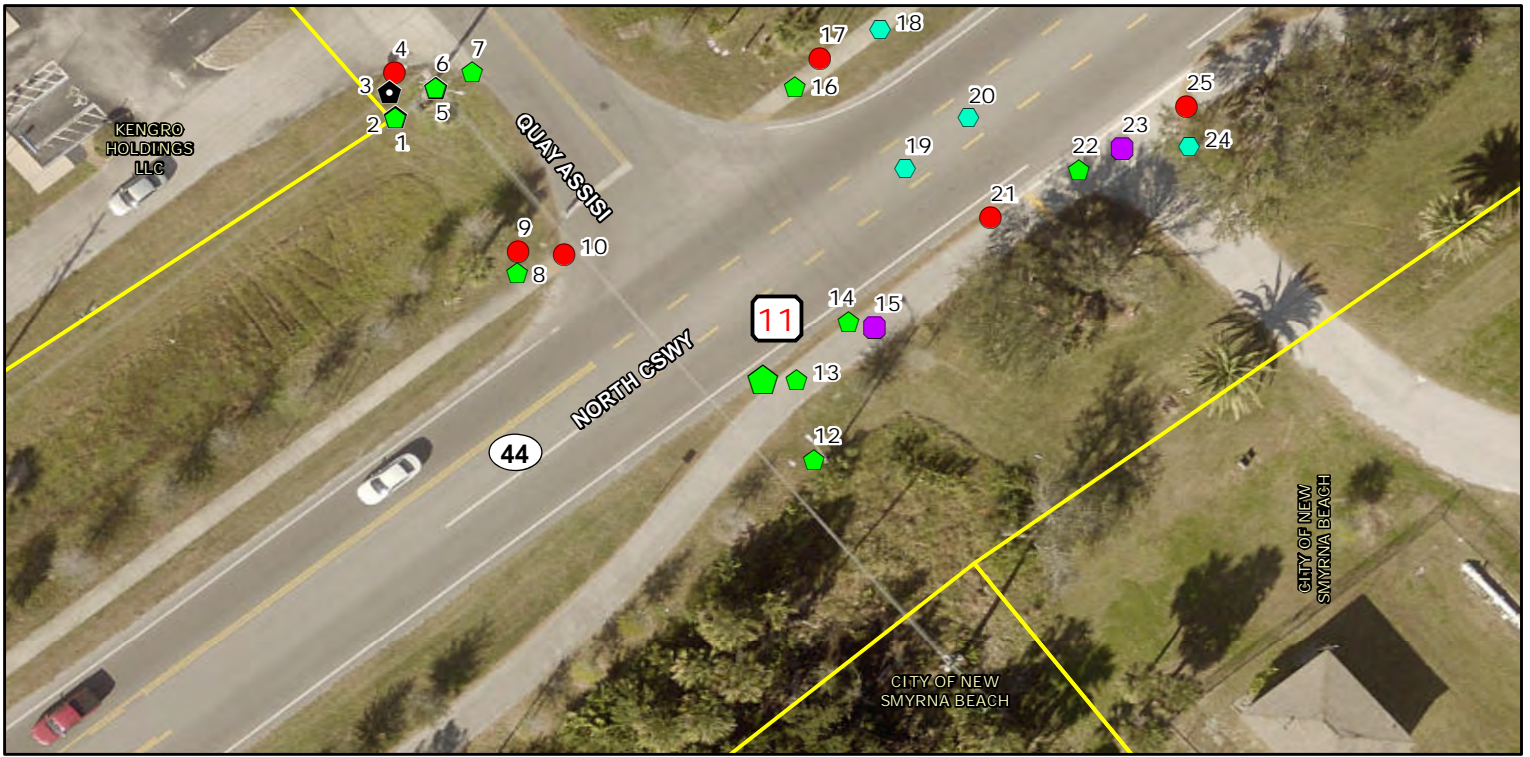
■ User

⬠ Lighting

⬡ Traffic Control

⬢ Utilities





Feature ID: 11

Feature Type: Lighting

Comment: Light pole looking north

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Long: -80.918943

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● ADA - Safety

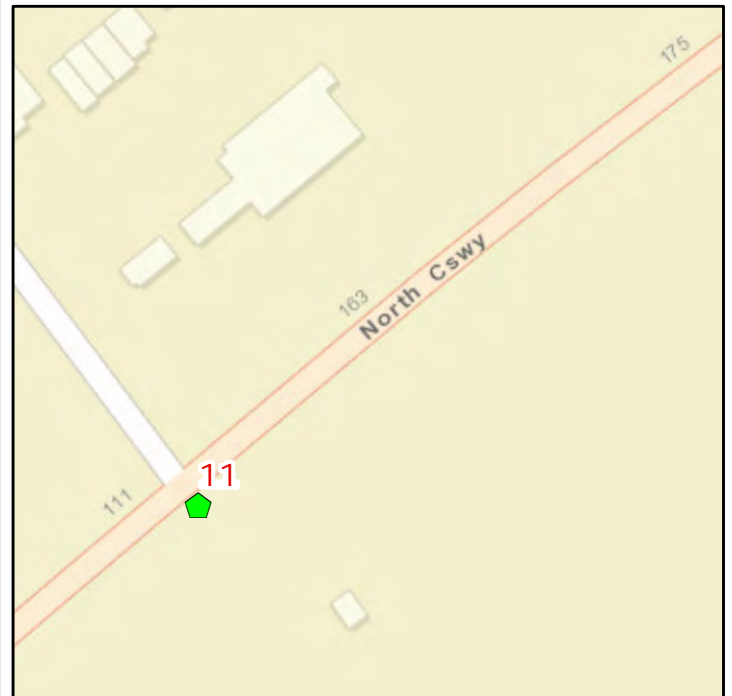
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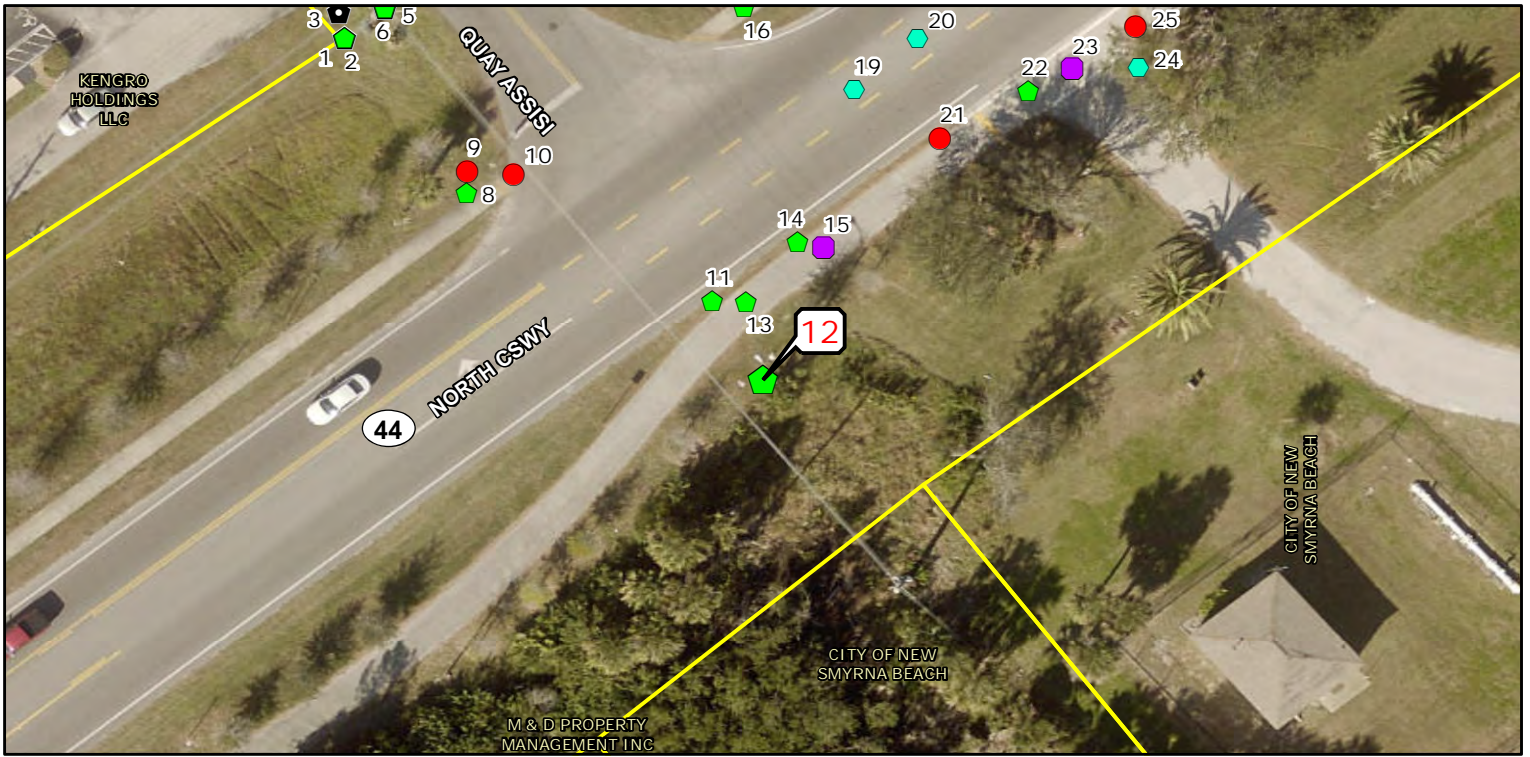
■ User

■ Lighting

■ Traffic Control

■ Utilities





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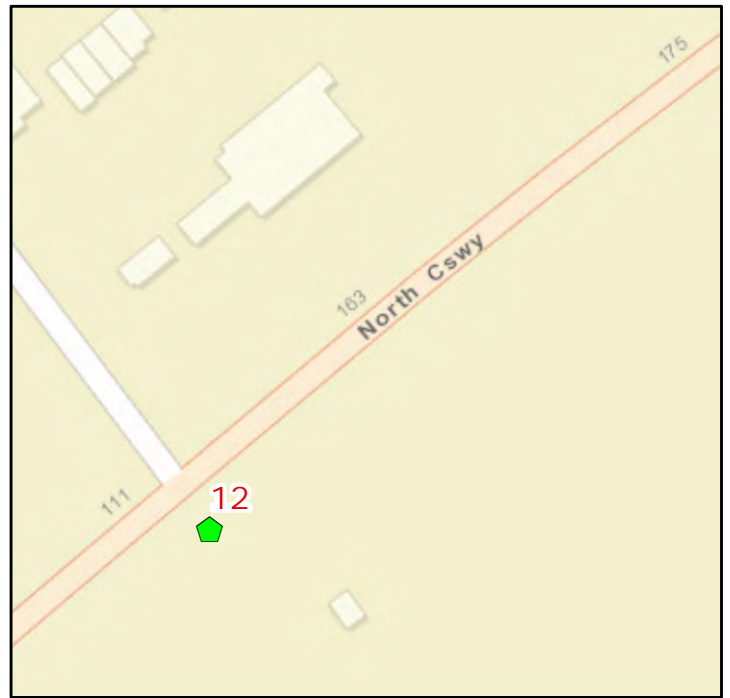
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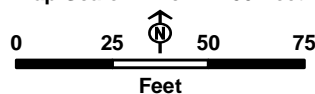
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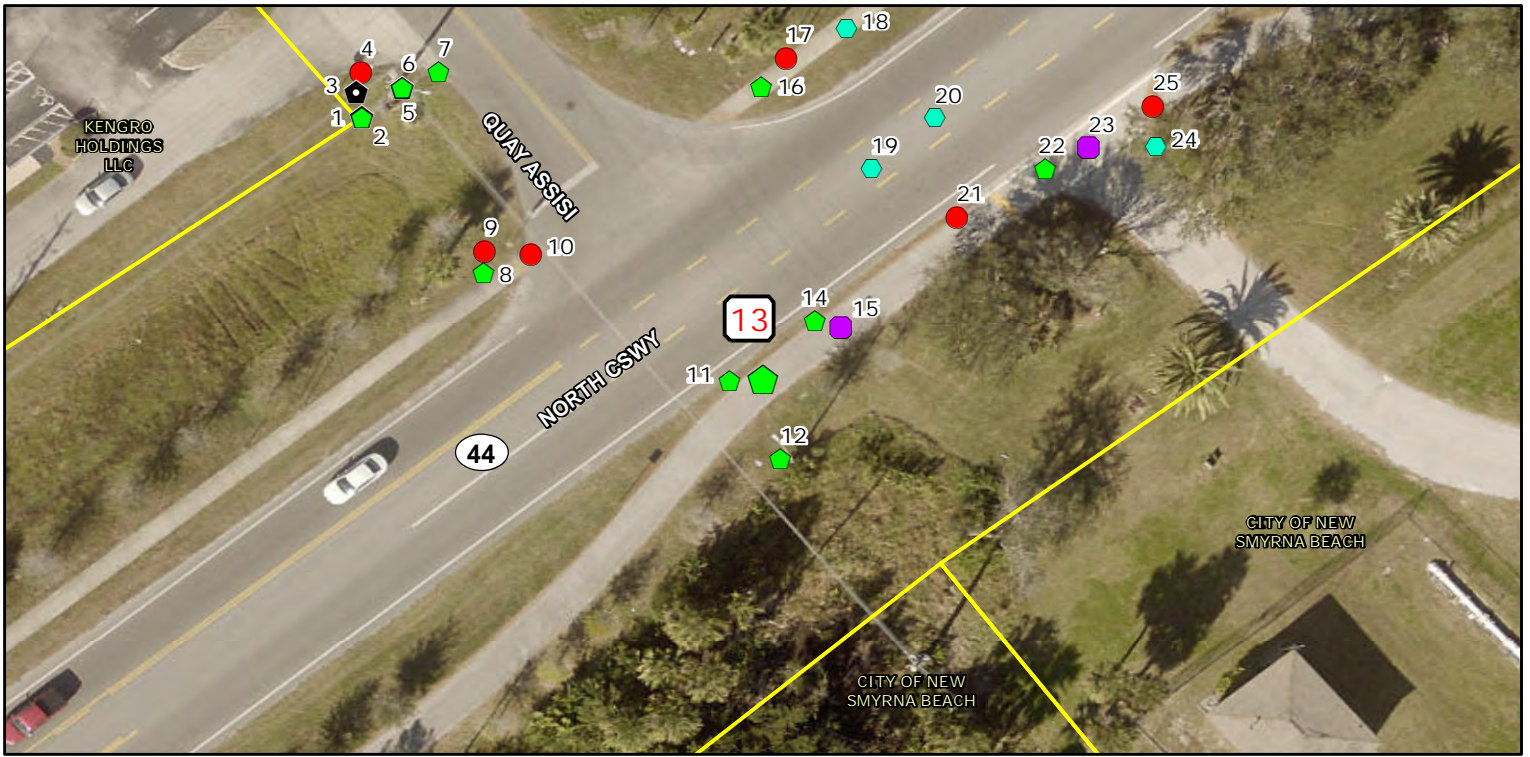
● ADA - Safety	● Lighting
★ Cultural	● Traffic Control
● User	● Utilities



Map Scale: 1 Inch = 100 Feet



Field Observations
River to Sea TPO
North Causeway Sidewalk Feasibility Study



Feature ID: 13

Feature Type: Lighting

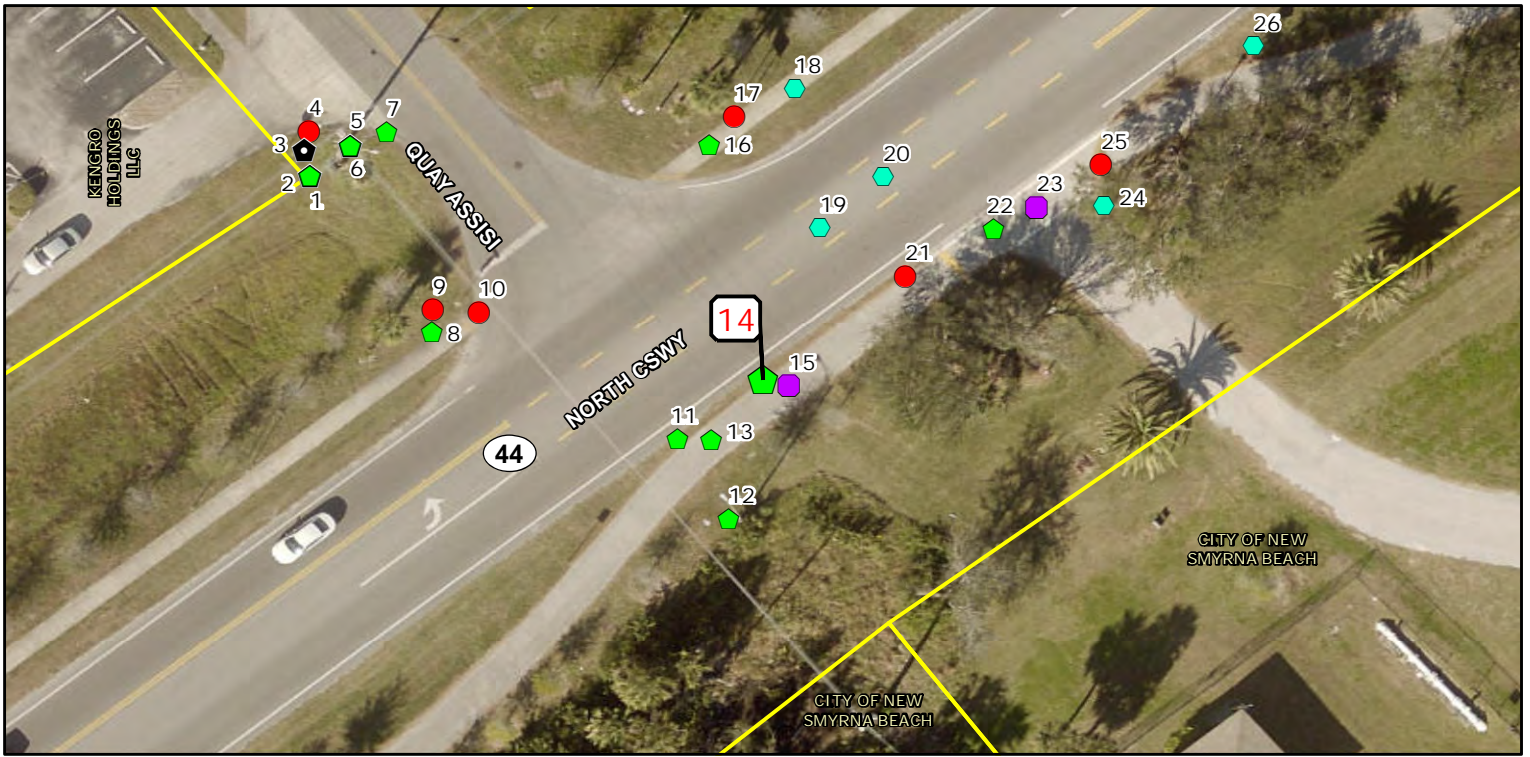
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● ADA - Safety	⬠ Lighting
★ Cultural	⬡ Traffic Control
⬢ User	⬠ Utilities





Feature ID: 14

Feature Type: Lighting

Comment: North at prop crosswalk

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● ADA - Safety

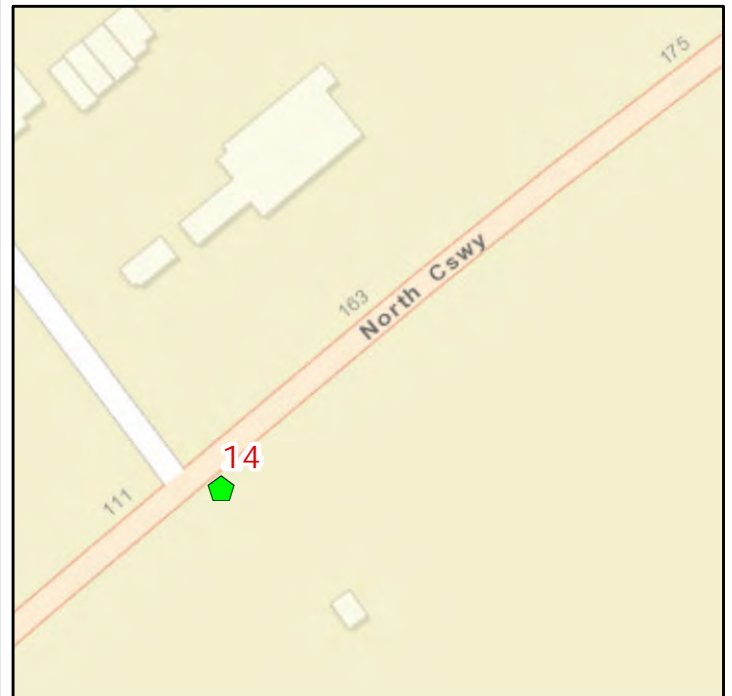
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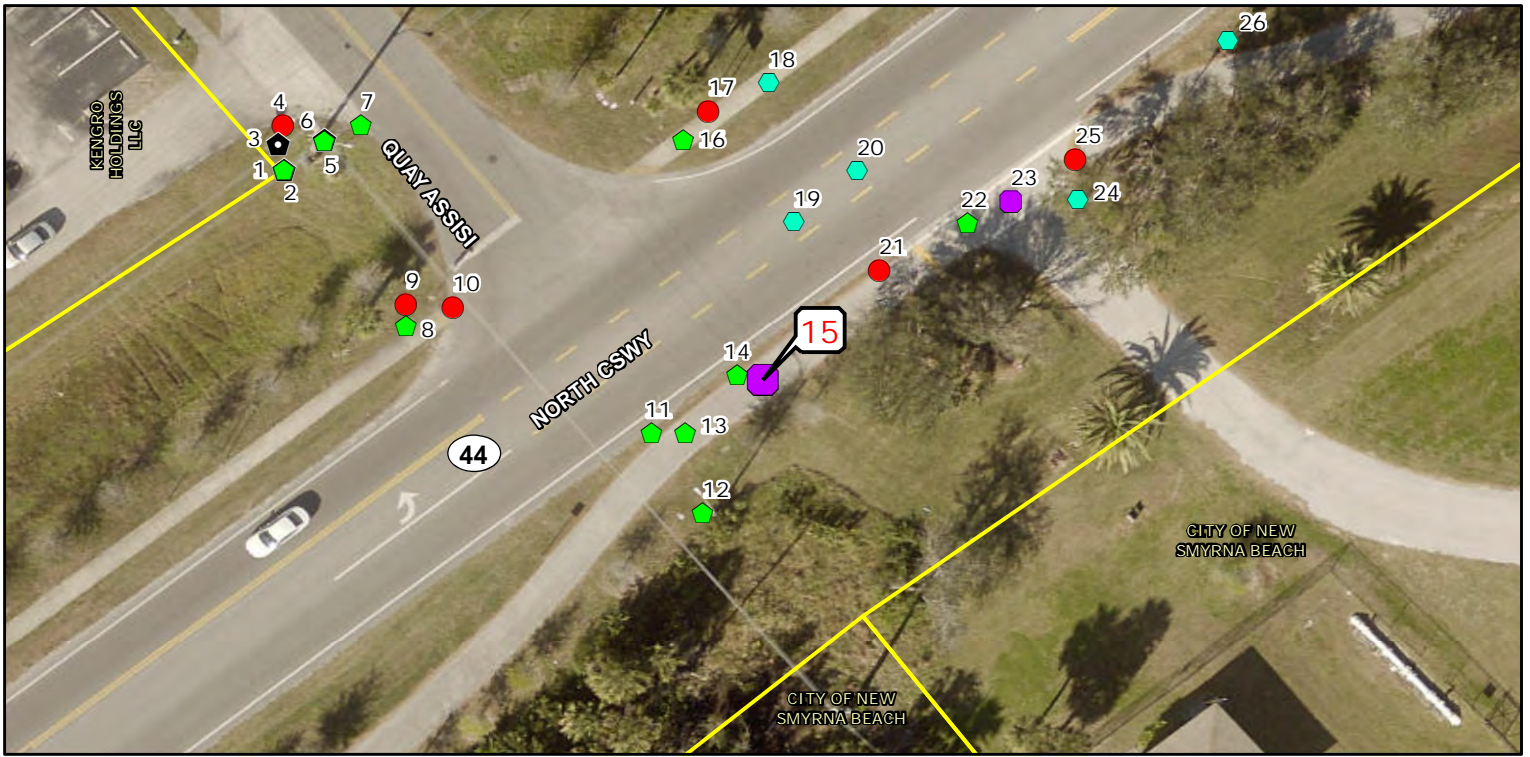
■ User

■ Lighting

■ Traffic Control

■ Utilities





Feature ID: 15

Feature Type: User

Comment:

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● ADA - Safety

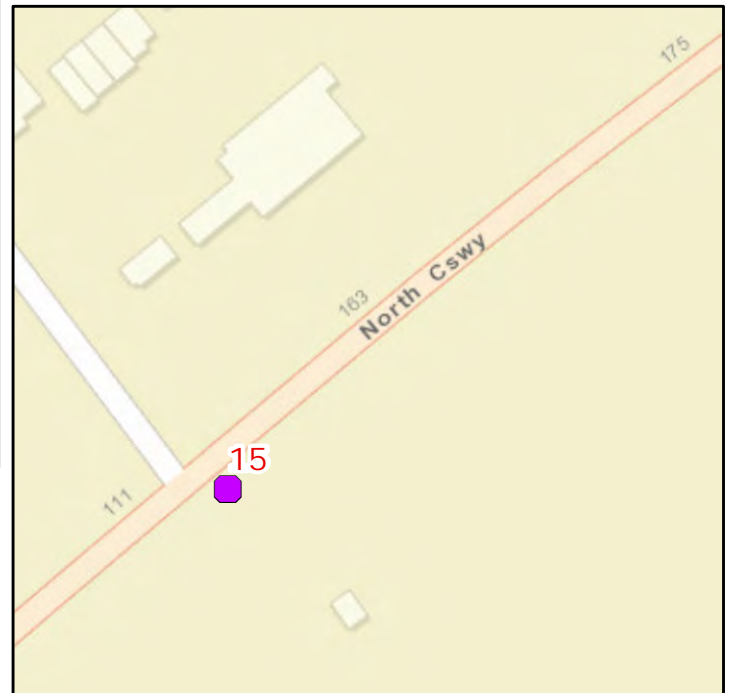
★ Cultural

■ User

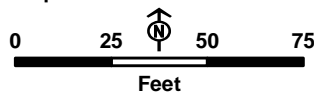
■ Lighting

■ Traffic Control

■ Utilities

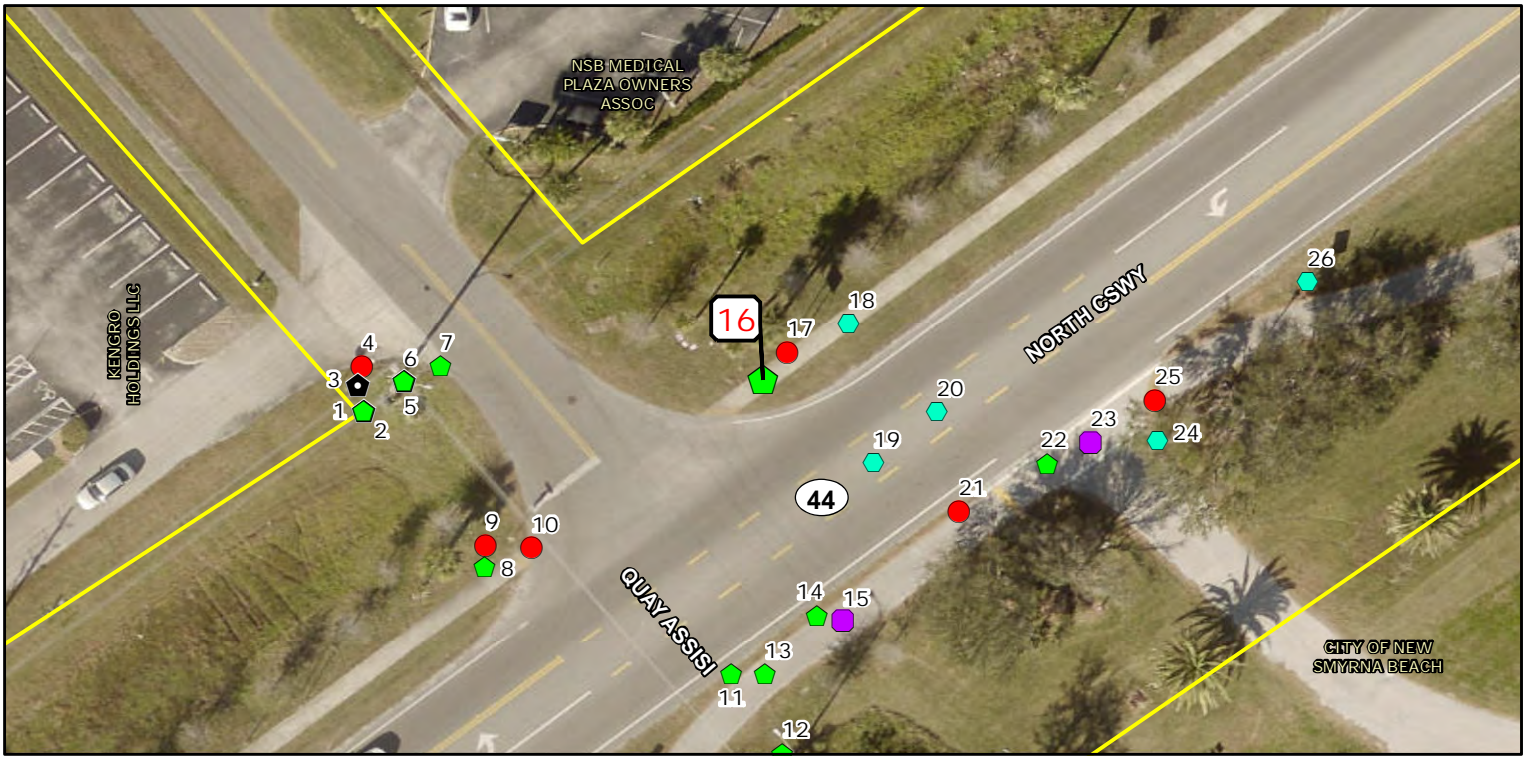


Map Scale: 1 Inch = 100 Feet



Field Observations

**River to Sea TPO
North Causeway Sidewalk Feasibility Study**



Feature ID: 16

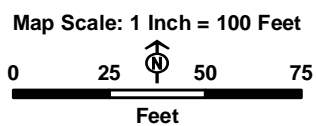
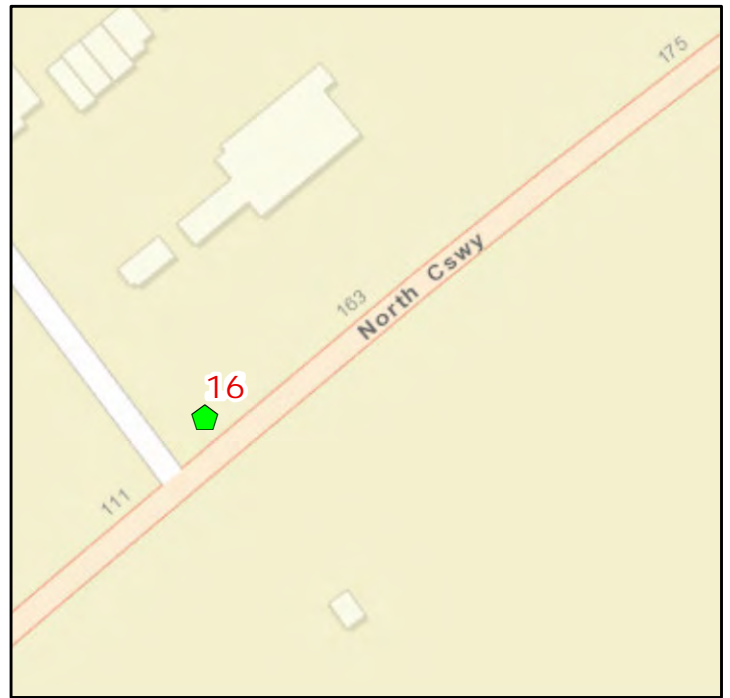
Feature Type: Lighting

Comment:

Lat: 29.031097 **Long:** -80.91892

<http://maps.google.com/maps?q=29.0310968840001,-80.918919946>

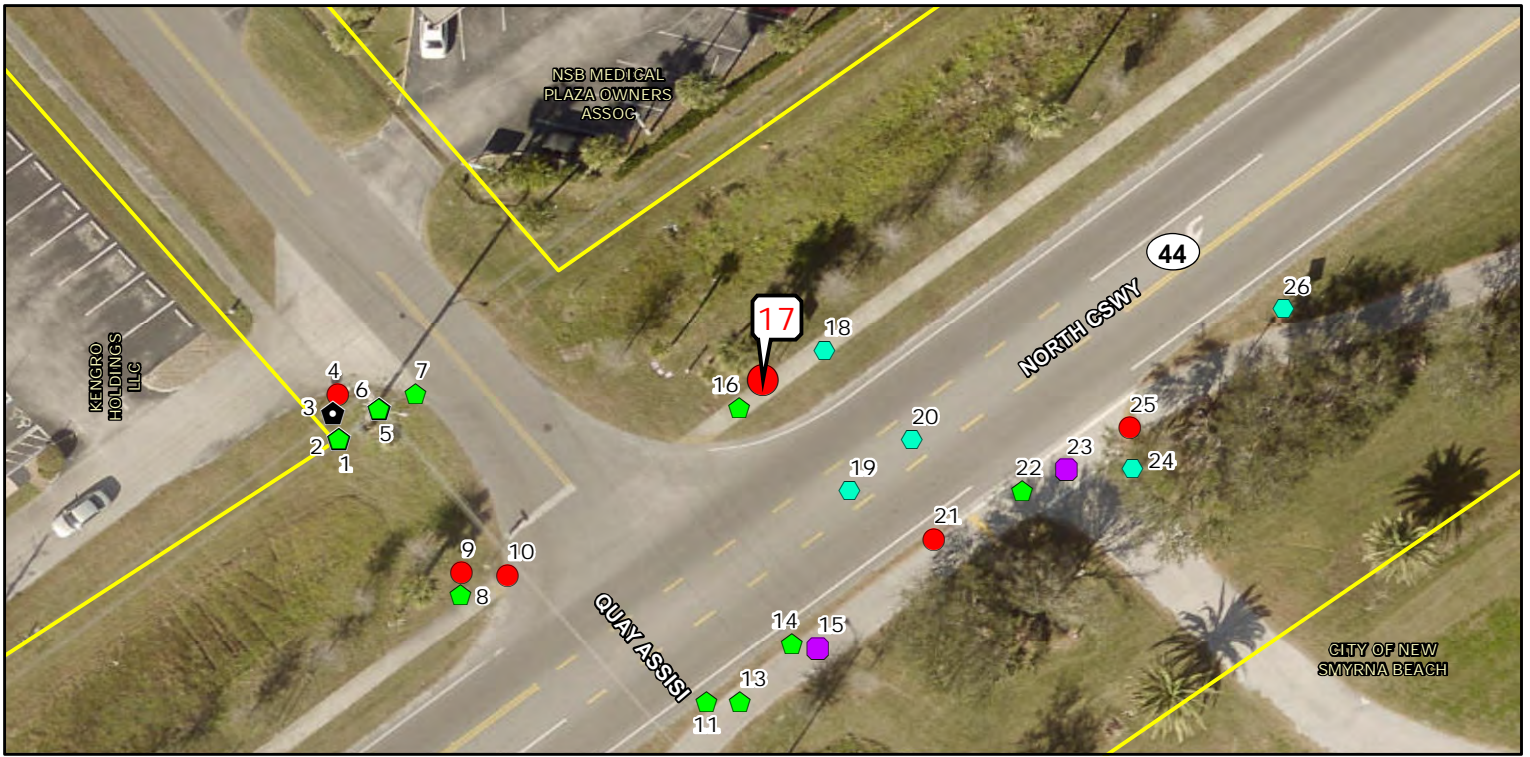
● ADA - Safety	⬠ Lighting
★ Cultural	⬡ Traffic Control
■ User	⬠ Utilities



Field Observations

River to Sea TPO

North Causeway Sidewalk Feasibility Study



Feature ID: 17

Feature Type: ADA - Safety

Comment:

Lat: 29.031117

Long: -80.918903

<http://maps.google.com/maps?q=29.031116528,-80.918902502>

● ADA - Safety

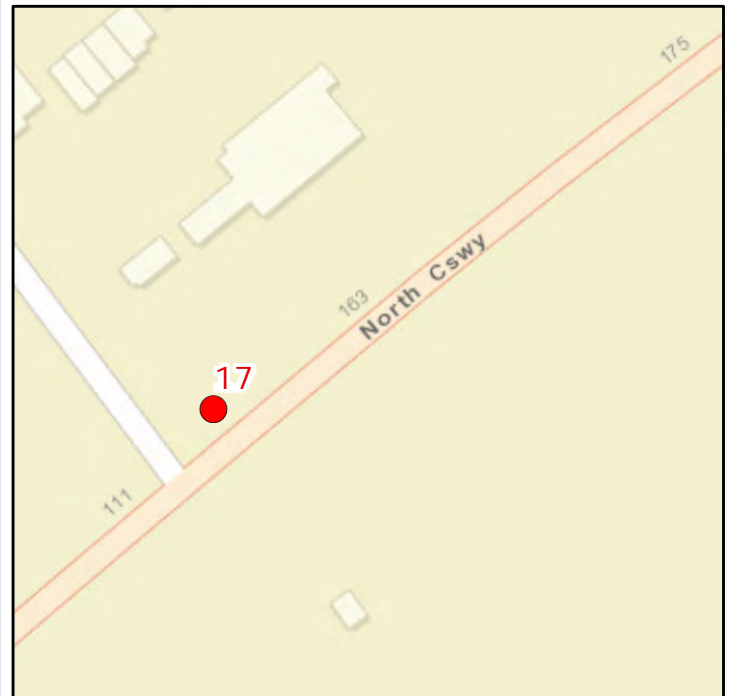
★ Cultural

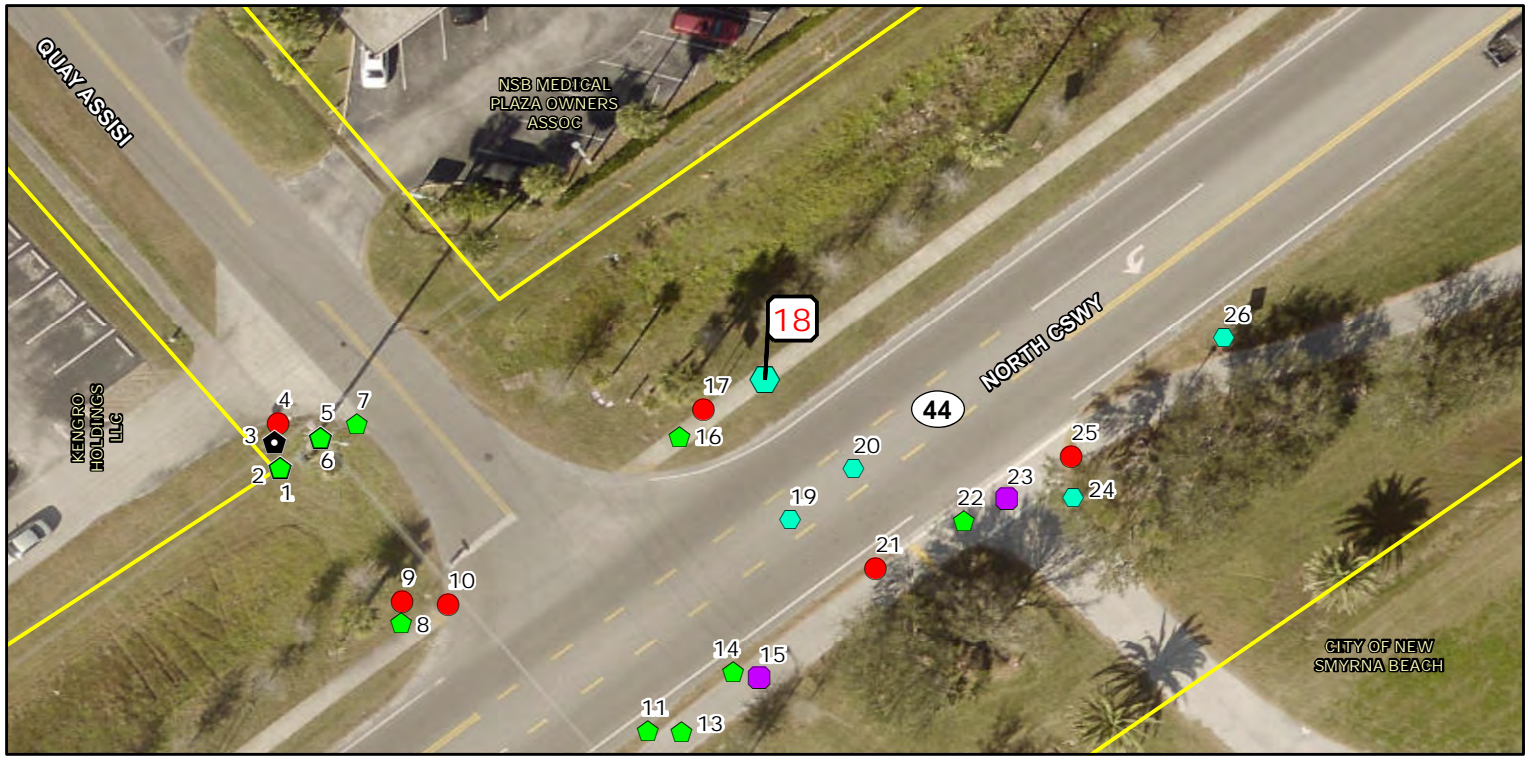
■ User

⬠ Lighting

⬡ Traffic Control

⬢ Utilities





Feature ID: 18

Feature Type: Traffic Control

Comment:

Lat: 29.031137

Long: -80.918859

<http://maps.google.com/maps?q=29.0311374790001,-80.918858916>

● ADA - Safety

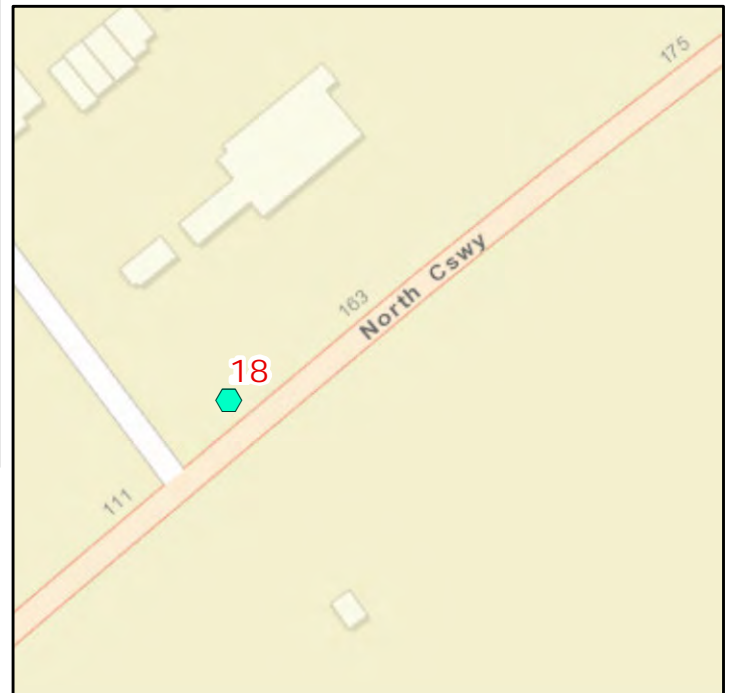
★ Cultural

■ User

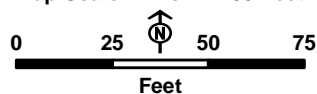
⬠ Lighting

⬡ Traffic Control

⬢ Utilities



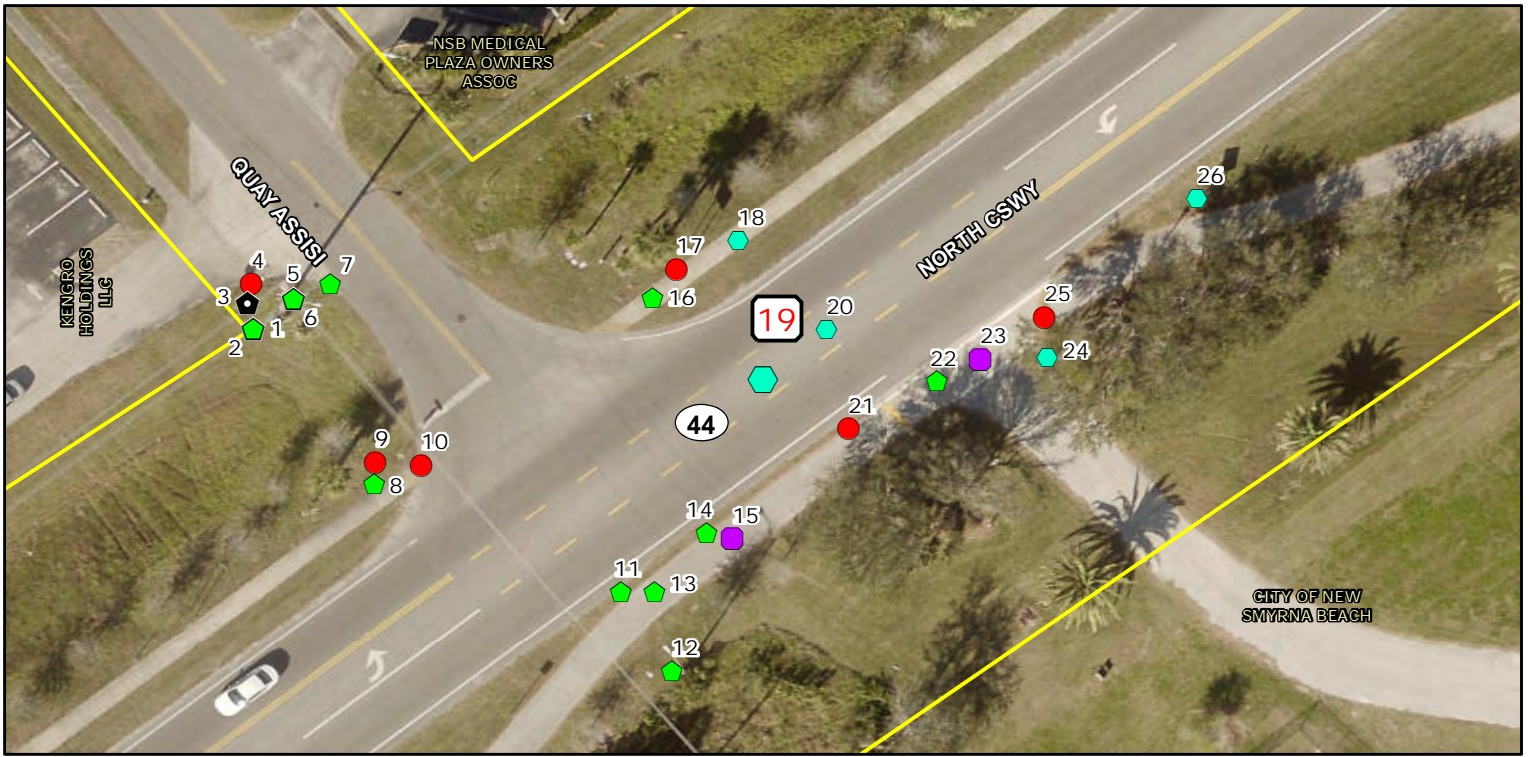
Map Scale: 1 Inch = 100 Feet



Field Observations

River to Sea TPO

North Causeway Sidewalk Feasibility Study



Feature ID: 19

Feature Type: Traffic Control

Comment:

Lat: 29.031038

Long: -80.918841

<http://maps.google.com/maps?q=29.031037815,-80.9188411069999>

● ADA - Safety

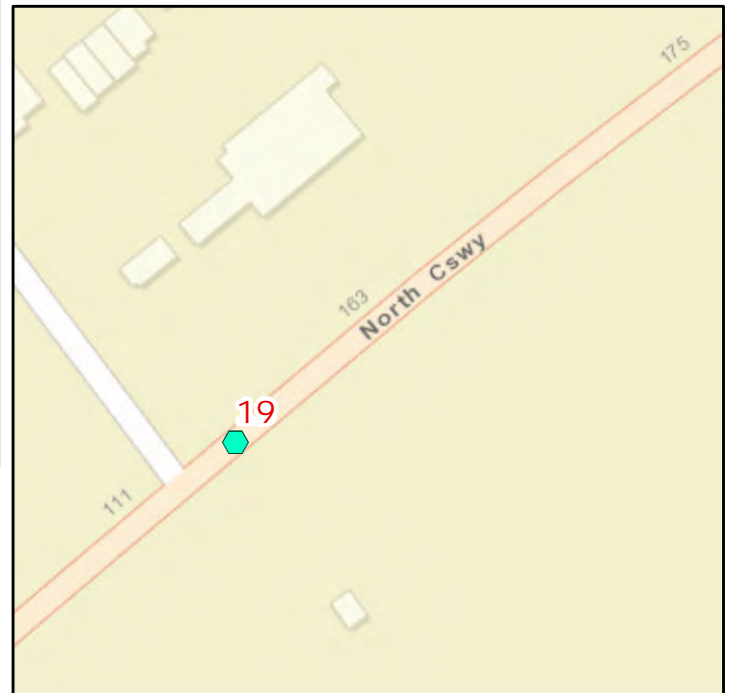
★ Cultural

■ User

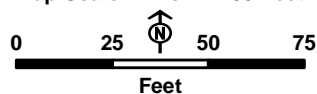
⬠ Lighting

⬡ Traffic Control

⬢ Utilities

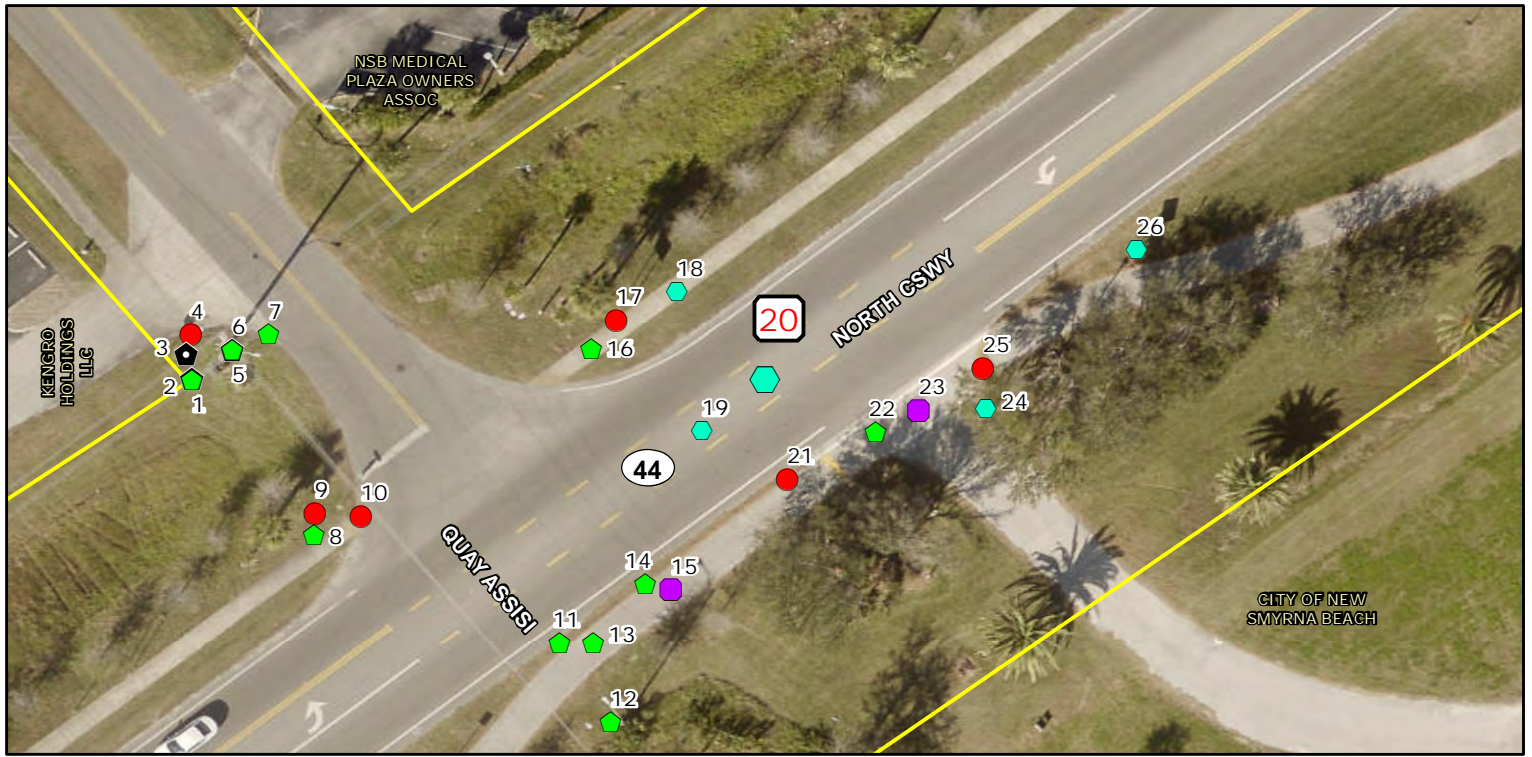


Map Scale: 1 Inch = 100 Feet



Field Observations

**River to Sea TPO
North Causeway Sidewalk Feasibility Study**



Feature ID: 20

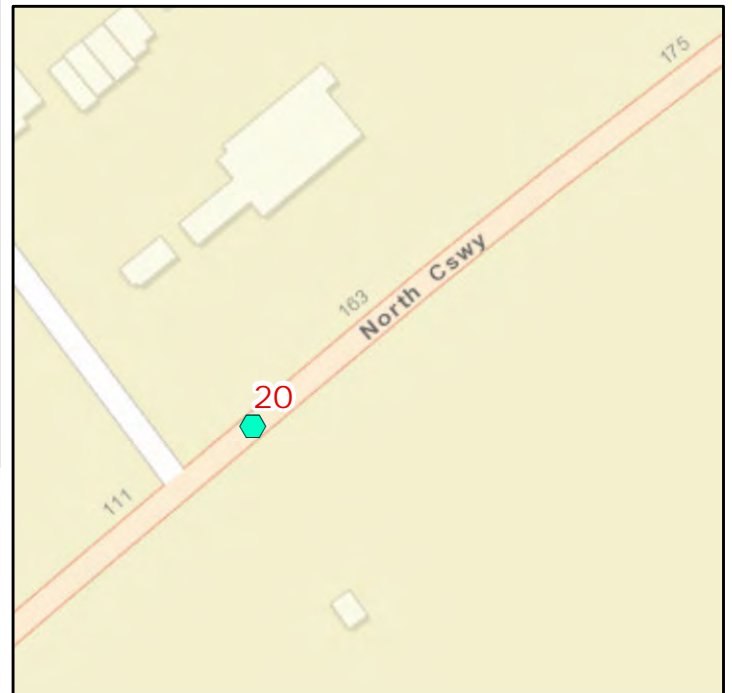
Feature Type: Traffic Control

Comment:

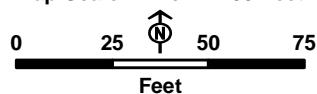
Lat: 29.031074 **Long:** -80.918796

<http://maps.google.com/maps?q=29.0310741660001,-80.91879618>

- | | |
|---|---|
| ● ADA - Safety | ⬠ Lighting |
| ★ Cultural | ⬡ Traffic Control |
| ■ User | ⬠ Utilities |

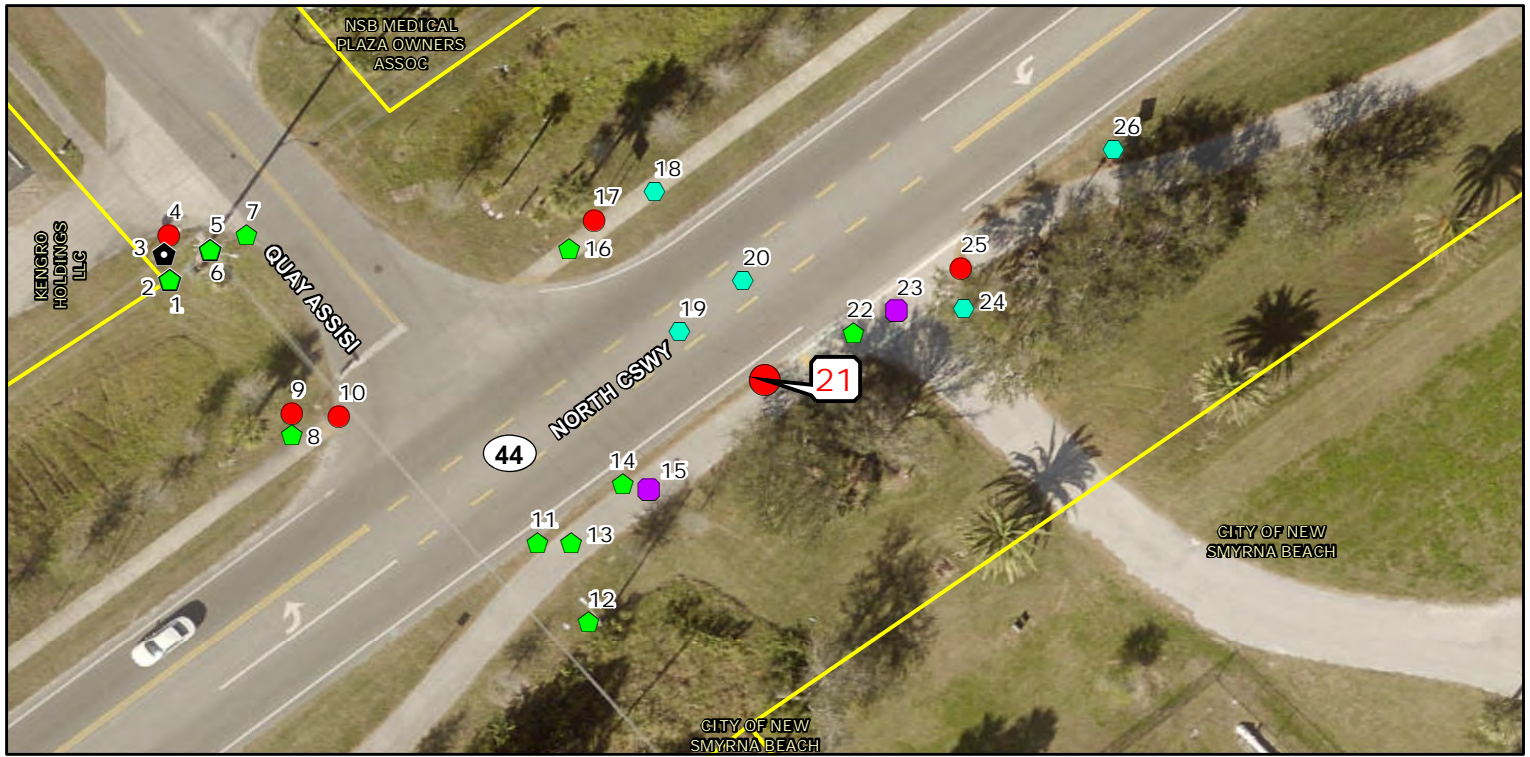


Map Scale: 1 Inch = 100 Feet



Field Observations

**River to Sea TPO
North Causeway Sidewalk Feasibility Study**



Feature ID: 21

Feature Type: ADA - Safety

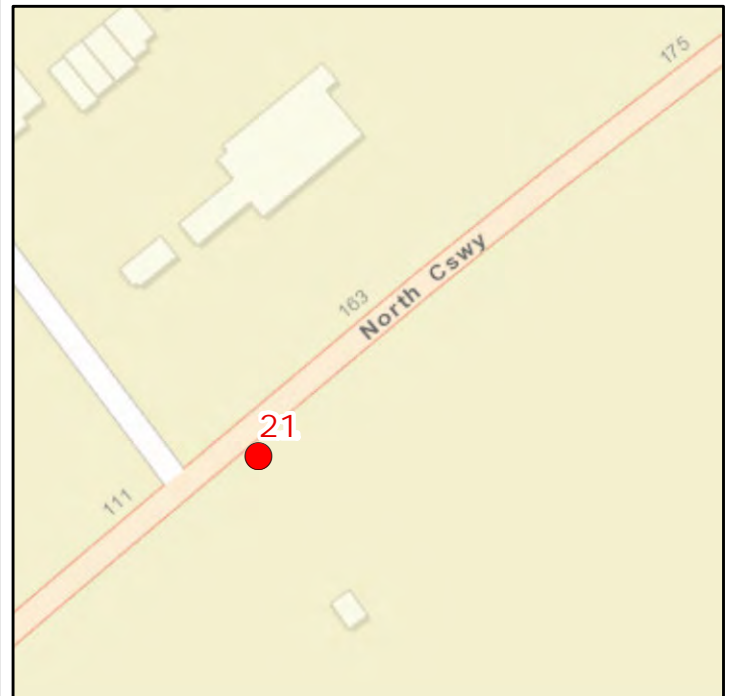
Comment:

Lat: 29.031003

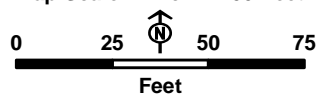
Long: -80.91878

<http://maps.google.com/maps?q=29.031002927,-80.9187803139999>

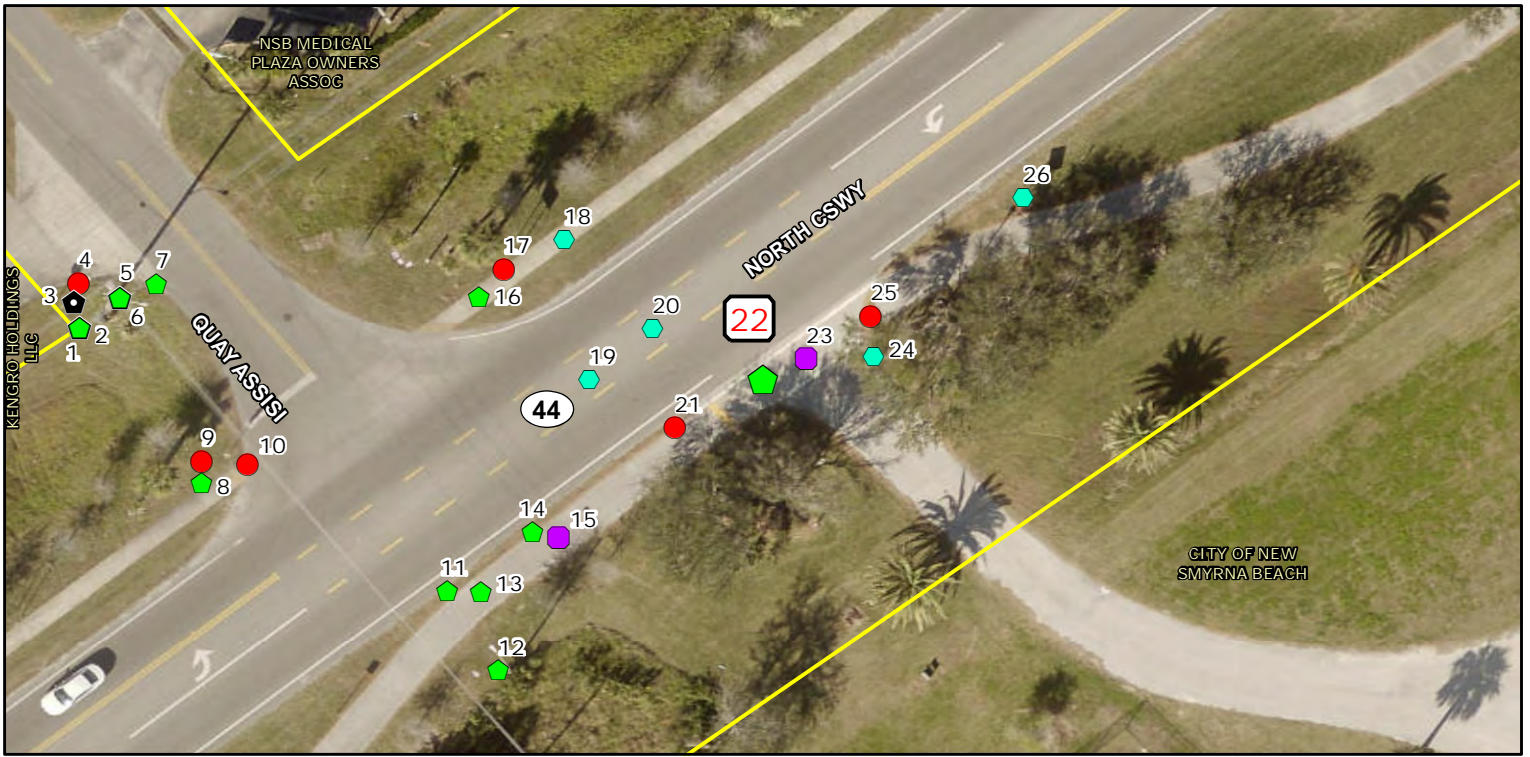
- | | |
|---|---|
| ● ADA - Safety | ◆ Lighting |
| ★ Cultural | ◆ Traffic Control |
| ◆ User | ⬢ Utilities |



Map Scale: 1 Inch = 100 Feet



Field Observations
River to Sea TPO
North Causeway Sidewalk Feasibility Study



Feature ID: 22

Feature Type: Lighting

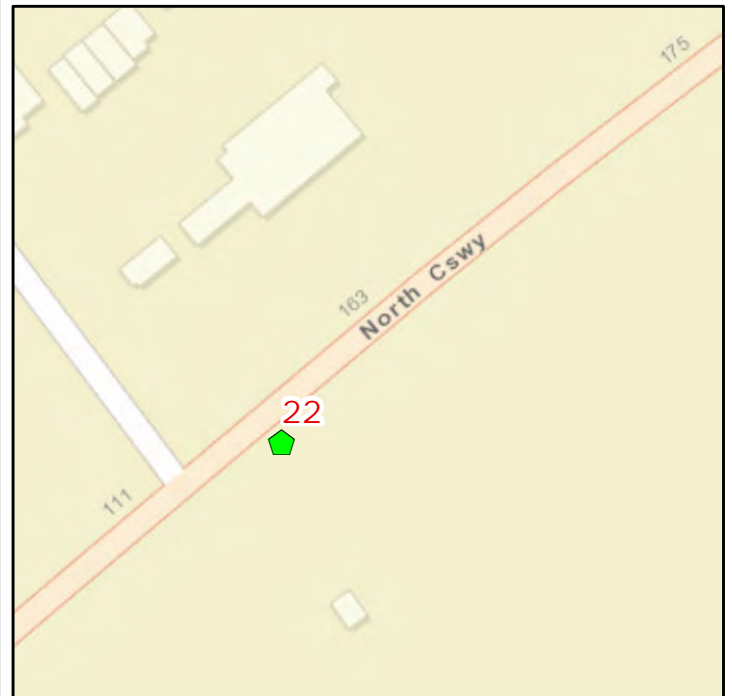
Comment:

Lat: 29.031037

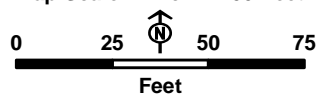
Long: -80.918717

<http://maps.google.com/maps?q=29.0310374060001,-80.9187172059999>

- | | |
|---|---|
| ● ADA - Safety | ⬠ Lighting |
| ★ Cultural | ⬡ Traffic Control |
| ■ User | ⬠ Utilities |

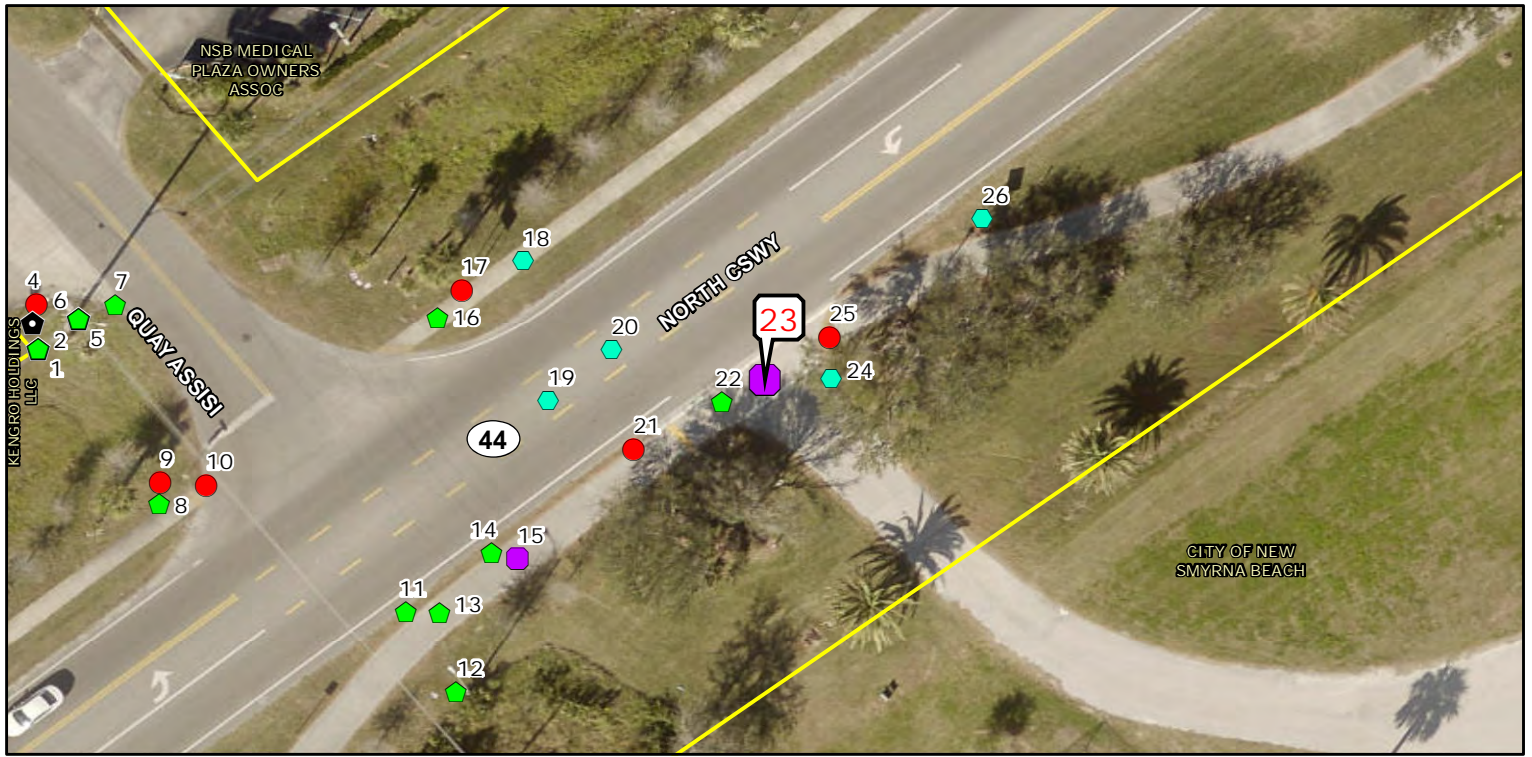


Map Scale: 1 Inch = 100 Feet



Field Observations

**River to Sea TPO
North Causeway Sidewalk Feasibility Study**



Feature ID: 23

Feature Type: User

Comment:

Lat: 29.031052

Long: -80.918686

<http://maps.google.com/maps?q=29.031052473,-80.918686209>

● ADA - Safety

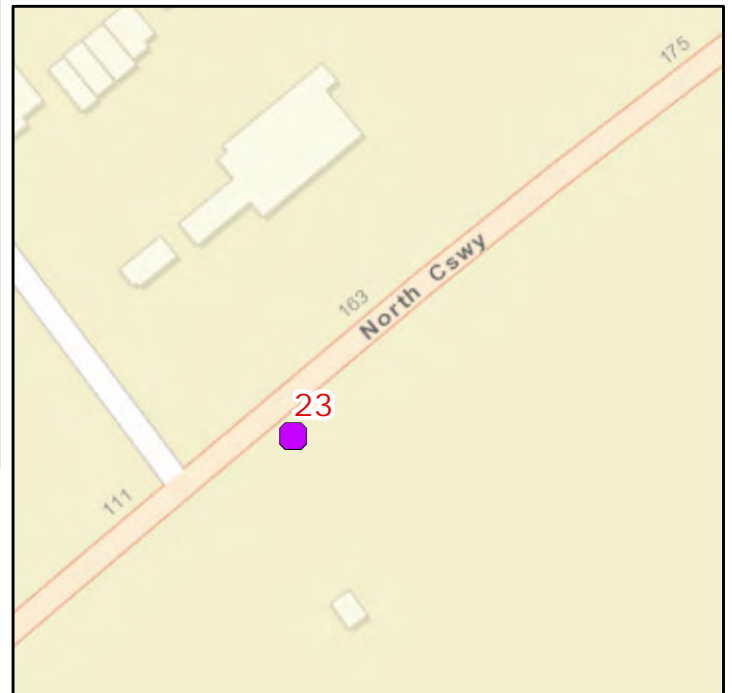
★ Cultural

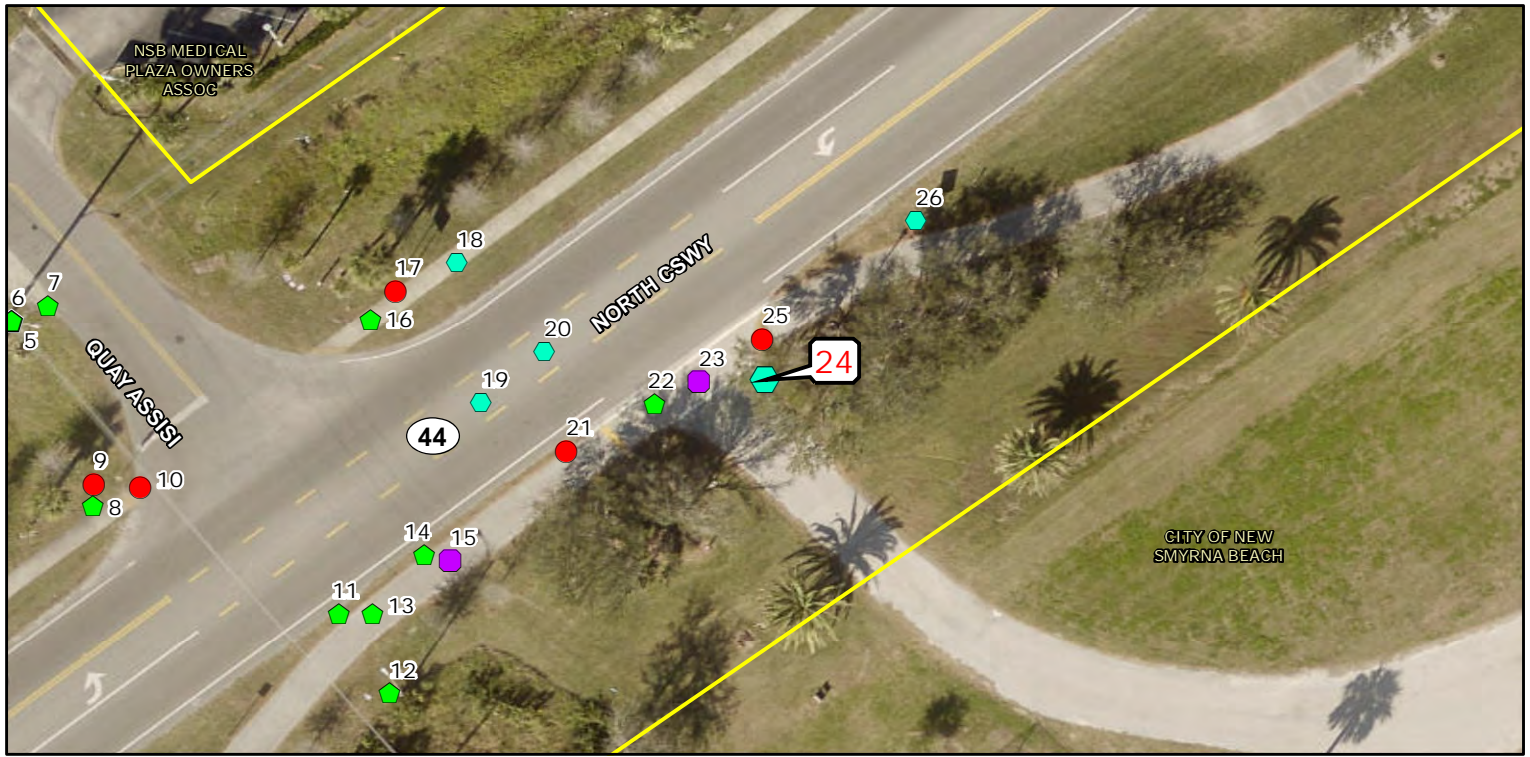
■ User

⬠ Lighting

⬡ Traffic Control

⬢ Utilities





Feature ID: 24

Feature Type: Traffic Control

Comment:

Lat: 29.031054

Long: -80.918639

<http://maps.google.com/maps?q=29.031053645,-80.9186386>

● ADA - Safety

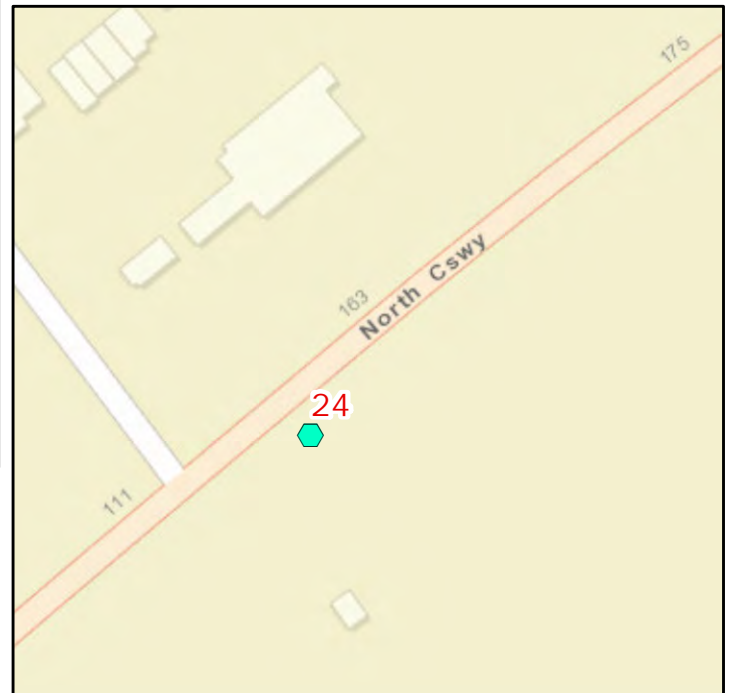
★ Cultural

● User

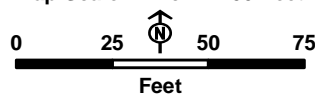
● Lighting

● Traffic Control

● Utilities

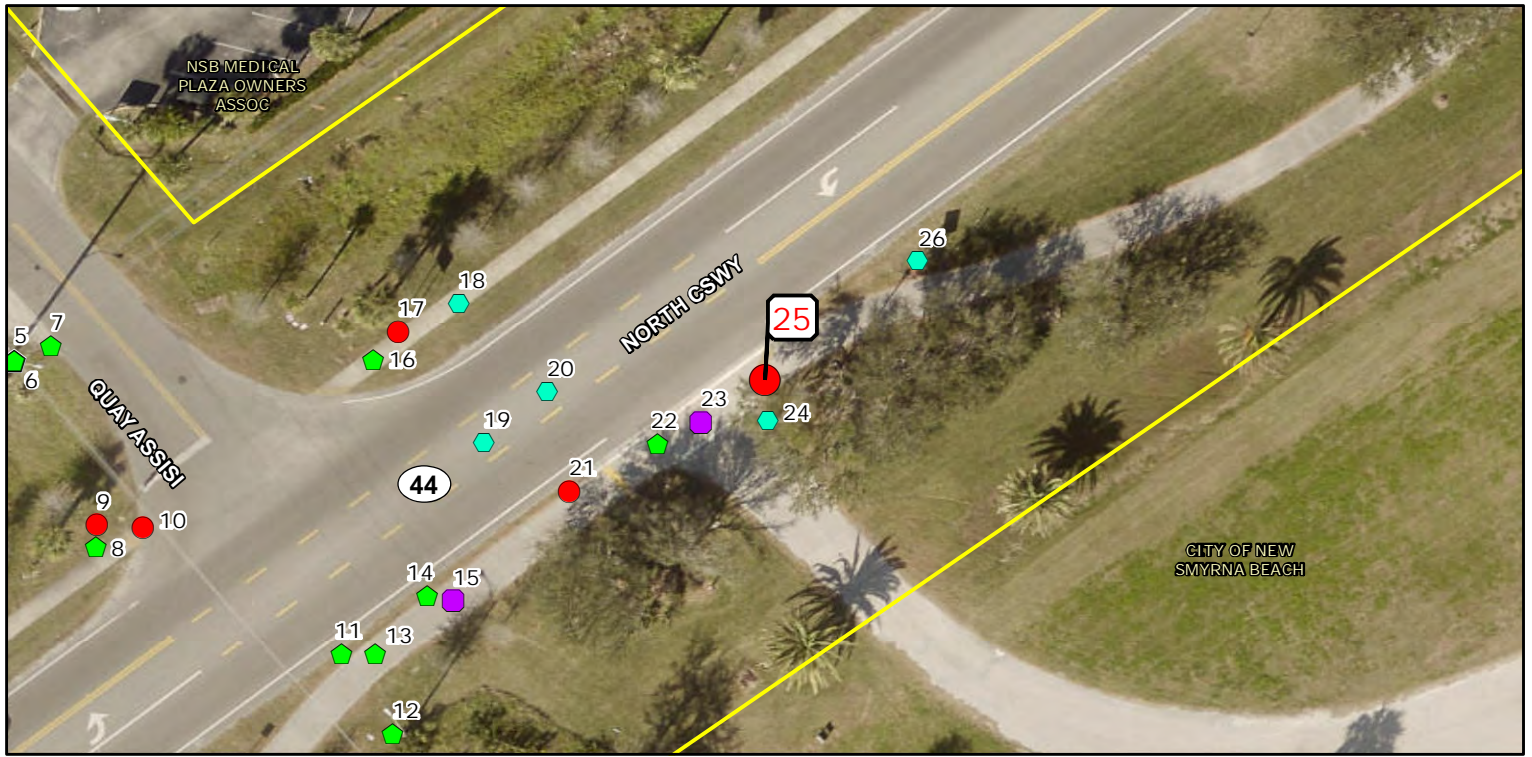


Map Scale: 1 Inch = 100 Feet



Field Observations

**River to Sea TPO
North Causeway Sidewalk Feasibility Study**



Feature ID: 25

Feature Type: ADA - Safety

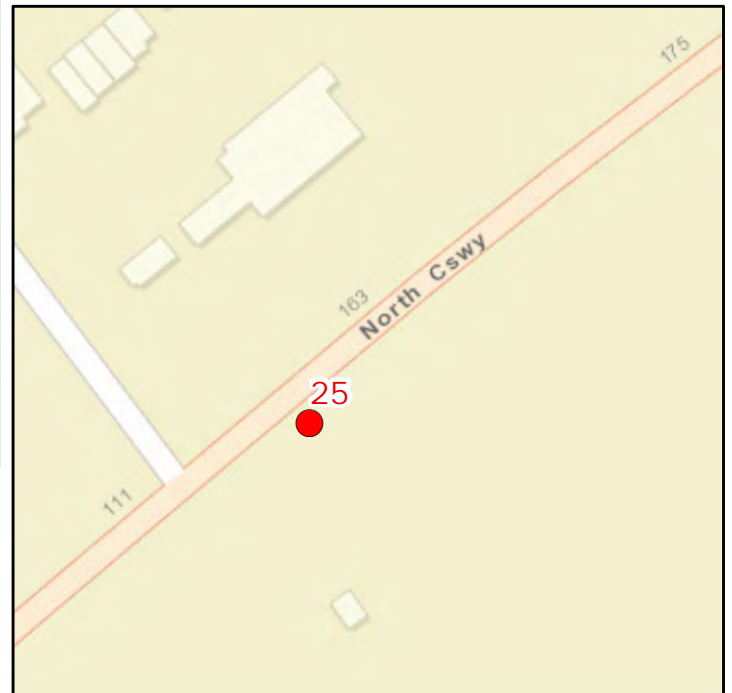
Comment:

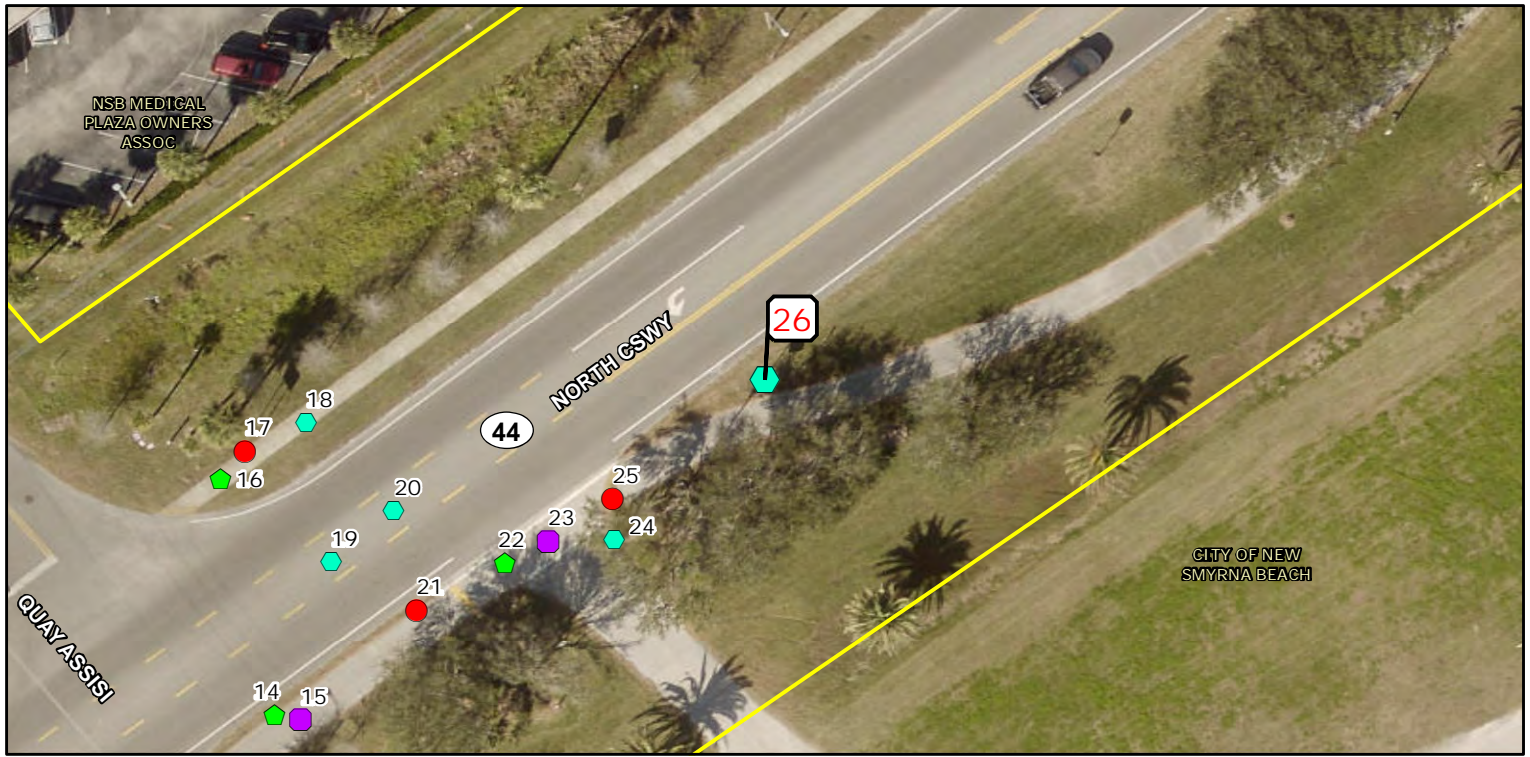
Lat: 29.031082

Long: -80.918641

<http://maps.google.com/maps?q=29.031082344,-80.918640612>

- | | |
|---|---|
| ● ADA - Safety | ⬠ Lighting |
| ★ Cultural | ⬡ Traffic Control |
| ⬠ User | ⬢ Utilities |





Feature ID: 26

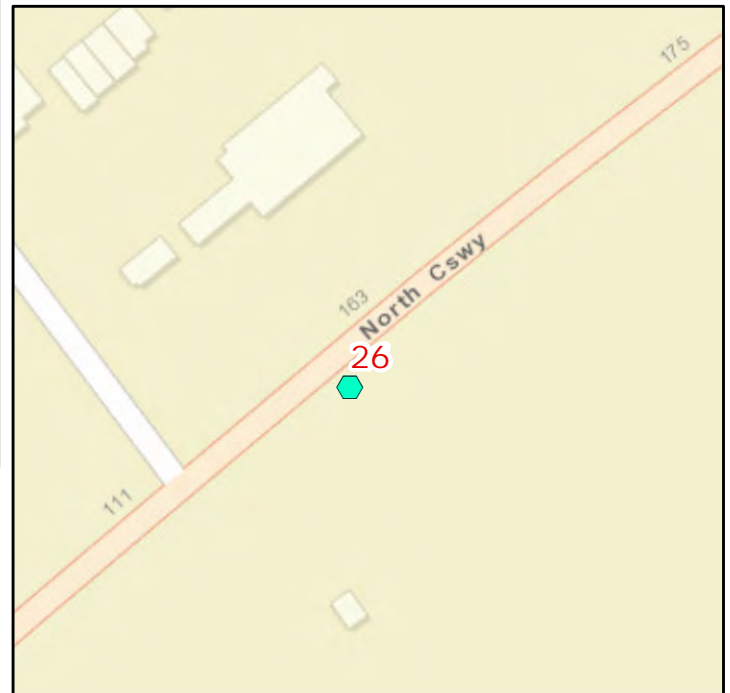
Feature Type: Traffic Control

Comment:

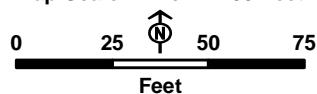
Lat: 29.031167 **Long:** -80.918531

<http://maps.google.com/maps?q=29.031167388,-80.918531312>

- | | |
|----------------|-------------------|
| ● ADA - Safety | ● Lighting |
| ★ Cultural | ● Traffic Control |
| ● User | ● Utilities |

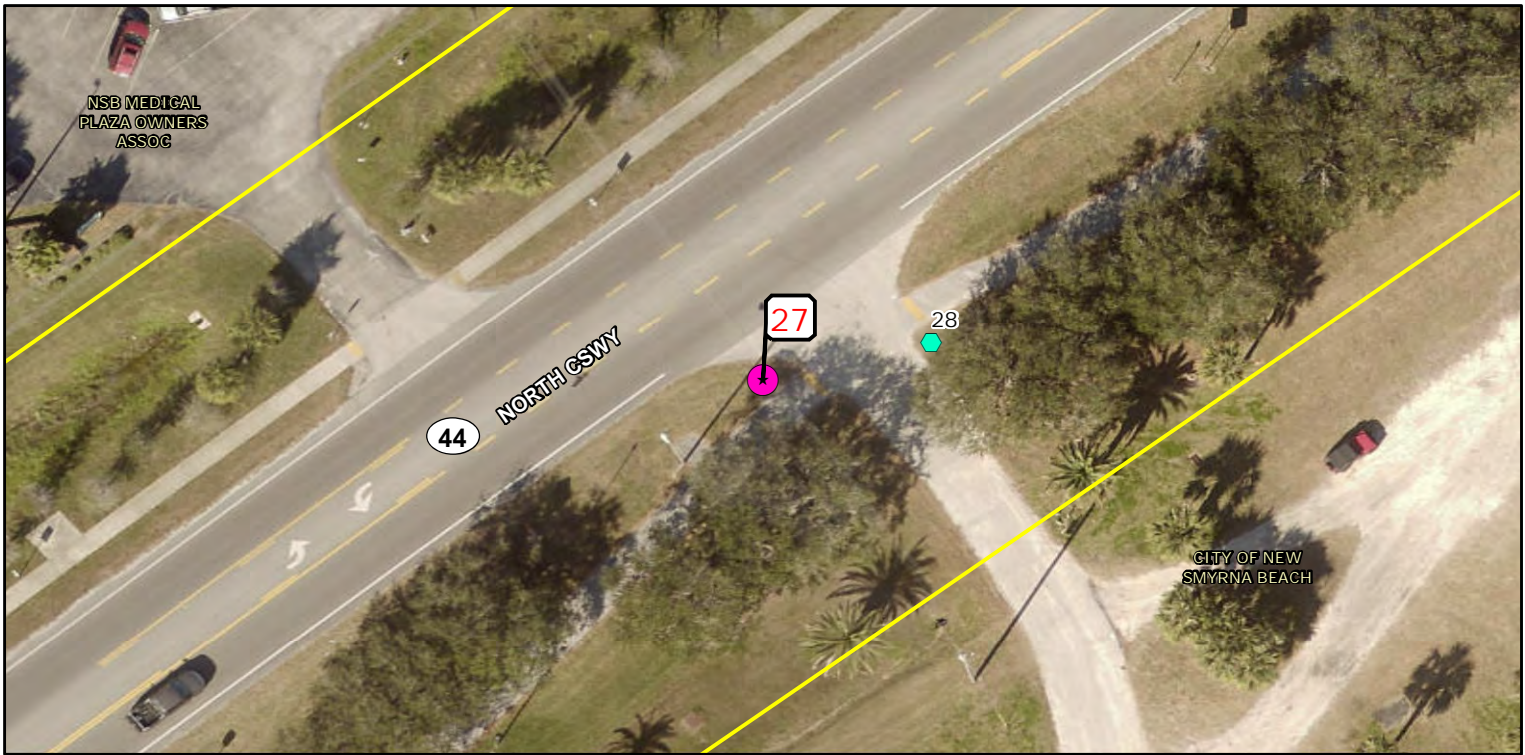


Map Scale: 1 Inch = 100 Feet



Field Observations

**River to Sea TPO
North Causeway Sidewalk Feasibility Study**



Feature ID: 27

Feature Type: Cultural

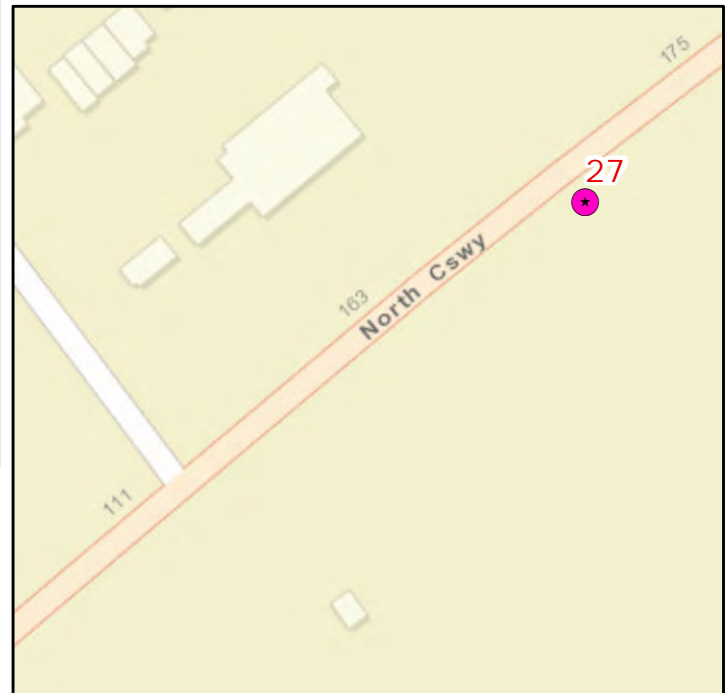
Comment:

Lat: 29.031611

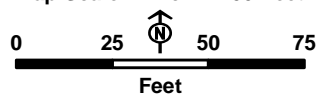
Long: -80.917893

<http://maps.google.com/maps?q=29.031611148,-80.917892945999>

- | | |
|---|---|
| ● ADA - Safety | ⬠ Lighting |
| ★ Cultural | ⬠ Traffic Control |
| ⬠ User | ⬠ Utilities |

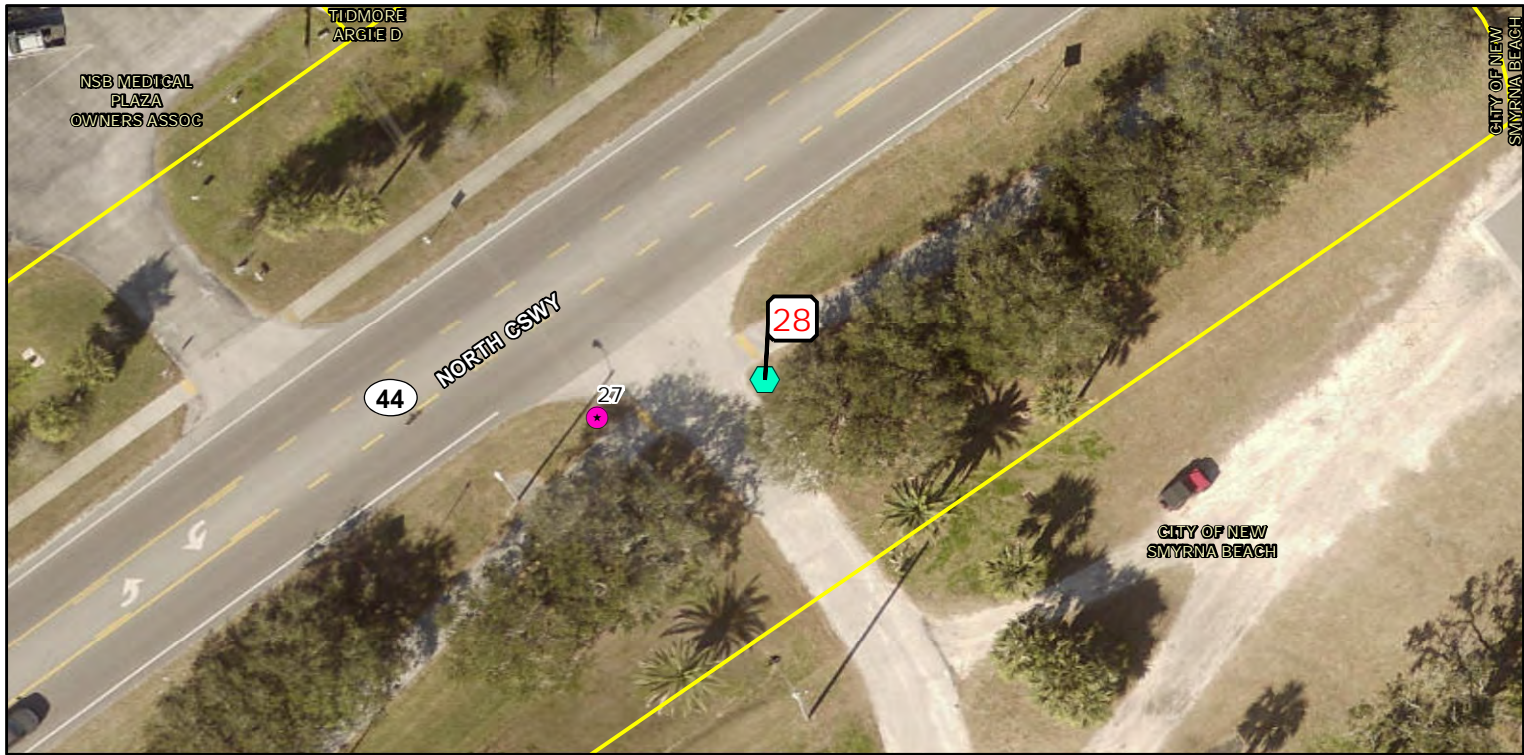


Map Scale: 1 Inch = 100 Feet



Field Observations

**River to Sea TPO
North Causeway Sidewalk Feasibility Study**



Feature ID: 28

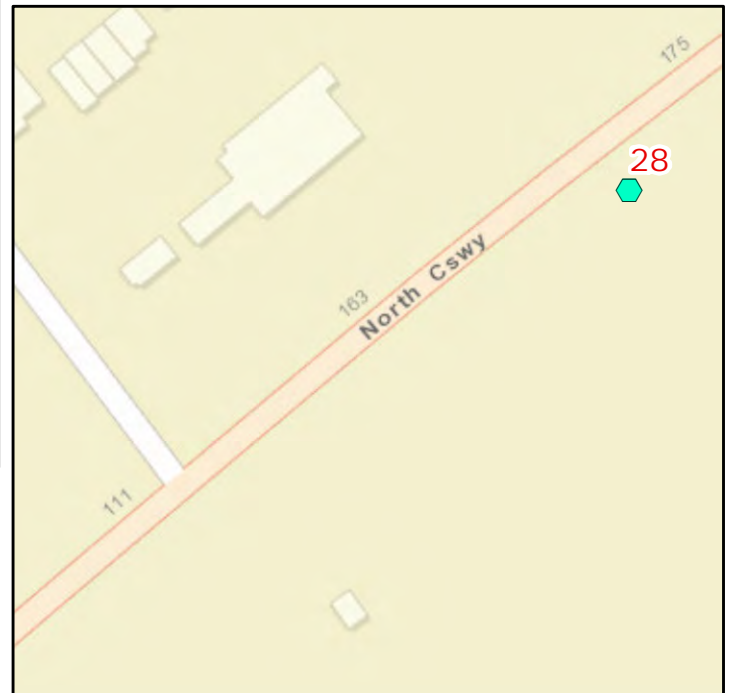
Feature Type: Traffic Control

Comment:

Lat: 29.031638 **Long:** -80.917773

<http://maps.google.com/maps?q=29.031638156,-80.917772917>

- | | |
|---|---|
| ● ADA - Safety | ⬠ Lighting |
| ★ Cultural | ⬠ Traffic Control |
| ⬠ User | ⬠ Utilities |





Appendix B – Sunshine One Call Ticket

NO LOCATE NEEDED - DESIGN TICKET REQUEST

Ticket : 334106247 Rev:000 Taken: 11/30/21 14:29ET

State: FL Cnty: VOLUSIA GeoPlace: NEW SMYRNA BEACH

CallerPlace: NEW SMYRNA BEACH

Subdivision:

Address :

Street : N CAUSEWAY

Cross 1 : QUAY ASSISI

Within 1/4 mile: Y

Locat: NO LOCATE NEEDED - DESIGN TICKET REQUEST

:

Remarks : DESIGN TICKET REQUEST FOR A BIKE PED STUDY

IN RESPONSE TO RECEIPT OF A DESIGN TICKET, SSOCOF PROVIDES THE ORIGINATOR OF THE DESIGN TICKET WITH A LIST OF SSOCOF MEMBERS IN THE VICINITY OF THE DESIGN PROJECT. SSOCOF DOES NOT NOTIFY SSOCOF MEMBERS OF THE RECEIPT BY SSOCOF OF A DESIGN TICKET. IT IS THE SOLE RESPONSIBILITY OF THE DESIGN ENGINEER TO CONTACT SSOCOF MEMBERS TO REQUEST INFORMATION ABOUT THE LOCATION OF SSOCOF MEMBERS' UNDERGROUND FACILITIES. SUBMISSION OF A DESIGN TICKET WILL NOT SATISFY THE REQUIREMENT OF CHAPTER 556, FLORIDA STATUTES, TO NOTIFY SSOCOF OF AN INTENT TO EXCAVATE OR DEMOLISH. THAT INTENT MUST BE MADE KNOWN SPECIFICALLY TO SSOCOF IN THE MANNER REQUIRED BY LAW. IN AN EFFORT TO SAVE TIME ON FUTURE CALLS, SAVE YOUR DESIGN TICKET NUMBER IF YOU INTEND TO BEGIN EXCAVATION WITHIN 90 DAYS OF YOUR DESIGN REQUEST. THE DESIGN TICKET CAN BE REFERENCED, AND THE INFORMATION ON IT CAN BE USED TO SAVE TIME WHEN YOU CALL IN THE EXCAVATION REQUEST.

*** LOOKUP BY INTERSECTION ***

*** DIG SITE FOOTPRINT IS 500 FT ***

:

Grids : 2901A8055D

Work date: 11/30/21 Time: 14:23ET Hrs notc: 000 Category: 6 Duration: UNKNOWN

Due Date : 12/02/21 Time: 23:59ET Exp Date : 12/30/21 Time: 23:59ET

Work type: DESIGN Boring: N White-lined: N

Ug/Oh/Both: U Machinery: N Depth: UNK Permits: N N/A

Done for : DESIGN

Company : HDR ENGINEERING Type: CONT

Co addr : 4830 W KENNEDY BLVD

Co addr2: SUITE 400

City : TAMPA State: FL Zip: 33609-2548

Caller : JASON STARR Phone: 813-282-2300

Contact : JASON STARR Email: JASON.STARR@HDRINC.COM

BestTime: 8-5

Mobile : 941-342-2711

Fax : 941-342-6589

Email : JASON.STARR@HDRINC.COM

Submitted: 11/30/21 14:29ET Oper: JAS Chan: WEB

Mbrs : CN1366 CNS736 SBF02 SFN477 TCI377

* Responses are current as of 11/30/2021 02:29 PM

<u>Ex. Circum</u>	<u>Service Area</u>	<u>Utility Type(s)</u>	<u>Contact</u>	<u>Alternate Contact</u>	<u>Emergency Contact</u>	<u>Positive Response</u>
No	UTILITIES COMMISSION, CITY OF NEW SMYRNA BEACH - WATER CN1366	WASTEWATER, WATER	KENNY HO (386) 424-3076 x3076	CHRIS BROCKMAN (386) 424-3188	CHRIS BROCKMAN (386) 424-3188	
No	UTILITIES COMMISSION CITY OF NEW SMYRNA BEACH - ELECTRIC CNS736	ELECTRIC	KENNY HO (386) 424-3076 x3076	CRYSTAL MEAHL (386) 424-3161	MIKE MINES (386) 424-3172	
No	A T & T/ DISTRIBUTION SBF02	TELEPHONE	DINO FARRUGGIO (561) 683-2729	DINO FARRUGGIO (561) 683-2729		
No	FLORIDA PUBLIC UTILITIES CO. SFN477	GAS	COLIN DUNN (386) 785-4554	VERONICA THOMAS (352) 459-1589	VIRGINIA CESPEDES (352) 636-7047	
No	CHARTER COMMUNICATIONS TCI377	CATV	JERROLD KAISER (321) 338-1928	USIC DISPATCH OFFICE (CLS) (800) 778-9140	USIC DISPATCH OFFICE (CLS) (800) 778-9140	

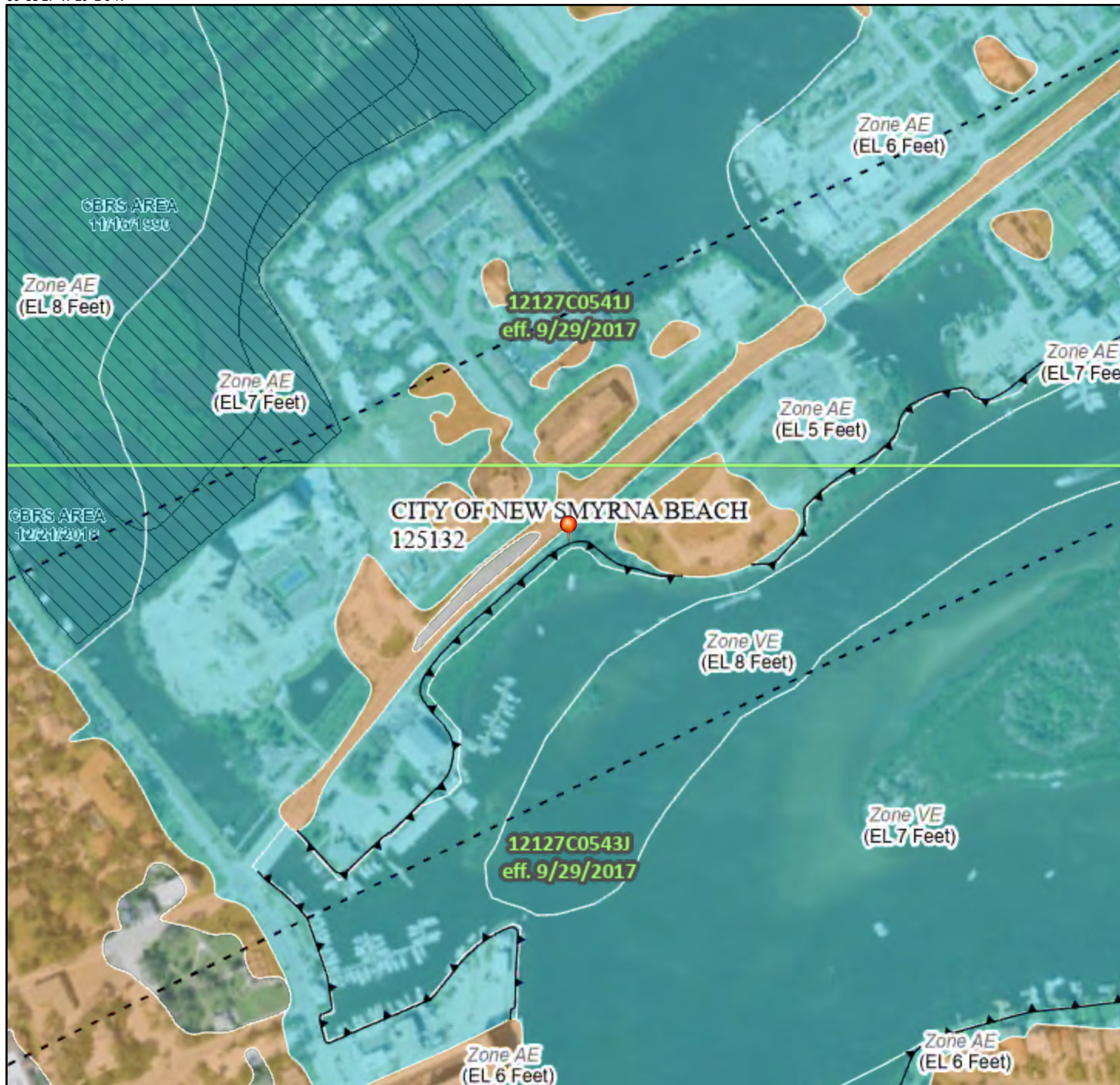


Appendix C – FEMA FIRM Map

National Flood Hazard Layer FIRMMette



80°55'27"W 29°2'6"N



0 250 500 1,000 1,500 2,000 Feet

1:6,000

80°54'50"W 29°1'35"N

Basemap: USGS National Map: Orthoimagery: Data refreshed October, 2020

Legend

SEE FIS REPORT FOR DETAILED LEGEND AND INDEX MAP FOR FIRM PANEL LAYOUT

SPECIAL FLOOD HAZARD AREAS		Without Base Flood Elevation (BFE) Zone A, V, A99
		With BFE or Depth Zone AE, AO, AH, VE, AR
		Regulatory Floodway
OTHER AREAS OF FLOOD HAZARD		0.2% Annual Chance Flood Hazard, Areas of 1% annual chance flood with average depth less than one foot or with drainage areas of less than one square mile Zone X
		Future Conditions 1% Annual Chance Flood Hazard Zone X
		Area with Reduced Flood Risk due to Levee. See Notes. Zone X
		Area with Flood Risk due to Levee Zone D
OTHER AREAS		NO SCREEN Area of Minimal Flood Hazard Zone X
		Effective LOMRs
		Area of Undetermined Flood Hazard Zone D
GENERAL STRUCTURES		Channel, Culvert, or Storm Sewer
		Levee, Dike, or Floodwall
OTHER FEATURES		20.2 Cross Sections with 1% Annual Chance Water Surface Elevation
		17.5 Coastal Transect
		Base Flood Elevation Line (BFE)
		Limit of Study
		Jurisdiction Boundary
		Coastal Transect Baseline
		Profile Baseline
MAP PANELS		Digital Data Available
		No Digital Data Available
		Unmapped



The pin displayed on the map is an approximate point selected by the user and does not represent an authoritative property location.

This map complies with FEMA's standards for the use of digital flood maps if it is not void as described below. The basemap shown complies with FEMA's basemap accuracy standards

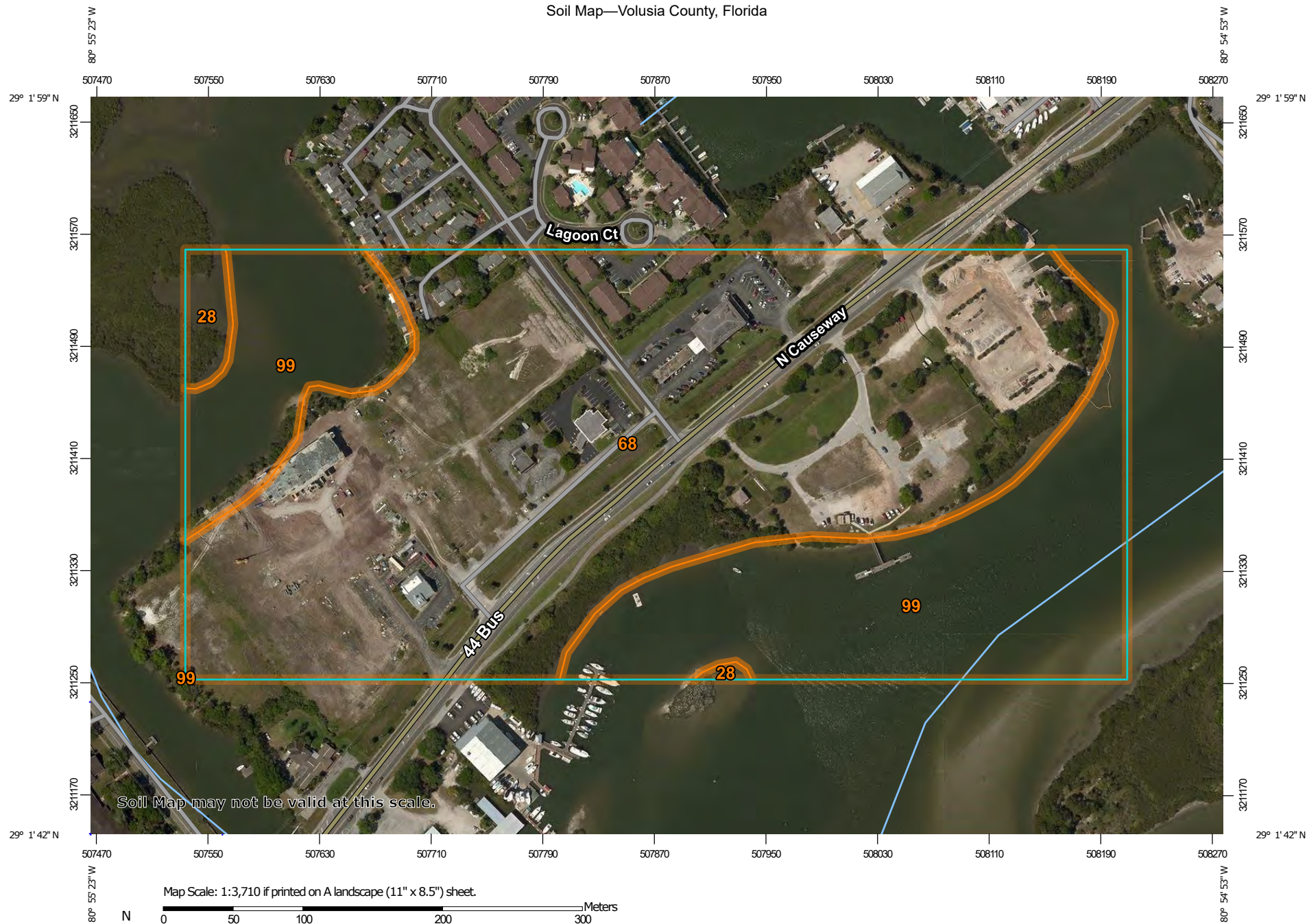
The flood hazard information is derived directly from the authoritative NFHL web services provided by FEMA. This map was exported on **11/30/2021 at 11:56 AM** and does not reflect changes or amendments subsequent to this date and time. The NFHL and effective information may change or become superseded by new data over time.

This map image is void if the one or more of the following map elements do not appear: basemap imagery, flood zone labels, legend, scale bar, map creation date, community identifiers, FIRM panel number, and FIRM effective date. Map images for unmapped and unmodernized areas cannot be used for regulatory purposes.



Appendix D – NRCS Soil Survey Map

Soil Map—Volusia County, Florida



Natural Resources
Conservation Service

Web Soil Survey
National Cooperative Soil Survey

11/18/2021
Page 1 of 3

MAP LEGEND

Area of Interest (AOI)

 Area of Interest (AOI)

Soils

 Soil Map Unit Polygons

 Soil Map Unit Lines

 Soil Map Unit Points

Special Point Features



Blowout



Borrow Pit



Clay Spot



Closed Depression



Gravel Pit



Gravelly Spot



Landfill



Lava Flow



Marsh or swamp



Mine or Quarry



Miscellaneous Water



Perennial Water



Rock Outcrop



Saline Spot



Sandy Spot



Severely Eroded Spot



Sinkhole



Slide or Slip



Sodic Spot



Spoil Area



Stony Spot



Very Stony Spot



Wet Spot



Other



Special Line Features

Water Features



Streams and Canals

Transportation



Rails



Interstate Highways



US Routes



Major Roads



Local Roads

Background



Aerial Photography

MAP INFORMATION

The soil surveys that comprise your AOI were mapped at 1:20,000.

Warning: Soil Map may not be valid at this scale.

Enlargement of maps beyond the scale of mapping can cause misunderstanding of the detail of mapping and accuracy of soil line placement. The maps do not show the small areas of contrasting soils that could have been shown at a more detailed scale.

Please rely on the bar scale on each map sheet for map measurements.

Source of Map: Natural Resources Conservation Service

Web Soil Survey URL:

Coordinate System: Web Mercator (EPSG:3857)

Maps from the Web Soil Survey are based on the Web Mercator projection, which preserves direction and shape but distorts distance and area. A projection that preserves area, such as the Albers equal-area conic projection, should be used if more accurate calculations of distance or area are required.

This product is generated from the USDA-NRCS certified data as of the version date(s) listed below.

Soil Survey Area: Volusia County, Florida

Survey Area Data: Version 20, Aug 27, 2021

Soil map units are labeled (as space allows) for map scales 1:50,000 or larger.

Date(s) aerial images were photographed: Mar 30, 2015—Apr 4, 2015

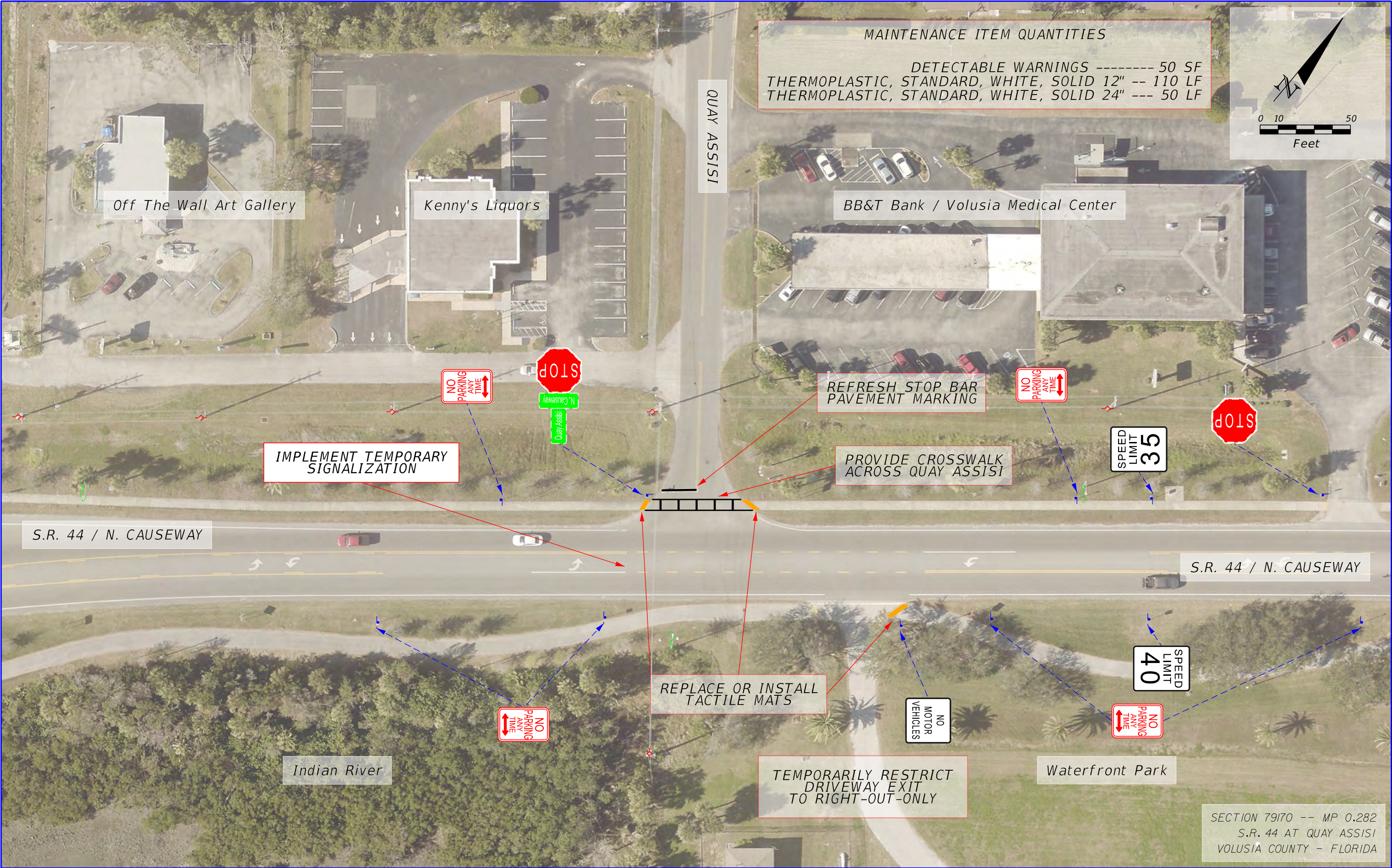
The orthophoto or other base map on which the soil lines were compiled and digitized probably differs from the background imagery displayed on these maps. As a result, some minor shifting of map unit boundaries may be evident.

Map Unit Legend

Map Unit Symbol	Map Unit Name	Acres in AOI	Percent of AOI
28	Hydraquents	0.8	1.6%
68	Turnbull variant sand	34.4	66.8%
99	Water	16.2	31.6%
Totals for Area of Interest		51.4	100.0%



Appendix E – Pedestrian and Bicycle Counts and Temporary Signal Concept Plan



FLORIDA DEPARTMENT OF TRANSPORTATION

PEDESTRIAN MOVEMENT SUMMARY

SECTION	79170	CITY New Smyrna Beach	COUNTY Volusia
STATE ROUTE	State Road 44	INTERSECTING ROUTE Quay Assisi	
OBSERVER	TEDS	DATE 1/5/2021	

REMARKS _____

FORM COMPLETED BY CML **DATE** 01/08/21

H O U R S	West side of			East side of			North side of			South side of			GRAND TOTAL
	Quay Assisi			Quay Assisi			State Road 44			State Road 44			
	NB	SB	TOTAL	NB	SB	TOTAL	EB	WB	TOTAL	EB	WB	TOTAL	
9:00 - 10:00	1	0	1	0	0	0	0	3	3	5	7	12	16
10:00 - 11:00	0	0	0	0	0	0	0	2	2	16	7	23	25
11:00 - 12:00	0	0	0	0	0	0	2	1	3	5	9	14	17
12:00 - 1:00	0	0	0	0	0	0	3	1	4	9	10	19	23
1:00 - 2:00	0	0	0	0	0	0	4	0	4	8	4	12	16
2:00 - 3:00	0	0	0	0	0	0	0	3	3	5	8	13	16
3:00 - 4:00	0	0	0	0	0	0	3	0	3	6	5	11	14
4:00 - 5:00	1	0	1	0	2	2	2	2	4	10	11	21	28
TOTAL	2	0	2	0	2	2	14	12	26	64	61	125	155

FLORIDA DEPARTMENT OF TRANSPORTATION

BICYCLE MOVEMENT SUMMARY

SECTION 79170 CITY New Smyrna Beach COUNTY Volusia
 STATE ROUTE State Road 44 INTERSECTING ROUTE Quay Assisi
 OBSERVER TEDS DATE 1/5/2021

REMARKS _____

FORM COMPLETED BY CML DATE 01/08/21

H O U R S	West side of			East side of			North side of			South side of			GRAND TOTAL
	Quay Assisi			Quay Assisi			State Road 44			State Road 44			
	NB	SB	TOTAL	NB	SB	TOTAL	EB	WB	TOTAL	EB	WB	TOTAL	
9:00 - 10:00	0	0	0	0	0	0	2	3	5	3	1	4	9
10:00 - 11:00	0	0	0	0	0	0	1	0	1	3	1	4	5
11:00 - 12:00	0	0	0	0	0	0	2	4	6	8	2	10	16
12:00 - 1:00	0	0	0	0	0	0	1	0	1	6	5	11	12
1:00 - 2:00	0	0	0	0	0	0	0	3	3	10	4	14	17
2:00 - 3:00	0	2	2	0	0	0	3	4	7	15	13	28	37
3:00 - 4:00	0	0	0	0	0	0	1	7	8	11	8	19	27
4:00 - 5:00	0	0	0	0	0	0	2	2	4	0	3	3	7
TOTAL	0	2	2	0	0	0	12	23	35	56	37	93	130

FLORIDA DEPARTMENT OF TRANSPORTATION

PEDESTRIAN MOVEMENT SUMMARY

SECTION	79170	CITY New Smyrna Beach	COUNTY Volusia
STATE ROUTE	State Road 44	INTERSECTING ROUTE	Barracuda Boulevard
OBSERVER	TEDS	DATE	1/5/2021

REMARKS _____

FORM COMPLETED BY CML **DATE** 01/08/21

H O U R S	West side of			East side of			North side of			South side of			GRAND TOTAL
	Barracuda Blvd			Barracuda Blvd			State Road 44			State Road 44			
	NB	SB	TOTAL	NB	SB	TOTAL	EB	WB	TOTAL	EB	WB	TOTAL	
9:00 - 10:00	0	1	1	0	0	0	1	4	5	3	6	9	15
10:00 - 11:00	0	1	1	0	0	0	2	0	2	17	7	24	27
11:00 - 12:00	0	1	1	2	1	3	2	1	3	6	4	10	17
12:00 - 1:00	0	1	1	1	0	1	0	1	1	11	10	21	24
1:00 - 2:00	1	0	1	2	3	5	6	1	7	3	0	3	16
2:00 - 3:00	0	0	0	1	0	1	0	1	1	3	6	9	11
3:00 - 4:00	0	1	1	0	2	2	2	0	2	4	4	8	13
4:00 - 5:00	0	1	1	2	0	2	1	1	2	8	7	15	20
TOTAL	1	6	7	8	6	14	14	9	23	55	44	99	143

FLORIDA DEPARTMENT OF TRANSPORTATION

BICYCLE MOVEMENT SUMMARY

SECTION 79170 CITY New Smyrna Beach COUNTY Volusia
 STATE ROUTE State Road 44 INTERSECTING ROUTE Barracuda Boulevard
 OBSERVER TEDS DATE 1/5/2021

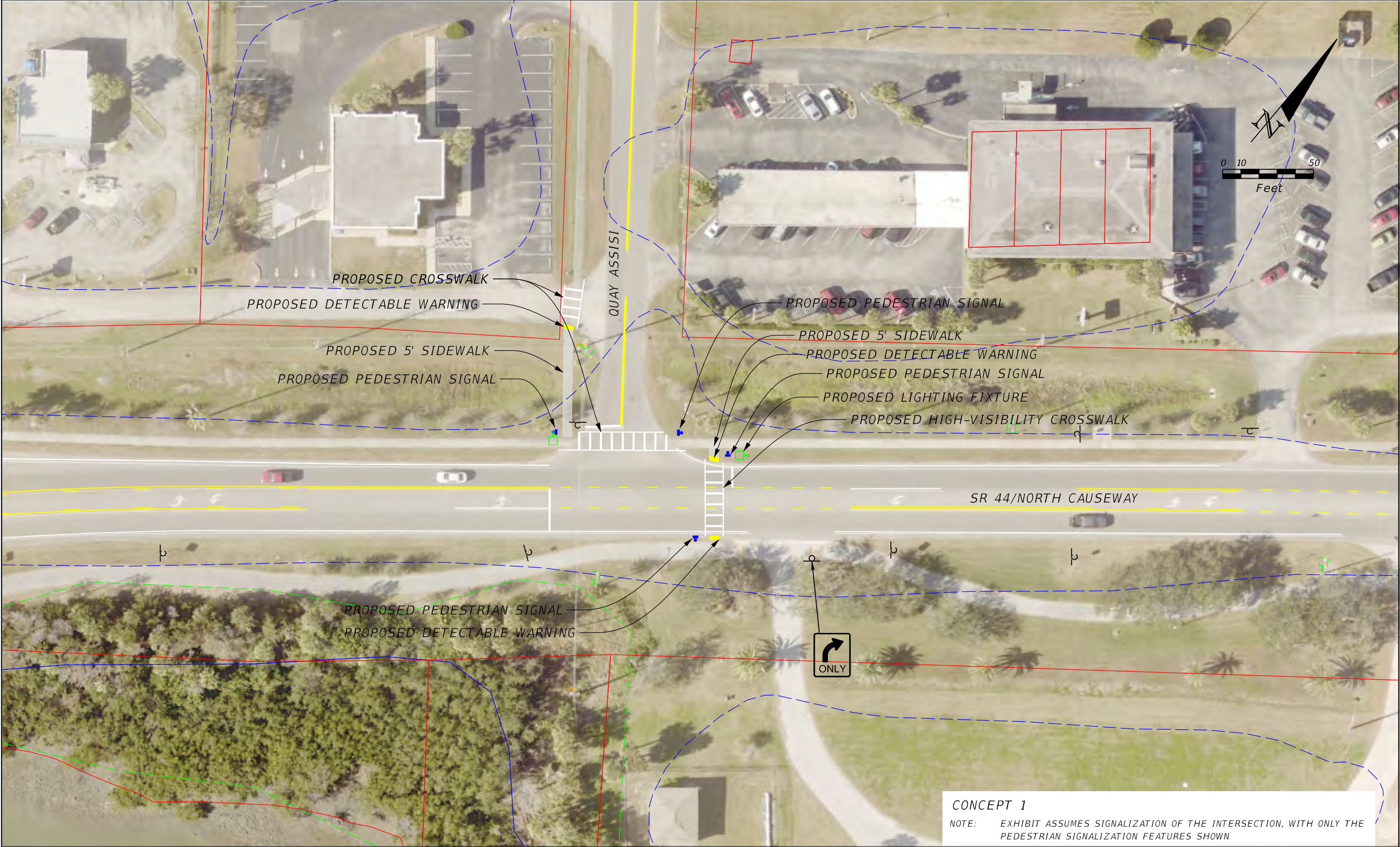
REMARKS _____

FORM COMPLETED BY CML DATE 01/08/21

H O U R S	West side of			East side of			North side of			South side of			GRAND TOTAL
	Barracuda Blvd			Barracuda Blvd			State Road 44			State Road 44			
	NB	SB	TOTAL	NB	SB	TOTAL	EB	WB	TOTAL	EB	WB	TOTAL	
9:00 - 10:00	0	1	1	0	1	1	0	2	2	1	0	1	<u>5</u>
10:00 - 11:00	1	0	1	0	1	1	1	2	3	3	0	3	<u>8</u>
11:00 - 12:00	0	2	2	1	0	1	0	2	2	5	0	5	<u>10</u>
12:00 - 1:00	0	0	0	0	0	0	1	4	5	6	5	11	<u>16</u>
1:00 - 2:00	0	2	2	1	0	1	1	1	2	5	0	5	<u>10</u>
2:00 - 3:00	0	4	4	1	0	1	1	4	5	10	3	13	<u>23</u>
3:00 - 4:00	0	0	0	1	0	1	0	3	3	2	6	8	<u>12</u>
4:00 - 5:00	0	1	1	0	0	0	0	2	2	3	1	4	<u>7</u>
TOTAL	1	10	11	4	2	6	4	20	24	35	15	50	<u>91</u>



Appendix F – Concept Plans



NOTE: PARCEL LINES REPRESENT "APPARENT" RIGHT-OF-WAY. ACTUAL RIGHT-OF-WAY HAS NOT BEEN VERIFIED.

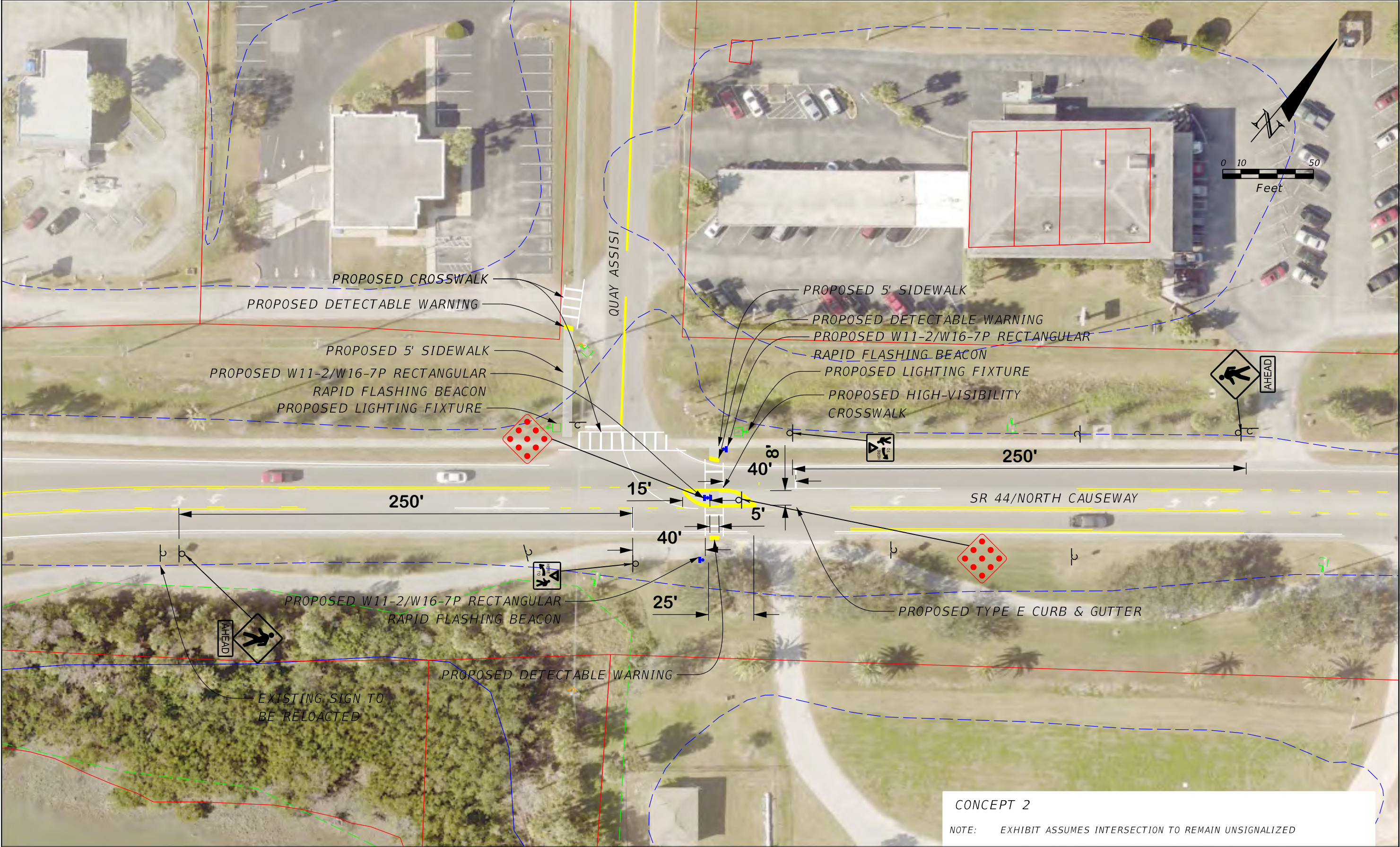
LEGEND



CITY OF NEW SMYRNA BEACH
SR 44/NORTH CAUSEWAY
SIDEWALK CONCEPT PLANS

- | | | |
|-----------------------|---------------------|-------------------------------|
| EXISTING DRAIN | EXISTING PARCELS | EXISTING LIMIT OF FLOODPLAINS |
| EXISTING UTILITY POLE | EXISTING TREE LINE | EXISTING LIMIT OF WETLANDS |
| EXISTING SIGN | EXISTING LIGHT POLE | EXISTING DRAINAGE PIPE |





NOTE: PARCEL LINES REPRESENT "APPARENT" RIGHT-OF-WAY. ACTUAL RIGHT-OF-WAY HAS NOT BEEN VERIFIED.

LEGEND



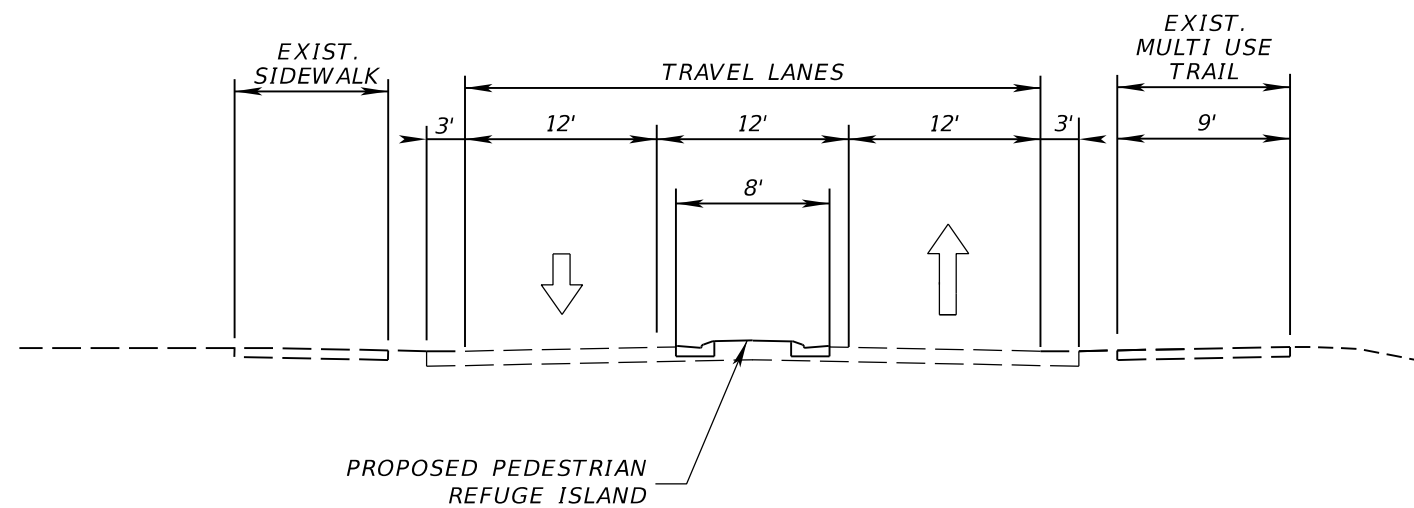
CITY OF NEW SMYRNA BEACH
SR 44/NORTH CAUSEWAY
SIDEWALK CONCEPT PLANS

- | | | |
|-----------------------|---------------------|-------------------------------|
| EXISTING DRAIN | EXISTING PARCELS | EXISTING LIMIT OF FLOODPLAINS |
| EXISTING UTILITY POLE | EXISTING TREE LINE | EXISTING LIMIT OF WETLANDS |
| EXISTING SIGN | EXISTING LIGHT POLE | EXISTING DRAINAGE PIPE |





Appendix G – Typical Section



TYPICAL SECTION
UNSIGNALIZED EXHIBIT
SR 44/NORTH CAUSEWAY
PROPOSED PEDESTRIAN CROSSING

NOTE: PARCEL LINES REPRESENT "APPARENT" RIGHT-OF-WAY. ACTUAL RIGHT-OF-WAY HAS NOT BEEN VERIFIED.

LEGEND



**CITY OF NEW SMYRNA BEACH
SR 44/NORTH CAUSEWAY
SIDEWALK CONCEPT PLANS**





Appendix H – FDOT Inflation Factors



Inflation Factors

This “*Transportation Costs*” report is issued by the Office of Policy Planning. It provides information on inflation factors and other indices that may be used to convert Present Day Costs (PDC) to future Year Of Expenditure costs (YOE) or vice versa. This report is updated regularly based on the FDOT Work Program Instructions.

Please note that the methodology for inflationary adjustments relating to specific transportation projects should be addressed with the district office where the project will be located. For general use or non-specific areas, the guidelines provided herein may be used for inflationary adjustments.

Construction Cost Inflation Factors

The table on the next page includes the inflation factors and Present Day Cost (PDC) multipliers that are applied to the Department’s Work Program for highway construction costs expressed in Fiscal Year 2022 dollars (FY 2022 runs from July 1, 2021 to June 30, 2022).

Other Transportation Cost Inflation Factors

Other indices may be used to adjust project costs for other transportation modes or non-construction components of costs. Examples are as follows:

The Consumer Price Index (CPI, also retail price index) is a weighted average of prices of a specified set of products and services purchased by wage earners in urban areas. As such, it provides one measure of inflation. The CPI is a fixed quantity price index and a reasonable cost-of-living index.

The Employment Cost Index (ECI) is based on the National Compensation Survey, administered by the Bureau of Labor Statistics (BLS). It measures quarterly changes in compensation costs, which include wages, salaries, and other employer costs for civilian workers (nonfarm private industry and state and local government).

The monthly series, Producer Price Index for Highway and Street Construction, is also available from BLS. It provides national-level estimates of past and recent highway construction inflation. The Producer Price Index (PPI) web site is <http://www.bls.gov/ppi/home.htm>.



FLORIDA DEPARTMENT OF
TRANSPORTATION

TRANSPORTATION COSTS REPORTS

**Work Program
Highway Construction Cost Inflation Factors**

Fiscal Year	Inflation Factor	PDC Multiplier
2022	Base	1.000
2023	2.7%	1.027
2024	2.8%	1.056
2025	2.9%	1.086
2026	3.0%	1.119
2027	3.1%	1.154
2028	3.2%	1.191
2029	3.3%	1.230
2030	3.3%	1.270
2031	3.3%	1.312
2032	3.3%	1.356
2033	3.3%	1.400
2034	3.3%	1.447
2035	3.3%	1.494
2036	3.3%	1.544
2037	3.3%	1.595
2038	3.3%	1.647
2039	3.3%	1.702
2040	3.3%	1.758
2041	3.3%	1.816
2042	3.3%	1.876
2043	3.3%	1.938
2044	3.3%	2.002
2045	3.3%	2.068
2046	3.3%	2.136
2047	3.3%	2.206
2048	3.3%	2.279
2049	3.3%	2.354
2050	3.3%	2.432
2051	3.3%	2.512
2052	3.3%	2.595
2053	3.3%	2.681
2054	3.3%	2.769
2055	3.3%	2.861
2056	3.3%	2.955
2057	3.3%	3.053
2058	3.3%	3.153
2059	3.3%	3.257



Appendix I – Draft Report Comments and Responses

N CAUSEWAY PEDESTRIAN CROSSING FEASIBILITY STUDY			
Comments By:	Stephan Harris, Transportation Planner – Project Manager		
Agency:	R2CTPO		
Date Received:	January 25, 2022		
Comment #	Comment	Response	Location
1	Page Number Change	Updated.	Page 13
2	Update paragraph text	Updated.	Page iii
3	Change text to Flex 42	Updated.	Page 5
4	Change text to curb-to-curb	Updated.	Page 5
5	Add north arrow and scale to Figure 2-1	The image was taken directly from a FDOT Barracuda Boulevard Bridge presentation file and did not include a scale. It is being shown to illustrate the proposed detour route that would affect pedestrian/bicycle circulation. A north arrow has been added, along with a note "Not to scale - for illustrative purposes".	Page 10
6	Include recommended pedestrian lighting from page 8	Updated.	Page 17
7	Include recommended pedestrian lighting from page 8	Updated.	Page 18
8	This language is ambiguous and implies that the project is not currently feasible. Explicitly state whether the project is currently feasible or not.	Updated.	Page 20
9	Add proposed lighting feature	Updated.	Page 73
10	Add proposed lighting feature	Updated.	Page 74

N CAUSEWAY PEDESTRIAN CROSSING FEASIBILITY STUDY			
Comments By:	Kyle Fegley, City Engineer		
Agency:	City of New Smyrna Beach		
Date Received:	January 25, 2022		
Comment #	Comment	Response	Location
1	Would the pedestrian crossing ever merit the State's threshold at a mid-block unsignalized intersection?	It does not meet the demand requirement for a marked crossing today, although that may potentially change with the completion of the adjacent development, or with circulation changes that may initially be induced by the Barracuda Boulevard Bridge project. After discussing further with FDOT, this location should be considered for a potential crossing in the future, and it's recommended to monitor the crossing demand.	General
2	Can the refuge island be reconfigured to allow a left turn movement from the westerly most driveway connection from the City's property to the south (reference attached HDR concept 2) allowing boaters to make a left turn onto the N. Causeway?	The island has been modified to allow northbound lefts out from the driveway on the south side of North Causeway, but still meet minimum FDOT requirements.	General

N CAUSEWAY PEDESTRIAN CROSSING FEASIBILITY STUDY			
Comments By:	Chris Dabson, FDOT Structures Engineer & Project Manager Michael Sanders, FDOT Assistant District Traffic Operations Engineer		
Agency:	FDOT		
Date Received:	January 25, 2022		
Comment #	Comment	Response	Location
1	We would need a couple weeks to turn this around at a minimum.	Noted.	General
2	There is no available topographical survey at this intersection to use for design.	Noted.	General
3	There are other suggested improvements that should accompany the RRFB (lighting, sidewalk gaps, etc.).	The proposed concept includes filling the sidewalk gap on Quay Assisi, as well as lighting and signage improvements associated with the crossing and proposed traffic control.	General
4	Adding the RRFB would extend the construction duration of this project as the installation would likely need to occur after removal of the temporary signal at Quay Assisi.	Noted.	General
5	Additionally, the recommended temp. crossing of N. Causeway @ Quay Assisi is unfavorable as there is an existing signalized crossing at Barracuda Blvd. Also, providing a temporary crossing with the temp. could give public notion that crossing should remain as a permanent condition.	The crossing at Quay Assisi provides the opportunity for people to cross to the shared-use path on the south side sooner versus going back to Barracuda Boulevard before crossing. Further, any person crossing today at Barracuda Boulevard and proceeding west would be going out of their way to go back to the east to Barracuda Boulevard in order to cross North Causeway.	General
6	Some other considerations would be lighting, advanced flashers, sidewalk gap on Quay Assisi and some level of public notification for the access change	The physical infrastructure items mentioned are included in the concept plans with the exception of advance flashers. These could be added, but with good existing sight distance on a two-lane road are not necessary.	